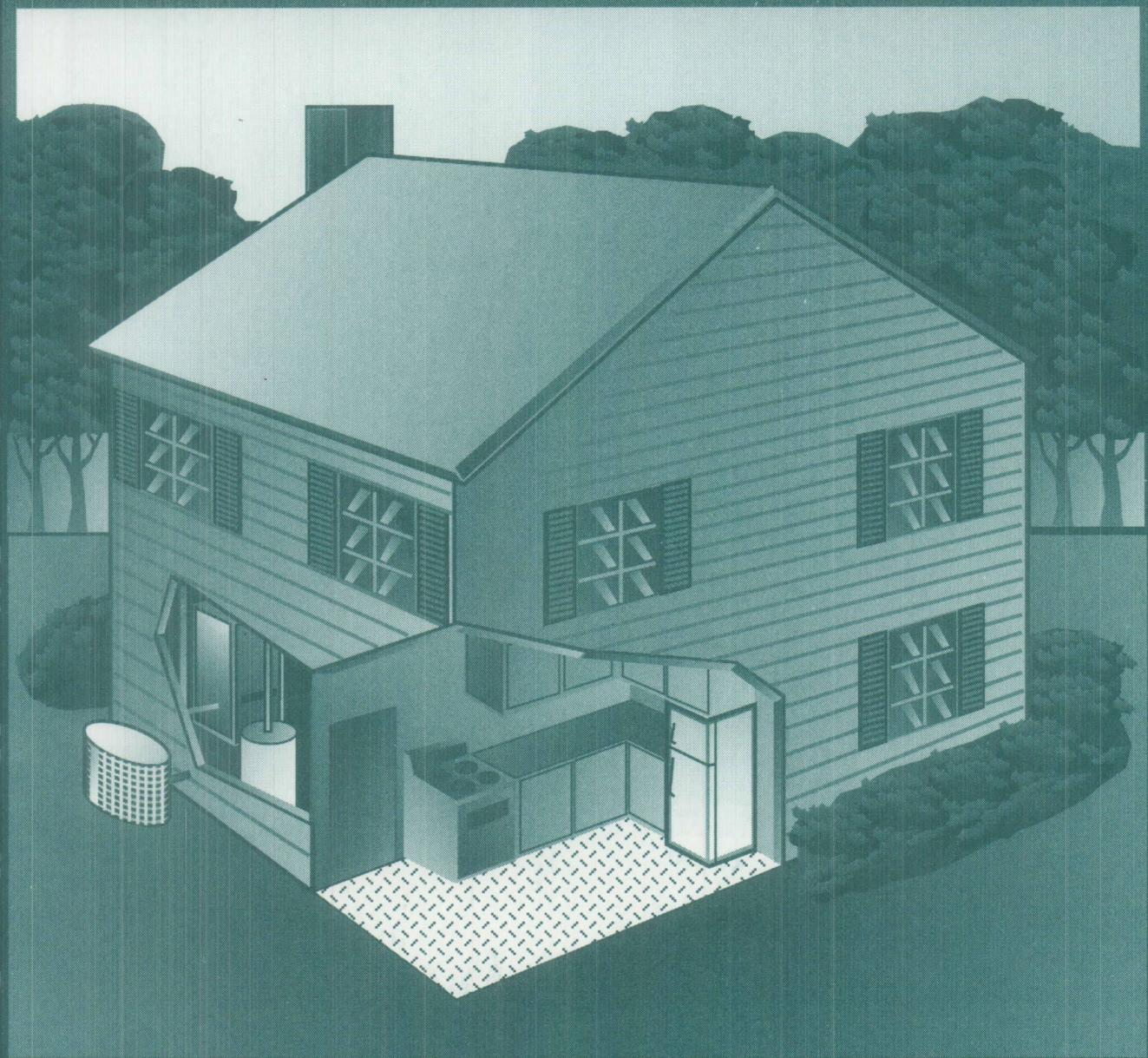


Housing Characteristics 1990



**Residential Energy
Consumption Survey**

May 1992

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Housing Characteristics 1990

May 1992

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

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Contents

Executive Summary	ix
Introduction	1
Organization of the Report	2
Housing Trends 1980-1990	3
Location of Housing Units	3
Housing Unit Type and Size	4
Fuels Used for Major End Uses by U.S. Households	6
New Housing Trends	11
Unit Size and Type	11
Natural Gas Replaced Electricity in New Homes	12
Building Shell Improvements in New Housing	14
Natural Gas: Availability and Usage by Households	15
Availability of Natural Gas	15
Potential for Increased Use of Natural Gas	17
Changes in Appliance Usage	19
Refrigerators	19
Entertainment Appliances	19
Cooking Appliances	20
Convenience Appliances	22
Age of Major Household Appliances and Equipment	23
Efficiency Improvements	23
Household Energy Conservation Activities	27
Differences Between 1980 and 1990	27
Demand-Side Management Programs	29
DSM Participant Characteristics: Single-Family and Mobile Homes	30
Renewable Resources: A Portrait of Households	
Using Solar or Wood as a Source of Energy	33
Active Solar Energy	33
Wood Energy	33
Detailed Tables	35
Table Organization	35
Row and Column Factors	35
Appendices	
A. How the Survey Was Conducted	189
B. Quality of the Data	209
C. RECS Coverage Related to EIA Supply Surveys	223
D. Survey Forms	229
E. U.S. Climate Zone and Census Regions and Divisions Maps	325
F. Related EIA Publications on Energy Consumption	329

Glossary	335
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Tables

1. Changes in the Location of U.S. Households, 1980 to 1990	4
2. Changes in the Type of U.S. Households, 1980 to 1990	5
3. Changes in the Location and Size of U.S. Households, 1980 to 1990	6
4. Changes in Cost of Fuels, 1980 to 1990	7
5. Availability of Natural Gas by Year of Construction in 1981 and 1990	16
6. Potential Market for U.S. Residential Use of Natural Gas, 1981 and 1990	17
7. Age and Estimated Efficiency Improvement of Major U.S. Household Appliances and Equipment, 1990	24
8. Characteristics of Participants as Compared to Nonparticipants in Demand-Side Management Programs in U.S. Single-Family and Mobile Homes, 1990	30
9. Appliances and Fuels Used by Participants Compared to Nonparticipants in Demand-Side Management Programs in U.S. Single-Family and Mobile Homes, 1990	31
10. Quick-Reference Guide to the Detailed Tables of 1990 U.S. Housing Characteristics	37
11. Household Characteristics by Census Region and Urban Status, Million U.S. Households, 1990	38
12. Household Characteristics by Census Region and Urban Status, Percent of U.S. Households, 1990	40
13. Household Characteristics by Year of Construction, Million U.S. Households, 1990	42
14. Household Characteristics by Year of Construction, Percent of U.S. Households, 1990	45
15. Average Floorspace, Characteristics of U.S. Households, 1990	48
16. Total Floorspace, Characteristics of U.S. Households, 1990	51
17. Household Characteristics by Family Income, Million U.S. Households, 1990	54
18. Household Characteristics by Family Income, Percent of U.S. Households, 1990	57
19. Fuel Use by Census Region and Urban Status, Million U.S. Households, 1990	60
20. Fuel Use by Census Region and Urban Status, Percent of U.S. Households, 1990	62
21. Fuel Use by Family Income, Million U.S. Households, 1990	64
22. Fuel Use by Family Income, Percent of U.S. Households, 1990	66
23. Fuel Use by Type and Ownership of Housing Unit, Million U.S. Households, 1990	68
24. Fuel Use by Type and Ownership of Housing Unit, Percent of U.S. Households, 1990	71
25. Average Floorspace by Fuel Use, U.S. Households, 1990	74
26. Total Floorspace by Fuel Use, U.S. Households, 1990	76
27. Fuel Use by Main Space-Heating Fuel, Million U.S. Households, 1990	78
28. Fuel Use by Main Space-Heating Fuel, Percent of U.S. Households, 1990	80
29. Fuel Use by Climate Zone and Census Region, Million U.S. Households, 1990	82
30. Fuel Use by Climate Zone and Census Region, Percent of U.S. Households, 1990	85
31. Fuel Use by Year of Construction, Million U.S. Households, 1990	88
32. Fuel Use by Year of Construction, Percent of U.S. Households, 1990	90
33. Appliances by Census Region and Urban Status, Million U.S. Households, 1990	92
34. Appliances by Census Region and Urban Status, Percent of U.S. Households, 1990	96
35. Appliances by Type and Ownership of Housing Unit, Million U.S. Households, 1990	100
36. Appliances by Type and Ownership of Housing Unit, Percent of U.S. Households, 1990	104
37. Appliances by Family Income, Million U.S. Households, 1990	108
38. Appliances by Family Income, Percent of U.S. Households, 1990	112
39. Appliances by Year of Construction, Million U.S. Households, 1990	116
40. Appliances by Year of Construction, Percent of U.S. Households, 1990	120
41. Conservation by Census Region and Urban Status, Million U.S. Households, 1990	124

42. Conservation by Census Region and Urban Status, Percent of U.S. Households, 1990	129
43. Conservation by Type and Ownership of Housing Unit, Million U.S. Households, 1990	134
44. Conservation by Type and Ownership of Housing Unit, Percent of U.S. Households, 1990	139
45. Conservation by Climate Zone and Census Region, Million U.S. Households, 1990	144
46. Conservation by Climate Zone and Census Region, Percent of U.S. Households, 1990	149
47. Conservation by Year of Construction, Million U.S. Households, 1990	154
48. Conservation by Year of Construction, Percent of U.S. Households, 1990	159
49. Conservation by Family Income, Million U.S. Households, 1990	164
50. Conservation by Family Income, Percent of U.S. Households, 1990	169
51. Indoor Winter Temperatures by Climate Zone and Floorspace, Million U.S. Households, 1990	174
52. Indoor Winter Temperatures by Climate Zone and Floorspace, Percent of U.S. Households, 1990	175
53. Setback Temperature Behavior in U.S. Households with Winter Temperature of 65 Degrees or Higher, 1990	176
54. Total Equipped and Used U.S. Household Air Conditioning, 1990	180
55. Annual Heating Degree-Days per U.S. Household	185
56. Annual Cooling Degree-Days for U.S. Households with Electric Air Conditioning	186
A1. Overview of Sample Operations for the 1982, 1984, 1987, and 1990 RECS	192
A2. Interviews Completed by Stage in the 1990 RECS	193
A3. Response Rates in the 1990 RECS by Region, Urban Status, Type of Structure, and Rotation Groups	197
A4. Population Estimates Used as Controls in Ratio Estimates in the 1990 RECS	199
A5. Imputation Methods Used for the 1990 RECS Household Questionnaire	200
A6. Items Most Frequently Imputed in the 1990 RECS	202
A7. Completeness of Data on Square Footage of Housing Units in the 1990 RECS	203
B1. Definition of Poverty, 1990 RECS	211
B2. Secondary Space-Heating Equipment Used in U.S. Households with Fuel Oil-Switching Potential Under Different Assumptions, 1990	219
C1. Comparison of Residential Energy Consumption Estimates from the Consumption Survey and Supply Surveys, 1990	224

Illustrations

1. Heated Floorspace per U.S. Housing Unit, 1980 and 1990	5
2. Main Space-Heating Fuels in U.S. Households, 1980 and 1990	7
3. Water-Heating Fuels in U.S. Households, 1980 and 1990	8
4. Air Conditioning by Type in U.S. Households, 1980 and 1990	8
5. Air Conditioning by Region in U.S. Households, 1980 and 1990	9
6. Types of U.S. Homes by Year of Construction, 1990	12
7. Use of Electricity and Natural Gas for Main Space and Water Heating in U.S. Households by Year of Construction, 1990	13
8. Adequacy of Insulation in U.S. Households, Respondent's Judgment, 1990	14
9. Availability of Natural Gas to U.S. Households by Census Region, 1981 and 1990	15
10. Presence of Television Sets in U.S. Households, 1980 and 1990	20
11. Cooking Appliances in U.S. Households, 1980 and 1990	20
12. Characteristics of U.S. Households Using Microwave Ovens to Cook Half or More of Their Food, 1990	21
13. Convenience Appliances in U.S. Households, 1980 and 1990	22
14. U.S. Appliance Energy Efficiency Trends, 1972 to 1987	23
15. Daytime Temperatures in U.S. Households, 1981 and 1990	28
16. Nighttime Temperatures in U.S. Households, 1981 and 1990	28

17. Comparison of Participants and Nonparticipants in Demand-Side Management Programs in U.S. Single-Family and Mobile Homes, 1990	32
18. Insulation in U.S. Single-Family Homes of Users Compared to Nonusers of Wood as the Main Space-Heating Fuel, 1990	34
19. Use of RSE Row and Column Factors	36
A1. Multistage Area Probability Sample Activities for the 1990 RECS	191
B1. Main Space-Heating Fuel in U.S. Single-Family and Multifamily Homes Constructed from 1971 to 1990	220

Executive Summary

The report, *Housing Characteristics 1990*, is based upon data collected by the 1990 Residential Energy Consumption Survey (RECS). This national energy consumption survey in the residential sector is the eighth in a series conducted since 1978 by the Energy Information Administration. Over 5,000 households were surveyed, representing the characteristics and energy consumption of 94 million households nationwide. *Housing Characteristics 1990* presents the results.

Perhaps the most significant finding is that the characteristics of new housing (*built between 1988 and 1990*) are changing relative to housing built since the 1970's. New housing is on average larger, more energy efficient, and most likely gas heated, rather than electrically heated, but these changes were not large enough to affect the national-level shares for natural gas and electricity. This finding shows that, even though lower energy prices may have lessened somewhat the economic incentives for change, the energy programs of the 1980's are changing the nature and consumption patterns of the housing in the United States.

Some overall trends for the decade indicated by the 1990 RECS:

- Houses are growing larger while the number of persons in a housing unit is growing smaller. Over the decade, the growth in both the number and size of housing units has exceeded the growth in the population. There were 94.0 million units in 1990 compared to 81.6 million in 1980 (Table ES1). The average number of people per household has fallen from 2.76 in 1980 to 2.63 in 1990. At the same time, the total residential area heated in 1980 of 122.4 billion square feet grew to 147.5 billion square feet by 1990, which means that the per capita heated space increased from 575 square feet to 602 square feet in 1990.
- Energy consumption per household is down for 1990 according to preliminary data (Table ES2). Fewer people per household usually means less energy is used for hot water, cooking, and appliances, while more floorspace normally implies more energy used for heating and cooling. (The winter months of 1990 were considerably warmer than normal, which also reduced the need for space heating.) Other significant changes included more households having air conditioning and increased usage of air conditioning and other appliances (and a warmer summer in 1990) all of which increased energy consumption. Despite the increase in the use of air conditioning and other appliances, preliminary results show a trend of less energy use per household, with no measurable effect on the percentage shares of consumption for space heating, water heating, air conditioning, and appliances. A detailed analysis of household consumption will be presented in the second publication from the 1990 RECS, *Household Energy Consumption and Expenditures 1990*.
- The trend to "shared walls" of living space reversed in new homes. Until 1987, there had been a systematic trend away from construction of the traditional *detached* single-family unit in favor of *attached* single and multifamily housing. However in 1990, about two-thirds of the new homes were *detached* single-family units (Table ES3). Overall in 1990, conventional single-family housing (69 percent of the total stock) continued to be dominant. Another 26 percent were multifamily homes, and the remaining 5 percent were mobile homes. The ratio of single to multifamily housing did not change very much over the decade.
- Over the decade, the enclosed living space was generally larger even with a trend to "shared walls." Nearly all forms of housing have steadily increased in size, the exception being single-family attached and larger blocks of multifamily units. In the 1990 RECS, the average size of homes was 1,569 square feet of heated floorspace, an increase of 70 square feet from that of 1980.

This volume of the 1990 RECS survey results does not contain detailed consumption and expenditure data, but does include fuel choice and appliance information. In an average household, the 1987 RECS survey noted that of total energy consumption, 54 percent was devoted to space heating, 18 percent to water heating,

5 percent to air conditioning and the remainder, 23 percent, was used for appliances. Preliminary 1990 data show similar shares for these major uses of energy in the home.

- Natural gas remained the fuel of choice for space heating (55 percent) and water heating (53 percent) for all homes. These shares have not changed from 1980 to 1990. Despite the preference for natural gas (46 percent) in new homes over other fuels, the level was still below that for all homes and, thus, exerted a downward pull on the national level share. However, fuel switching to natural gas in homes built before 1980 kept the level of natural gas shares from falling between 1980 and 1990.
- The share for electric space heating increased from 18 percent in 1980 to 23 percent for all homes in 1990. An increase in the electric space-heating share is likely to continue in the 1990's as long as the electric space-heating share in new construction is above 23 percent.

Table ES1. Changes in Selected U.S. Residential Energy-Related Data, 1980 and 1990

Household Characteristics	1980	1990	Percent Change from 1980 to 1990
Number of Households (million)	81.6	94.0	15
Floorspace (billion heated square feet)	122.4	147.5	20
Average Floorspace (heated square feet)	1,499	1,569	5
Main Space-Heating Fuel (percent of households)			
Electricity	18	23	5
Natural Gas	55	55	0
Fuel Oil	15	11	-4
Air Conditioning (percent of households)	57	68	11
Natural Gas Available in the Neighborhood (percent of households)	a76	72	b-4
Use Natural Gas (connected to pipeline)	a64	61	b-3
Available But Do Not Use	a12	11	b-1
Appliances (percent of households with one or more)			
Microwave Oven	14	79	65
LPG Outdoor Grill	6	23	17
Color Television	82	96	14
Dishwasher	37	45	8
Indoor Temperature (percent of households)			
70 Degrees or More in Winter	a37	62	b25
Use Renewable Energy (percent of households)			
Solar	*	1	1
Wood	27	27	0

^aData are for 1981. Households were not asked in 1980 if natural gas was available in their neighborhood.

^bRepresents change from 1981 to 1990.

*Less than 0.5 percent.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1980, 1981, and 1990 Residential Energy Consumption Surveys.

Table ES2. Preliminary Estimates of Energy Consumption and Expenditures from the 1990 Residential Energy Consumption Survey

Type of Housing Unit and Energy Source	Households Using the Energy Source (million)	Total Consumption (quadrillion Btu)	Total Expenditures (billion dollars)	Average Consumption per Household (million Btu)	Average Expenditures per Household (dollars)
All Households	94.0	9.3	110.5	98.6	1,176
Electricity	94.0	3.0	71.6	32.3	761
Natural Gas	57.7	4.9	27.5	84.9	476
Fuel Oil	11.7	1.0	7.7	84.0	654
Kerosene	5.3	.1	.6	11.5	109
LPG	8.2	.3	3.2	35.2	390
Single-family	64.4	7.2	85.2	111.3	1,323
Electricity	64.4	2.4	55.6	37.0	864
Natural Gas	39.5	3.8	20.6	95.0	521
Fuel Oil	8.2	.8	6.1	92.4	736
Kerosene	4.1	(*)	.3	8.6	82
LPG	6.2	.2	2.5	37.6	411
Mobile Home	5.2	.4	5.3	77.3	1,008
Electricity	5.2	.2	3.5	31.1	674
Natural Gas	2.0	.2	.8	74.6	397
Fuel Oil	.4	(*)	.2	49.5	409
Kerosene	.9	(*)	.2	24.8	233
LPG	1.7	.1	.6	29.7	345
Multifamily	24.4	1.7	20.1	82.3	822
Electricity	24.4	.5	12.4	19.9	509
Natural Gas	16.2	1.0	6.1	61.6	374
Fuel Oil	3.1	.2	1.4	65.6	463
Kerosene	.3	Q	Q	Q	Q
LPG	.4	(*)	.1	19.4	254

(*) = Less than 0.05.

Q = Data withheld because the observations were insufficient in the statistical sample to provide meaningful data.

Source: Preliminary data. Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A through G of the 1990 Residential Energy Consumption Survey.

- The growth in natural gas availability has not kept pace with the growth in housing. Although more households had natural gas available to them in 1990, the proportion reporting that natural gas was available in their neighborhood or that were already connected to a gas line actually decreased from 76 percent in 1981 to 72 percent in 1990. Thus the share of total houses connected to a natural gas pipeline declined from 64 percent to 61 percent over the same decade.
- Significant potential appears to exist for increased use of natural gas in areas where it is available. Of the 57.7 million households that were connected to natural gas in 1990, the RECS indicates that 6 million did *not* use it for space heating, 7.7 million did *not* use it for water heating and 24 million did *not* use it for cooking. Another 10 million households had natural gas available in their neighborhood but were *not* hooked up to it.
- Increasingly, central air conditioning is a standard part of new home construction. Census data on new construction note that the penetration of central air conditioning annually in new homes has risen to 91 percent in the South and 51 to 74 percent in the northern, less humid, Census regions. The RECS noted in 1990 that air conditioning for all homes increased over 1980 by 11 percentage points (from 57 percent to 68 percent).

Table ES3. Energy-Related Characteristics of U.S. Households by Year of Construction, 1990

Energy-Related Characteristic	Year of Construction							
	1939 or Before	1940 to 1949	1950 to 1959	1960 to 1969	1970 to 1979	1980 to 1984	1985 to 1987	1988 to 1990
Main Space-Heating Fuel (percent)								
Natural Gas								
Natural Gas	64	67	64	64	44	37	29	46
Electricity	5	9	10	18	38	48	59	27
Type of Structure (percent)								
Single-family								
Detached	64	77	82	64	49	54	43	64
Attached	5	4	4	4	7	10	21	Q
Multifamily	30	19	14	28	33	26	24	12
Average Heated Floorspace (square feet)								
	1,637	1,468	1,616	1,545	1,478	1,480	1,581	2,143
Respondent Reports Home Is "Well Insulated" (percent)								
	27	28	39	40	35	48	48	68
Percent of Homes with 100 Percent:								
Storm Windows								
Storm Windows	52	52	52	43	50	52	60	74
Storm Doors								
Storm Doors	44	50	48	38	35	29	33	42
Percent of Single-Family and Mobile Homes with:								
Roof/Ceiling Insulation								
Roof/Ceiling Insulation	68	75	83	83	84	87	86	90
Wall Insulation								
Wall Insulation	55	51	62	67	77	79	78	88

Q = Data withheld because the observations of this age of housing were insufficient in the statistical sample to provide meaningful data.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1990 Residential Energy Consumption Survey.

- New homes had a higher incidence of storm windows, storm doors, and insulation than older homes. The 1990 RECS specifically asked homeowners to judge how well insulated their homes were. Two-thirds of the residents in the new homes considered their homes to be "well insulated," while a similar response was less frequent in older homes. Although lower overall energy expenditures will show lowered consumer interest in energy conservation, the favorable comparison between new and older homes shows that conservation programs have been effective.

Appliance Usage

Energy is utilized by home equipment and appliances to provide services such as heating, cooling, hot water, and refrigeration. The key questions in the 1990 survey involved the prevalence of various kinds of energy-using equipment and appliances, their actual usage, and, in order to estimate turnover and efficiency, their age. In addition to heating, cooling, and water heating equipment, a list of mostly electric household appliances was considered, including refrigerators, dishwashers and washing machines, ranges and ovens, television sets, gas grills, and pool and spa heaters.

- Energy consumption by *appliances* (excluding heating, cooling, and water heating) is dominated by electricity. Expenditures on appliances are a major component of total residential energy expenditures. Both the 1987 RECS and preliminary 1990 data estimated that 43 percent of all energy expenditures was solely for appliances.
- The average age of household equipment, starting with heating and cooling equipment, is surprisingly high. The stock of heat pumps and air conditioners averaged between 8 and 9 years old in 1990, while conventional heating systems were somewhat older at 11 to 14 years. Based upon these *average* ages, heat pumps and air conditioners were 17 to 23 percent more efficient than new models in 1972, while average conventional gas furnaces were only 4 percent more efficient.
- Water heaters are the second (after space heating) most significant energy user; 86 percent of all households have their own. Natural gas is the predominant fuel choice at 44 percent with electricity increasing to 36 percent. Fuel oil has increasingly been displaced, and now amounts to 2 percent. The average water heater was 8 years old and, based upon this age, was only about 3 percent more efficient than new models in 1972.
- After air conditioning, refrigerators are the fourth most significant user of energy; 100 percent of all households have at least one and 15 percent have two or more refrigerators. The average age of the first is 9 years and the second is 13 years. The average 9-year old refrigerator would be about 60 percent more efficient than a new model in 1972.
- Efficiency gains are not known for conventional electric and gas ranges; however, energy use by this category was affected by a significant increase in the sales and use of microwave ovens. The 1990 RECS shows that 79 percent of all households own one or more and 23 percent of all households use microwave ovens to cook over half their food.
- Other appliances used for convenience or entertainment, such as dishwashers, clothes dryers, color televisions, heated swimming pools, and spas also became more prevalent.

Energy Conservation And Renewable Consumption

Overall, consistent with the decline in real energy prices over the decade, Americans appear to be less conscious of energy conservation:

- In 1990, 62 percent of U.S. households maintained the average temperature in their home at 70 degrees Fahrenheit or warmer, compared to only 37 percent in 1981. A parallel trend is seen in air conditioning, driven perhaps by increased affluence. In line with more central air conditioning in new construction, the percentage of households that kept air conditioners on all summer increased from 22 percent in 1981 to 35 percent in 1990. Central air-conditioning equipment is more often kept running all summer than room air-conditioning equipment. The summer of 1990 was also much hotter than normal, which affected the data.
- The number of active solar households increased significantly between 1980 and 1990, but still remained a tiny minority of all U.S. households. No information was collected on the more difficult to define category of passive solar design. In 1990, fewer than 1 percent of the 94 million households used active solar energy for any purpose, with two-thirds of these solar-using households located in the West.
- Use of wood was basically unchanged since 1980, with 27 percent of the households reporting that they used wood for any purpose in either wood stoves or fireplaces.

Demand-Side Management (DSM) Programs

Utility DSM programs serve to balance the expense of electric utility capacity expansion against the consumer expense of conservation investment to reduce consumption. State public utility commissions have encouraged most electric utilities and even some gas utilities to organize these programs. DSM programs differ markedly by utility, but in general include: audit programs designed to improve the thermal efficiency of the home; appliance rebate programs designed to encourage choice of higher efficiency components; and household load controllers designed to limit peak energy demand.

- The availability of a variety of utility-sponsored programs to reduce electricity demand grew rapidly during the decade. However in 1990, only 5 percent of U.S. households reported that they participated in these programs.
- Of the households involved in DSM programs, about 24 percent had received home audits, 26 percent participated in rebate programs, 35 percent participated in load control programs, and 35 percent had participated in some related conservation activity.
- Participants in DSM programs tend to be owners rather than renters, more affluent, better educated, and older. Among DSM households, 50 percent had annual incomes of \$35,000 or more, compared to 41 percent for non-participants. Only 11 percent of DSM households had less than a high school education, compared to 21 percent for non-participants.

More analysis of the DSM data is forthcoming in *Household Energy Consumption and Expenditures 1990*.

Introduction

The purpose of this report is to provide information on the use of energy in residential housing units in the United States. This includes the physical characteristics of the units, the appliances utilized, the occupants, the types of fuels being used, and other characteristics that relate to energy use.

The Energy Information Administration (EIA) is mandated by Congress to be the agency that collects, analyzes, and disseminates impartial, comprehensive data about energy--how much is produced, who uses it, and the purposes for which it is used. To comply with that Congressional mandate, the EIA collects energy data from a variety of sources covering a range of topics.¹

The data reported here were collected on the 1990 Residential Energy Consumption Survey (RECS) Forms EIA-457A through C. EIA conducts this national sample survey of residential housing units and their energy suppliers on a triennial basis. The RECS is the only comprehensive source of national-level data on energy-related information for the residential sector. The 1990 RECS is the eighth residential energy consumption survey conducted by EIA. Previous RECS were conducted annually from 1978 to 1982, and in 1984 and 1987.

These data were collected during personal interviews at the households, conducted in the fall of 1990 and during telephone interviews with rental agents, conducted in mid-1991. Estimates of the actual levels of energy consumption and expenditures for electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas will be reported separately in *Household Energy Consumption and Expenditures 1990*, to be published at the end of 1992.

The RECS is a national multistage probability sample survey. Housing unit and household characteristics data are collected via a personal interview with the householder. Householders are asked to sign authorization forms allowing their suppliers of energy to release billing information about their household. A mail survey is used to collect household energy consumption and expenditure information from the energy suppliers. The data for this report are based on the household interviews from the 1990 RECS, conducted in the fall of 1990 throughout the United States.

The statistics published in this report are based on a sample from the population of all primary, occupied residential housing units in the United States as of November 1990. As a result, all the statistics are estimates rather than exact measures for the population. The 1990 RECS represents 94.0 million households in the 50 States and the District of Columbia. As described in Appendix B, "Quality of the Data," the accuracy of each estimate is indicated by the relative standard error (RSE). No estimates were published that were based on fewer than 10 sample households or that had an RSE greater than 50 percent. All the tables of estimates in the section titled "Detailed Tables" include corresponding RSE's that are calculated using row and column RSE factors.

The data are published to provide objective, accurate energy information for a wide audience including Congress, Federal and State agencies, industry, and the general public. The data presented in this report were

¹The EIA conducts numerous energy-related surveys. In general, the surveys can be divided into two broad groups. One group of surveys is directed to the suppliers and marketers of specific energy sources. These surveys--called supply surveys--measure the quantities of specific fuels produced and/or supplied to the market. The results of the supply surveys are combined and published in the *Monthly Energy Review* and other EIA publications. The second group--the consumption surveys--gathers information on the types of energy used by the end users along with the characteristics of those end users that can be associated with energy use. The RECS belongs to the consumption survey group because it collects information directly from the end-user--the household. There are important differences between the supply and consumption surveys that need to be taken into account in any analysis that uses both data sources. For information on the differences, see Energy Information Administration, *Energy Consumption by End-Use Sector, A Comparison of Measures by Consumption and Supply Surveys*, DOE/EIA-0533 (Washington, D.C., April 6, 1990). Appendix C of this report includes a summary of the differences for the residential sector.

collected and published by the EIA to fulfill its responsibilities as specified in the Federal Energy Administration Act of 1974 (Public Law 93-275), as amended. The EIA gratefully acknowledges the cooperation of the respondents in supplying the information used to produce the estimates in this report.

Organization of the Report

The text of the report provides a discussion of the energy-related characteristics of U.S. residential households. Many data referenced in the text are from the "Detailed Tables" section of the report, where extensive cross tabulations of housing characteristics are presented. However, some tabulations of special interest appear in the main text of the report.

The appendices provide the detailed data and supporting information on the survey. Appendix A, "How the Survey Was Conducted," provides information on how the data were collected, including a section on the measurement of the housing unit. Appendix B, "Quality of the Data," discusses procedures for calculating the relative standard error of the data and other quality-related issues. Differences in the coverage of this survey and EIA supply surveys and data are discussed in Appendix C. The data for the RECS are collected on Forms EIA-457 A through G. Forms EIA-457 A through C were used to collect the data presented in this report, and copies of the forms can be found in Appendix D. Climate Zone and Census Region and Division maps are located in Appendix E. A list of related EIA publications are located in Appendix F. Definition of the terms used in this report are located in the "Glossary."

The housing characteristics in this report are presented at the national and four Census region levels. The data in the "Detailed Tables" section (Tables 11 through 56) are organized under the following topics:

- Household Characteristics
- Types of Fuel Used
- Appliances
- Conservation
- Consumption Usage Indicators
- Setback Temperature Behavior.

Housing Trends 1980-1990

This section of the report examines the important trends in housing units in this country during the decade of the 1980's. There were 81.6 million U.S. households in 1980. By 1990, that total had risen to 94.0 million households, an increase of 15 percent for the decade. During this period the U.S. population increased by only 10 percent, causing the average number of people per household to decline from 2.76 in 1980 to 2.63 in 1990.² The word "household" has two interrelated meanings: a household is an occupied housing unit, and a household is also the collective group of individuals inhabiting an occupied housing unit. Both the structure itself and the behavior of its inhabitants affect energy consumption in the housing unit. Data from the RECS series add an important dimension to the relationship between structures and people: measurements of floorspace and actual consumption of energy used.³ Between 1980 and 1990, the total heated household floorspace increased by more than 20 percent (122.4 billion square feet of heated floorspace in 1980 versus 147.5 in 1990). A 20-percent increase in floorspace, combined with a 15-percent increase in number of households and a 10-percent increase in population, indicates that there are fewer people per household and that U.S. households have more per capita living space in 1990 than they did in 1980.

Of interest to the energy community are housing characteristics most related to energy consumption. These factors include the Census region in which the housing unit is located, the housing unit type (single-family, multifamily, or mobile home), the average size of housing units, the appliances used, and the primary fuels used. Houses in warmer areas of the country usually use less energy because the increased use of energy for air conditioning is more than offset by the decreased use of energy for space heating. Single-family units use more energy than multifamily units, primarily because of their larger size.

Location of Housing Units

Comparison of the 1980 and 1990 RECS data reinforces a finding widely reported from the U.S. Bureau of the Census' Current Population Survey during the 1980's: the percentage of total households located in the colder regions (Northeast and Midwest) decreased, while the percentage of total households in the warmer regions (South and West) increased (Table 1). Looking at regional trends alone, though, can be misleading. Each region contains both colder and warmer areas. The West, in particular, ranges from southern California and Arizona to the very cold northwestern States of Montana and Alaska.

²U.S Bureau of the Census, *Statistical Abstract of the United States: 1991*, 111th ed. (Washington, D.C., 1991), p. 45.

³The RECS data on consumption of energy will be reported in *Household Energy Consumption and Expenditures 1990*, scheduled for publication in late 1992.

Table 1. Changes in the Location of U.S. Households, 1980 to 1990

Location of Households	Percent in 1980	Percent in 1990	Percent Change 1980 to 1990
Region			
Northeast	21.6	20.5	-1.1
Midwest	25.8	24.5	-1.3
South	33.0	34.4	+1.4
West	19.5	20.6	+1.1

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1980 and 1990 Residential Energy Consumption Surveys (RECS). Table 14 and RECS Public Use Data Files.

Housing Unit Type and Size

The 10-year trends indicate that the U.S. housing stock in 1990 contained about the same proportion of single-family and multifamily units as it did in 1980 (Table 2). Single-family units continue to be the predominant housing type, comprising about two-thirds (69 percent) of the housing stock. There was, however, a shift away from detached single-family units (-2.8 percent) to attached single-family units (+2.4 percent) and a shift from apartments in smaller buildings (-1.6 percent) to apartments in larger buildings (+2.1 percent). By itself, this apparent trend toward more "shared" walls for both single-family and multifamily units would imply lower energy use; however, the larger average size of housing units during the decade would imply higher energy use. Preliminary data confirm that there is a decline in overall per household energy use in 1990.

The size of a housing unit is closely related to the type of housing unit. In 1990, the average heated square footage was 1,865 for single-family homes, 928 square feet for multifamily homes, and 921 square feet for mobile homes (Table 15). Average heated floorspace increased during the decade, from 1,499 square feet in 1980 to 1,569 square feet in 1990 (Figure 1). Statistically significant increases in size occurred during the decade for single-family detached houses, 2-4 family buildings, and mobile homes. Single-family attached homes and units in buildings with five or more units continued to be about the same size as they were in 1980. It is interesting that the increase in square footage occurred mostly in those housing types (single-family detached and 2-4 unit buildings) that appear to be declining in prevalence relative to other housing types (single-family attached and buildings with five or more units). Looking only at single-family homes in 1980 and 1990:

- Single-family detached homes lost market share relative to single-family attached during the decade of the 1980's.
- Single-family detached homes, on average, were larger in 1990 than they were in 1980.
- Single-family attached homes, on average, were about the same size in 1990 as they were in 1980.

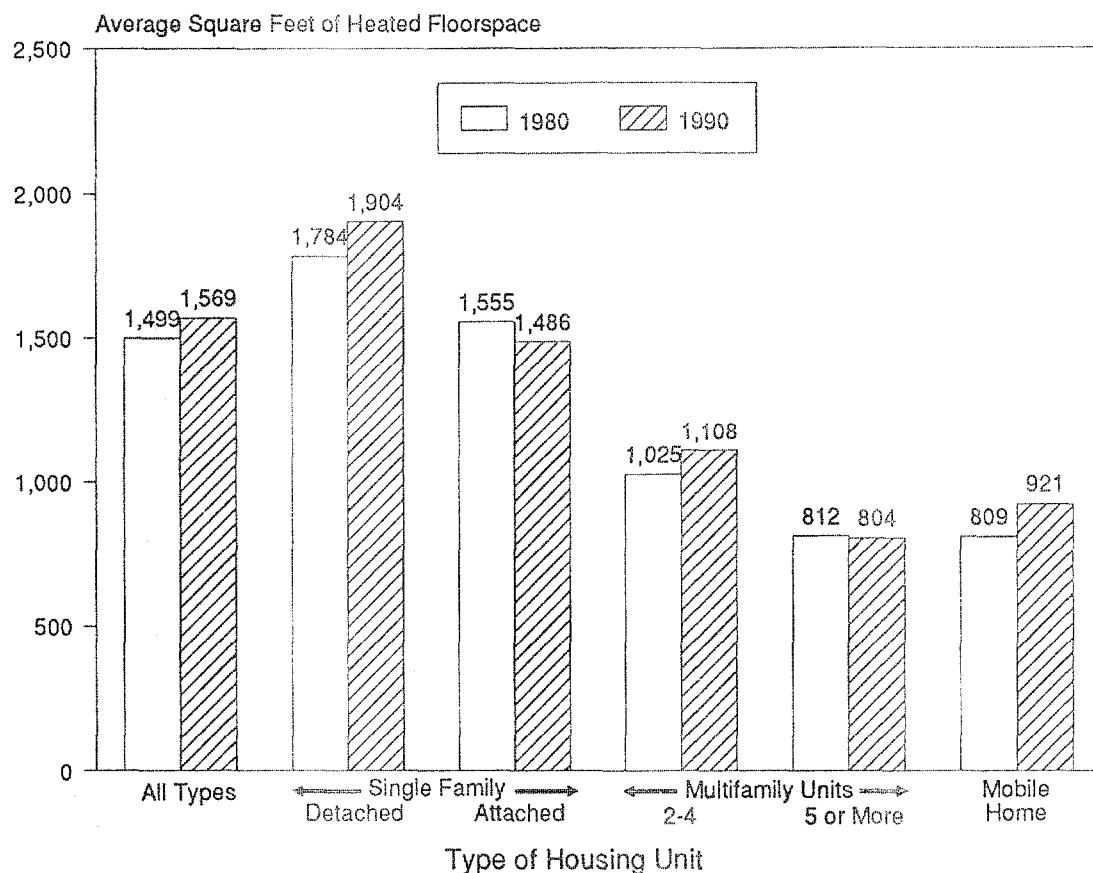
Table 2. Changes in the Type of U.S. Households, 1980 to 1990

Type of Housing Unit	Percent in 1980	Percent in 1990	Percent Change 1980 to 1990
Single-family	68.9	68.5	-0.4
Detached	64.9	62.1	-2.8
Attached	4.0	6.4	+2.4
Multifamily	25.4	26.0	+0.6
2 to 4 Units	12.2	10.6	-1.6
5 or More Units	13.2	15.3	+2.1
Mobile Home	5.7	5.5	-0.2

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, B, and C of the 1980 and 1990 Residential Energy Consumption Surveys (RECS). Table 14 and RECS Public Use Data Files.

Figure 1. Heated Floorspace per U.S. Housing Unit, 1980 and 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1980 and 1990 Residential Energy Consumption Surveys (RECS). Table 15 and RECS Public Use Data Files.

Housing characteristics during the 1980's thus illustrate two apparently contradictory trends: householders are increasingly selecting smaller housing types (which did not change significantly in size during the decade), but those who selected the larger housing types are living in significantly larger homes than was true for these same housing types in 1980. This could presage interesting trends in energy consumption for the 1990's.

The RECS data also indicate that homes are smaller in warmer areas. Homes in the warmest climate zone are about three-fourths the size of homes in the coldest zone--1,328 square feet of heated floorspace versus 1,719 square feet for homes in the coldest zone (Table 3). Homes were actually larger in 1990 than in 1980 in one of the colder climate zones, the zone with 5,500 to 7,000 heating degree-days. The primary reason for this difference in size between warmest and coldest zones is that housing units in colder zones are more likely to have basements (see Table 3), and the basements are usually heated or sufficiently warm for sedentary activity. The higher prevalence of basements in the colder zones may be related to climatic differences or may be simply traditional building practice for the area. It is necessary to lay footings for foundations below the frost line. In colder areas, the frost line is deeper. Once one has dug below the frost line, the additional expense of constructing a basement may be acceptably small in the coldest areas. Higher water tables and higher humidity levels in warmer areas make basements less desirable there, since it is difficult to keep them dry. Furthermore, there are regional differences in median household income (many of the poorest States are in the South). Building on a slab may be preferred for economic reasons in warmer regions where a cold floor is less likely to adversely affect occupant comfort.

Table 3. Changes in the Location and Size of U.S. Households, 1980 to 1990

Climate Zone	Average Heated Floorspace (square feet)			Homes with Heated Basements in 1990 (percent)
	1980	1990	Change in Square Feet from 1980 to 1990	
Under 2,000 CDD and- Over 7,000 HDD	1,749	1,719	-30	44.5
5,500 to 7,000 HDD	1,612	1,785	+173	42.4
4,000 to 5,499 HDD	1,545	1,656	+111	34.9
Under 4,000 HDD	1,359	1,310	-49	9.2
2,000 CDD or More and Under 4,000 HDD	1,266	1,328	+62	1.3

CDD = Cooling degree-days. HDD = Heating degree-days.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1980 and 1990 Residential Energy Consumption Surveys (RECS). Table 15 and RECS Public Use Data Files.

Fuels Used for Major End Uses by U.S. Households

One of the basic purposes of the RECS series is to track shifts in usage of fuels (natural gas, electricity, and fuel oil) for the most important end uses of space heating, water heating, and air conditioning. Based upon the 1987 RECS, these three end uses account for more than three-quarters (77 percent) of the average U.S. household's energy consumption--space heating (54 percent), water heating (18 percent), and air conditioning (5 percent).⁴ This section discusses fuels used for the three major end uses in 1980 and 1990.

⁴See Energy Information Administration, *Household Energy Consumption and Expenditures 1987, Part 1: National Data* (DOE/EIA-0321/1(87)), (Washington, D.C., October 1989), p. vii.

Main Space-Heating Fuel

Natural gas continues to be the prevalent heating fuel in the United States. The penetration of natural gas for space heating (55 percent of U.S. households) did not change significantly between 1980 and 1990 (Figure 2). However, changes were occurring in homes built before 1980 (by 1990, 59 percent of them were using natural gas as the main heating fuel) that compensated for the lowered use of natural gas (36 percent) in homes built between 1980 and 1990 (Table 31).

Electricity as a main space-heating fuel increased (23 percent in 1990 versus 18 percent in 1980), while fuel oil decreased (11 percent in 1990 versus 15 percent in 1980). Use of fuel oil as the main space-heating fuel decreased significantly in the Midwest and South regions. Use of electricity as the main space-heating fuel increased significantly in the South. The gains for electricity came from the higher than average use of electricity in homes built from 1980 to 1990 (48 percent). Fuel oil, on the other hand, suffered its loss both among homes built before 1980 (decreasing from 16 percent in 1980 to 13 percent in 1990) and among homes built from 1980 to 1990 (2 percent) (Table 31).

The fact that electricity made significant inroads into the space heating market over the decade is a function of household location and the availability of natural gas. After the significant price increase in 1980, fuel oil showed the most dramatic decrease in cost per million Btu. However, where available, natural gas was the least expensive fuel (Table 4), while electricity was the most expensive. For part of the decade, the growth of natural gas was restricted in many areas by moratoria on new gas hookups enforced by State Public Utility Commissions. Natural gas was in limited supply in the late 1970's and early 1980's. The increased use of electricity as the main space-heating fuel, while fuel oil decreased, is also partly a function of the fraction of the total housing stock in the warmer regions, where space heating is of less concern than air conditioning.

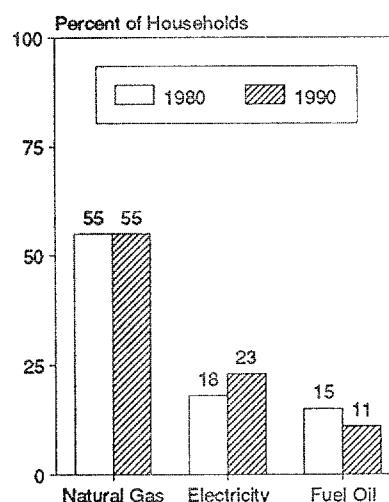
Table 4. Changes in Cost of Fuels, 1980 to 1990

Residential Fuel	Dollars per Million Btu ^a		Percent Change 1980 - 1990
	1980	1990	
Natural Gas	4.36	4.31	-1.1%
Fuel Oil	8.52	5.86	-31.2%
Electricity	19.21	17.49	-9.0%

^aIn constant (1982-84) dollars.

Source: Energy Information Administration, *Monthly Energy Review*, (DOE/EIA-0035(91/12), Table 1.9, p. 14.

Figure 2. Main Space-Heating Fuels in U.S. Households, 1980 and 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1980 and 1990 Residential Energy Consumption Surveys (RECS). Table 20 and RECS Public Use Data Files.

Where it is economical to do so, using the same fuel for both space heating and cooling yields benefits in both convenience and cost of installation. Since electricity is virtually the only fuel used for air conditioning,⁵ it tended to be a more attractive heating fuel in the warmer regions than in the colder regions.

Water-Heating Fuel

The changes in water-heating fuels during the 1980's are very similar to the changes in space-heating fuels during the decade (Figure 3). In 1990, as in 1980, natural gas was the predominant fuel nationally for water heating (53 percent in 1990 and 54 percent in 1980, which is not a statistically significant difference). Electricity gained an increased share of residential water heating (37 percent in 1990 versus 32 percent in 1980) as fuel oil decreased (5 percent in 1990 versus 9 percent in 1980). Electricity made its gains from the higher than average shares in homes built from 1980 to 1990 (59 percent). Fuel oil, as in space heating, lost shares among homes built before 1980 (9 percent in 1980, down to 6 percent in 1990) and among homes built from 1980 to 1990 (1 percent) (Table 3!).

Air Conditioning

Air conditioning became more common in U.S. households during the eighties (68 percent in 1990 versus 57 percent in 1980). The difference was in central air conditioning; prevalence of room air conditioning remained about the same during the decade (Figure 4). Electricity was the primary air-conditioning fuel; only 0.3 percent of households used gas (natural gas or LPG) for air conditioning.

Figure 3. Water-Heating Fuels in U.S. Households, 1980 and 1990

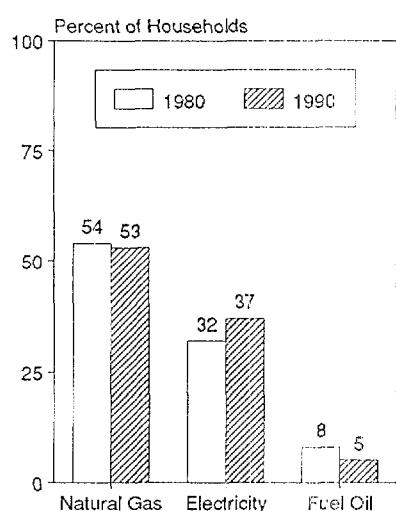
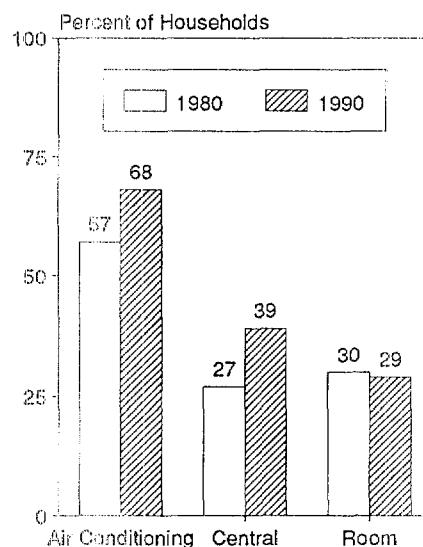


Figure 4. Air Conditioning by Type in U.S. Households, 1980 and 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1980 and 1990 Residential Energy Consumption Surveys (RECS). Table 20 and RECS Public Use Data Files.

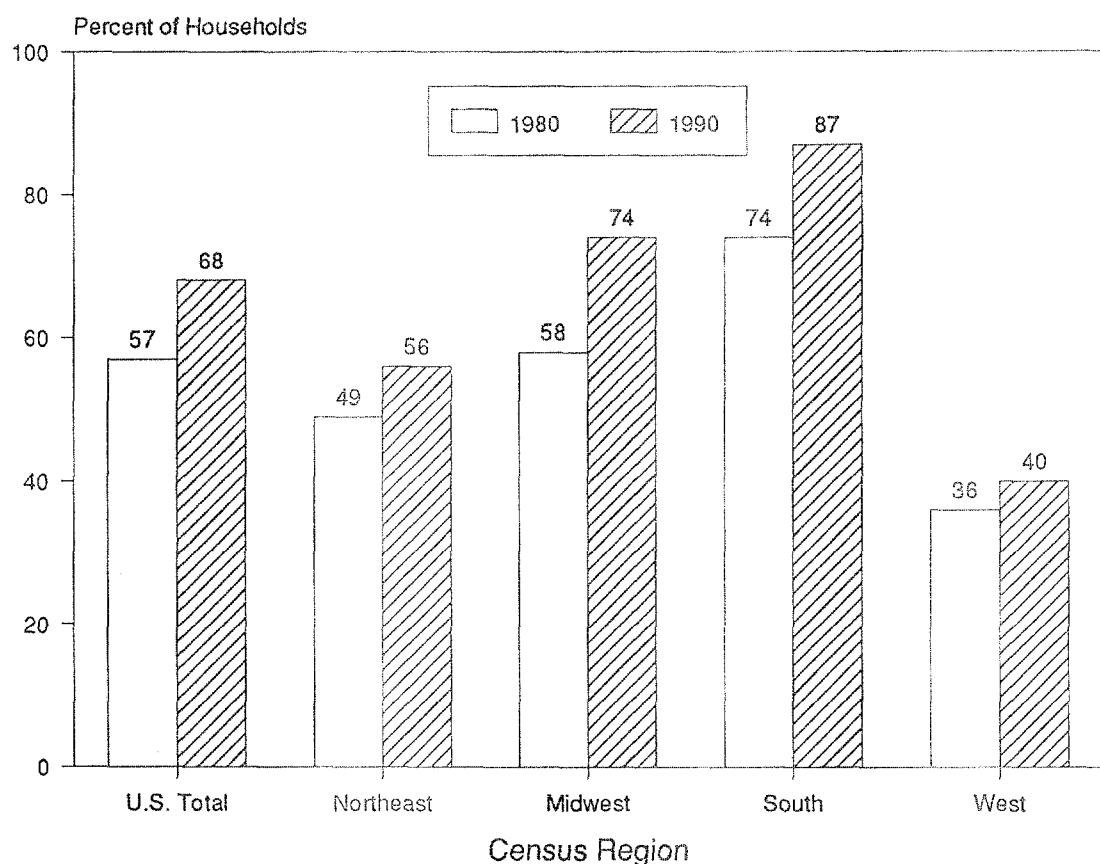
Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1980 and 1990 Residential Energy Consumption Surveys (RECS). RECS Public Use Data Files.

⁵Natural gas air conditioners were marketed in the 1970's, but were not widely accepted. According to the 1990 survey, there are very few gas air conditioners still in operation.

Given the shift in the distribution of the housing stock toward warmer climates during the 1980's, the national increase in air-conditioning penetration is not surprising. It is interesting, though, that the penetration of air conditioning (central or room) is significantly higher in 1990 in all regions (Figure 5); it is certainly not limited to the South.

The increase in air conditioning penetration from 1980 to 1990 occurred for two reasons: increased installations in homes built before 1980 (57 percent in 1980 increasing up to 65 percent in 1990) and higher than average levels in homes built from 1980 to 1990 (81 percent). Room air conditioning remained at the same level in homes built before 1980 and was lower than average (12 percent) in homes built from 1980 to 1990. Central air conditioning, on the other hand, increased both in homes built before 1980 (26 percent in 1980 to 33 percent in 1990) and among homes built from 1980 to 1990 (68 percent) (Table 31).

Figure 5. Air Conditioning by Region in U.S. Households, 1980 and 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1980 and 1990 Residential Energy Consumption Surveys (RECS). Table 20 and RECS Public Use Data Files.

New Housing Trends

One important factor affecting the housing stock is the introduction of new homes.⁶ New homes are defined in this report as those built during the three-year period of 1988 through 1990. The characteristics of these new homes that enter the housing stock are of special interest because they indicate the trends of the future housing stock, the penetration of innovations into the marketplace, and the implications of these innovations on both present and future energy use.

New homes use differing amounts and types of energy than older homes because of differences in the location, size, and types of energy used for space heating and water heating. New housing trends may alert us to future changes in overall housing trends, but it takes time for new housing trends to affect the overall housing stock. Homes built in 1988 or later represent only 3 percent of the total 1990 U.S. housing stock (Table 12). Therefore, an apparent reversal of a previous national trend in new housing may not be sufficient in itself to significantly affect trends in the total housing stock in the short run.

Unit Size and Type

From 1988 through early 1990, about 2.8 million new occupied housing units were added to the U.S. housing stock.⁷ New homes tended to be single-family detached housing units and were larger than homes built in the past.

More Single-Family Detached Homes

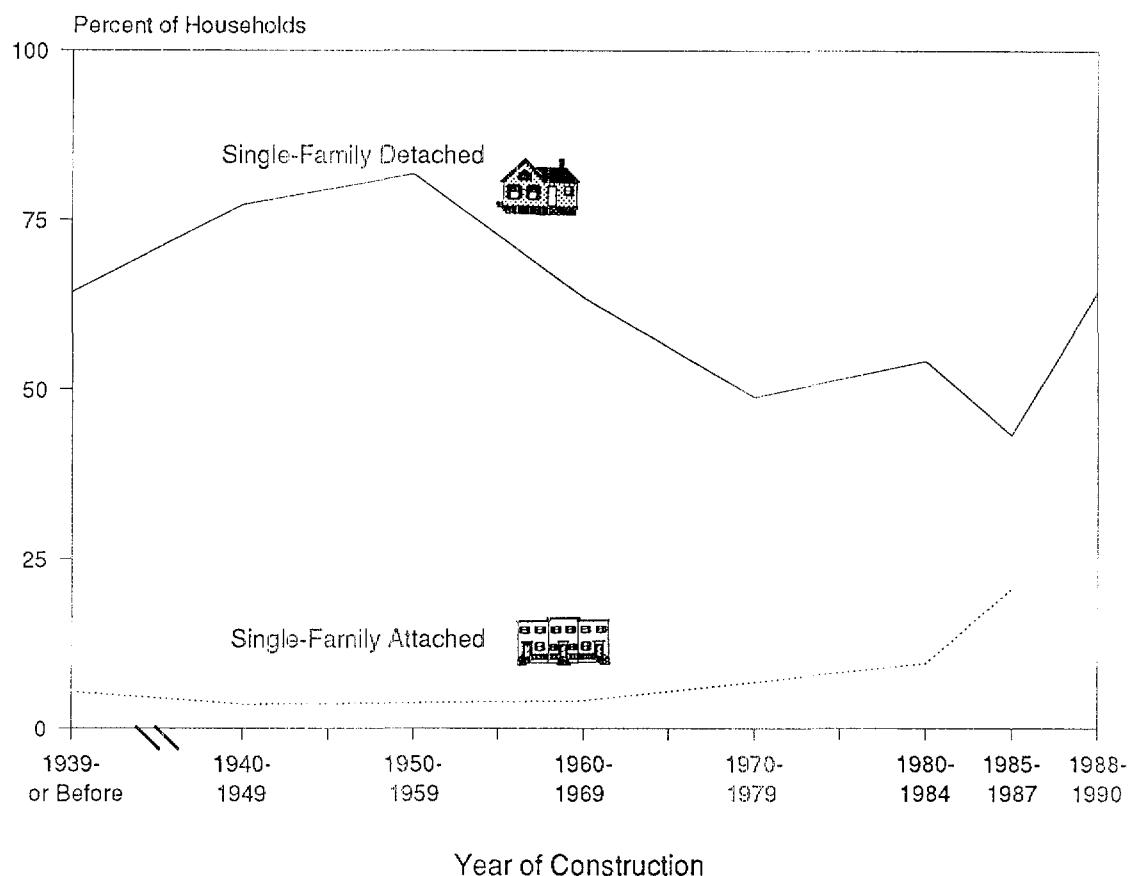
New homes in the 1990 RECS include a larger percentage of single-family detached units than did homes built between 1970 and 1987 (Figure 6). About two-thirds (64 percent) of the new homes are single-family detached units (Table 14). Figure 6 shows the distribution of all homes occupied in 1990, not the distribution of all homes ever built. It is clear, though, that 1988 to 1990 demonstrated a reversal of a previous trend away from single-family detached homes. The proportion of single-family detached units among all new homes is similar to what the proportion was for homes built prior to 1970. About 70 percent of the homes built before 1970 were single-family detached units. For homes built in the 1970's and 1980's, this figure dropped to 50 percent.⁸ If this trend toward more single-family detached homes continues into the 1990's, its effect will be to increase the relative frequency of single-family detached homes in the housing stock when the 1993 RECS is conducted and will have an impact on residential energy consumption trends.

⁶Other factors that affect change in the housing stock include refurbishing units that have been uninhabitable, remodeling, conversion to and from nonresidential use, destruction or demolition, and dividing a house into apartments or combining apartments into a single housing unit. In addition, equipment and fuels used in the same housing unit may change over time.

⁷The number of homes built in 1990 is underrepresented in this group. See Appendix B for more information.

⁸These changes are consistent with data from the Census Bureau that show fewer multifamily units being constructed in 1988 through 1990. U.S. Bureau of the Census, *Current Construction Reports -- Series C25, Characteristics of New Housing: 1989* (Washington, D.C.: U.S. Department of Commerce, 1990).

Figure 6. Types of U.S. Homes by Year of Construction, 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1990 Residential Energy Consumption Survey (RECS). Table 14 and RECS Public Use Data File.

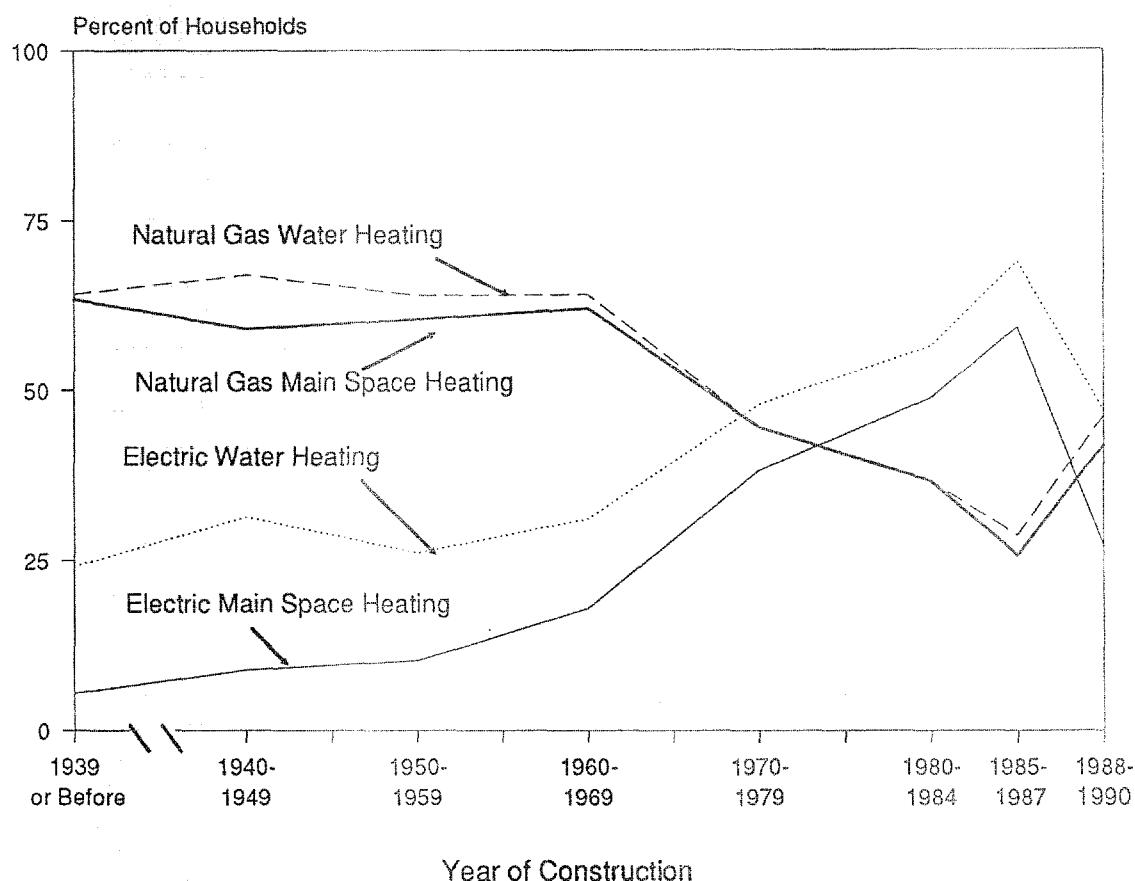
New Homes Were Larger in 1990

The average size of a new home built from 1988 to 1990 was 2,143 square feet of heated space compared to 1,581 square feet for homes built from 1985 to 1987. This increase in size is not surprising, given the increased prevalence of single-family detached homes, which tend to be larger.

Natural Gas Replaced Electricity in New Homes

Reliance on electricity for major uses in new homes changed dramatically between the 1987 RECS and the 1990 RECS. New homes showed a diminished use of electricity and an increased use of natural gas for such important purposes as space heating and water heating (Figure 7). Since space heating with electricity was more prevalent in the warmer regions than in the colder ones, it is important to note that the decrease in use of electricity for space heating in new homes was most dramatic in the

Figure 7. Use of Electricity and Natural Gas for Main Space and Water Heating in U. S. Households by Year of Construction, 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1990 Residential Energy Consumption Survey (RECS). Table 32 and RECS Public Use Data File.

South where the prevalence of electricity for heating in homes constructed in 1988-1990 (40 percent) was less than half of that for homes constructed during 1985-1987 (85 percent).⁹ Cooking with electricity, a less intensive use of electricity than space heating or water heating, also showed reduced use in new homes (Table 32).

The use of natural gas for space heating, water heating, and cooking increased in new homes (Table 32). The changes between electricity and natural gas are interrelated, since electricity and natural gas were the two main sources of energy used in the home for these purposes. A decrease in the use of one is likely to show an increase in the use of the other.

Electric Water Heating

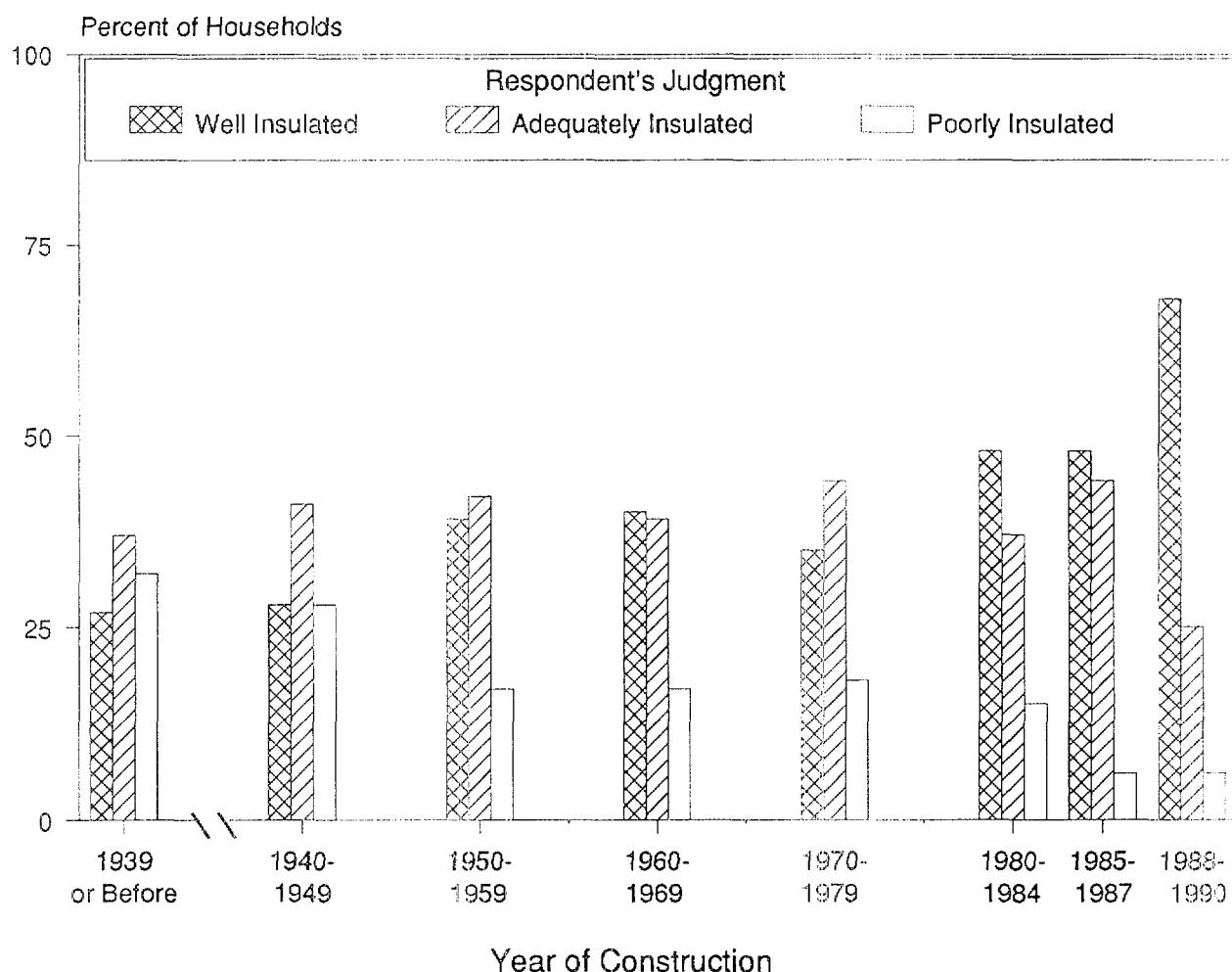
Electricity was the water-heating fuel of choice in homes built from 1985 to 1987, being selected for 69 percent of them (Figure 7). But in new homes built 3 years later, this share dropped to 47 percent--a percentage still above the national average of 37 percent of all homes that used electricity for heating in 1990. Even though the use of electricity to heat water in new homes decreased, its use in new homes was still sufficient to exert upward pressure on the national figure. The national figure increased from 32 percent of all households that used electricity for heating water in 1980 to 37 percent in 1990.

⁹Unpublished 1990 RECS data.

Building Shell Improvements in New Housing

The 1990 RECS asked households to judge how well insulated their homes were. Two-thirds of the respondents in new homes reported that their house or apartment was "well insulated" (Table 48). Such responses were less frequent for respondents in older homes (Figure 8). It should be noted that this response reflected what the respondent "felt" about the resulting comfort of the home and may not represent actual physical characteristics. There were, however, some specific ways in which the building shell appeared to be improved in new homes (built 1988 to 1990) versus those built in 1987 and earlier. For example, new homes had a higher incidence of storm windows and storm doors.

Figure 8. Adequacy of Insulation in U.S. Households, Respondent's Judgment, 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1990 Residential Energy Consumption Survey (RECS). Table 48 and RECS Public Use Data File.

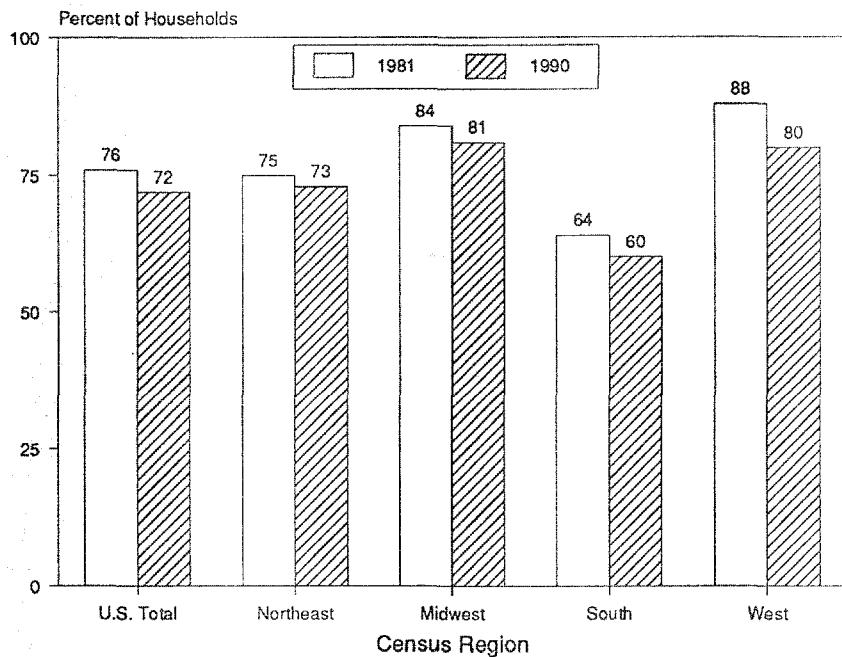
Natural Gas: Availability and Usage by Households

Natural gas is viewed in the *National Energy Strategy*¹⁰ as an environmentally desirable energy source, but one that has impediments to greater utilization. Access to natural gas has not kept pace with the growth in the number of households. Current consumption levels in the residential sector are below the levels of the early 1970's.

Availability of Natural Gas

Availability of natural gas is dependent on households already using natural gas for some purpose or the respondent's reporting that it is available in their "neighborhood."¹¹ Households in the RECS were first asked about the availability of natural gas in the 1981 survey, so the trends in this section of the report begin with the year 1981, not with 1980. More households in 1990 had natural gas available to them than in 1981, but the percentage increase in availability has not kept pace with the increase in the total number of households. There were 63.3 million households in 1981 with natural gas available in their neighborhood, and this number increased to 67.7 million in 1990. However, the percentage of households with natural gas available to them has been decreasing from 1981 to 1990 nationally and in each Census region. In 1981, 76 percent of U.S. households had natural gas available to them. In 1990, that percentage decreased to 72 percent of U.S. households (Figure 9).

Figure 9. Availability of Natural Gas to U.S. Households by Census Region, 1981 and 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1981 and 1990 Residential Energy Consumption Surveys (RECS). Table 20 and RECS Public Use Data Files.

¹⁰*National Energy Strategy, Powerful Ideas for America*, 1st ed., 1991/1992 (Washington, D. C., February 1991), pp. 86-87.

¹¹The meaning of "available" and "neighborhood" was left to individual interpretation by the respondents. See Glossary.

Two reasons for this decline can be detected. One reason is the disappearance of homes built before 1940 from the housing stock. Homes of this vintage decreased in number from 19.5 million in 1981 to 17.3 million in 1990, rendering them a smaller fraction of all homes in 1990 than in 1981 (Table 5). This loss is significant because a higher than average fraction of these older homes has natural gas available to them (81 percent in 1990) (Table 32). The other reason is the unavailability of natural gas for various reasons, such as the hookup moratoria or lack of a pipeline in the areas where homes are being constructed. Throughout the 1980's, natural gas was available to 50 percent of the homes, which is less than the national average of 72 percent (Table 5). Thus, the overall average of homes with natural gas available declined.

The data on availability of natural gas in new housing compared with availability in older housing exemplify the dangers inherent in looking only at new housing trends. Of the homes built from 1988 to 1990, 55 percent had access to natural gas, compared with only 40 percent of homes built from 1985 through 1987 (Table 32). This would appear to indicate an upward trend in availability of natural gas. However, the percentage of all U.S. homes with access to natural gas (72 percent in 1990) is still higher than the percentage for homes built from 1988 to 1990 (55 percent). The overall national trend downward in availability of natural gas from 1981 to 1990 will continue until the level of availability for new homes rises above the average for all homes.

The national trend toward decreased availability of natural gas is influenced by changes in the housing stock. Availability of natural gas in an existing neighborhood can change as pipelines are laid to bring gas to households that did not previously have it. Variations also occur when housing units leave the stock through demolition or deterioration and others having differential access to natural gas enter the stock through conversion or renovation.

Examining the RECS data for evidence that natural gas pipelines have been brought into existing neighborhoods, one finds no evidence that this has happened to a significant extent. For example, 7.3 million homes built in the 1970's did not have natural gas available to them in 1981 and this number was unchanged 9 years later in 1990. A similar pattern occurred for homes built in the years before 1970.

**Table 5. Availability of Natural Gas by Year of Construction In 1981 and 1990
(Million U.S. Households)**

Year of Construction			Natural Gas Is Available			
	All Households		No		Yes	
	1981	1990	1981	1990	1981	1990
1939 or Before	24.2	21.5	4.8	4.1	19.5	17.3
1940 to 1949	6.9	7.0	1.2	1.4	5.7	5.6
1950 to 1959	13.5	13.4	2.2	2.5	11.3	10.9
1960 to 1969	16.1	14.8	3.6	3.2	12.5	11.6
1970 to 1979	20.5	21.4	7.3	7.3	13.2	14.1
1980 to 1990	1.9	15.9	0.8	7.8	1.1	8.0
All Households	83.1	94.0	19.8	26.3	63.3	67.7

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, B, and C of the 1981 and 1990 Residential Energy Consumption Surveys (RECS). Table 31 and RECS Public Use Data Files.

Potential for Increased Use of Natural Gas

A topic raised by the National Energy Strategy is the potential for increasing natural gas usage. If greater advantage were made of natural gas availability, usage could be increased in the residential sector. There were 57.7 million households using natural gas for one or more purposes in 1990 (Table 19), but these households did not make full use of the availability of natural gas (Table 6). Among these 57.7 million households, 24.0 million (42 percent) did not use natural gas for cooking. Another 6.0 to 7.7 million households did not use natural gas for space heating or water heating but had it available in their housing unit for some other use. Yet another 10 million households had natural gas available in their neighborhood but were not hooked up to natural gas. Bringing natural gas to households where it is not currently available is one way of increasing residential use of natural gas; increasing natural gas end uses in areas where it is already available is another.

**Table 6. Potential Market for U.S. Residential Use of Natural Gas, 1981 and 1990
(Million Households)**

Uses	1981	1990
Household Already Uses Natural Gas but Not as:		
Main Space-Heating Fuel	7.2	6.0
Main Water-Heating Fuel	7.8	7.7
Main Cooking Fuel	21.2	24.0
Household Does Not Use Natural Gas, but It Is Available in the Neighborhood	9.9	10.0

Notes: •The same household may be represented more than once depending on the number of uses it makes of natural gas. •The figures in this table for 1990 were derived from Table 19. For example, the figure of 24.0 million for households that could use natural gas for cooking was derived by subtracting the 33.7 million households that use natural gas as their main cooking fuel from the 57.7 million households that use natural gas for some purpose.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1981 and 1990 Residential Energy Consumption Surveys (RECS). Table 19 and RECS Public Use Data Files.

Changes in Appliance Usage

Along with space heating, water heating, and air conditioning, household appliances represent another major factor in residential energy consumption. The 1990 RECS data show the continuation of a trend reported for the 1987 RECS--more appliances in households and a greater use of a wide range of new appliances (Tables 33 to 40). These trends are related to changing lifestyles and may result in increased household energy consumption, even when concurrent building shell improvements would imply decreased consumption.

A comparison of appliance usage over the decade of the 1980's indicates that the most significant increases in appliance saturation¹² are found in the percent of households using color television sets, gas grills, and microwave ovens. Significant increases also occurred in the number of households using dishwashers, clothes dryers, and heated swimming pools.

Refrigerators

In 1987, refrigerators used an estimated 20 percent of all electricity consumed by households in the United States.¹³ As was the case in 1987, almost all households (99.8 percent) used at least one refrigerator in 1990. There has been a significant increase between 1987 and 1990 in the number of households having two or more refrigerators. In 1990, 15 percent of the households (14.4 million households) used at least two refrigerators (Tables 33 and 34). Although the percentage having two or more working refrigerators is only a 2-percent increase over the percentage in 1987, the result is that 2.1 million households added at least one other refrigerator. Usually the second refrigerator is one that was displaced by a newer, more efficient model. This implies that householders increased their total electricity consumption by not disposing of their "old" inefficient refrigerators.

Although the prevalence of second refrigerators in U.S. households increased between 1987 and 1990, the percentage of households with second refrigerators in 1990 is not significantly different from the percentage in 1980 (15 percent versus 14 percent), implying that transitory ups and downs in prevalence of second refrigerators do not indicate a clear long-term trend. A clear trend does exist, though, for prevalence of automatic-defrost ("frost-free") refrigerators, which use more energy than do refrigerators that must be manually defrosted. In 1990, 79 percent of U.S. households had at least one automatic-defrost refrigerator, compared with 68 percent in 1980. Increasing use of more energy-intensive types of refrigerators combined with a tendency toward more second refrigerators implies greater energy consumption for household refrigeration.

Entertainment Appliances

Television Sets

Between 1980 and 1990, the percentage of households with at least one color television set increased from 82 percent to 96 percent (Figure 10)--close to total saturation. The increase in color televisions occurred in all Census regions. While color televisions were becoming almost an expected necessity in U.S. households, prevalence of black-and-white television sets decreased from 51 percent in 1980 to 31 percent in 1990.

¹²Saturation means the percent of households that use an appliance under the assumption that there is a limit of 100 percent use. Refrigerators are virtually at saturation, whereas the saturation of microwave ovens, clothes washers, and other appliances is still rising.

¹³See *Household Energy Consumption and Expenditures 1987, Part 1: National Data* (DOE/EIA-0321/1(87)), October 1989, p. 8, for a further discussion of refrigerator electricity consumption.

Heated Swimming Pools, Hot Tubs, and Spas

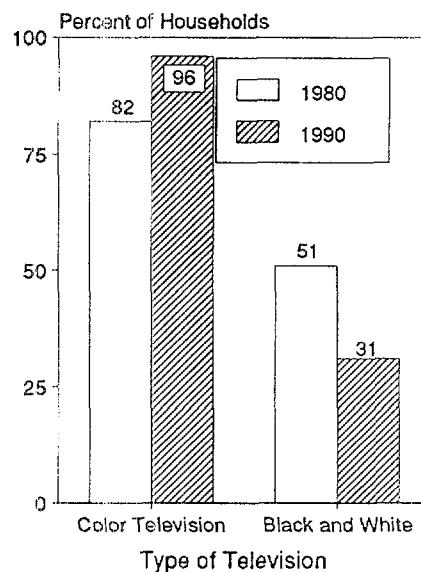
Prevalence of heated swimming pools increased between 1980 and 1990, from 0.6 percent to 1.1 percent of households. The 1980 RECS did not ask about hot tubs and spas. Prevalence of hot tubs and spas, which use less energy than heated swimming pools, increased significantly between 1987 and 1990 (2 percent in 1987 versus 4 percent in 1990).

Cooking Appliances

Outdoor Grills

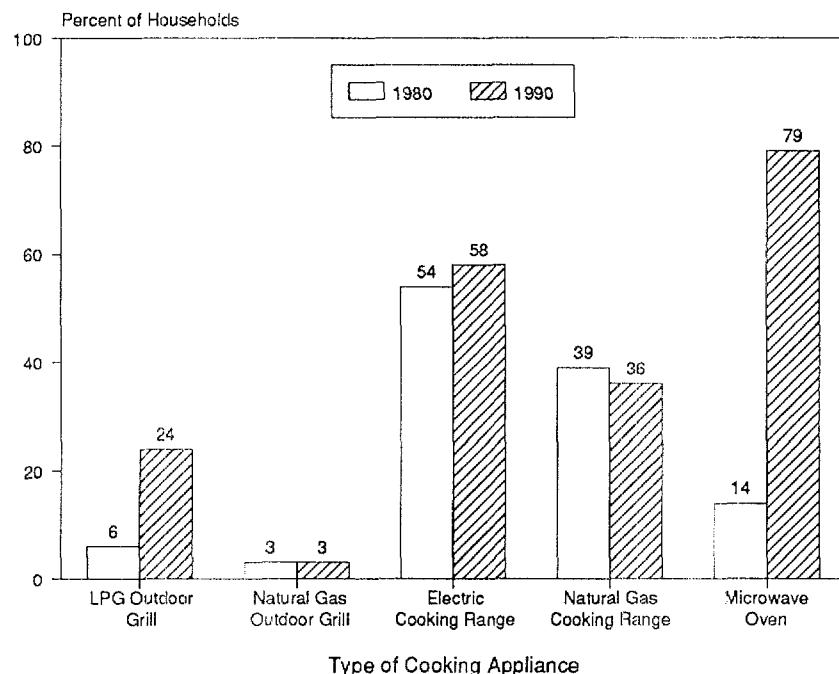
The penetration of liquefied petroleum gas (LPG) grills rose from 6 percent of households in 1980 to 24 percent of households in 1990 (Figure 11). This is a large increase in a decade, indicating that the LPG grill is a product that found its market during the 1980's. Natural gas grills cannot be moved easily because of their permanent connection to the gas pipe. They are used by only a small percentage of U.S. households (3 percent in 1980 and 1990).

Figure 10. Presence of Television Sets In U.S. Households, 1980 and 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1980 and 1990 Residential Energy Consumption Surveys (RECS). Table 34 and RECS Public Use Data Files.

Figure 11. Cooking Appliances in U.S. Households, 1980 and 1990



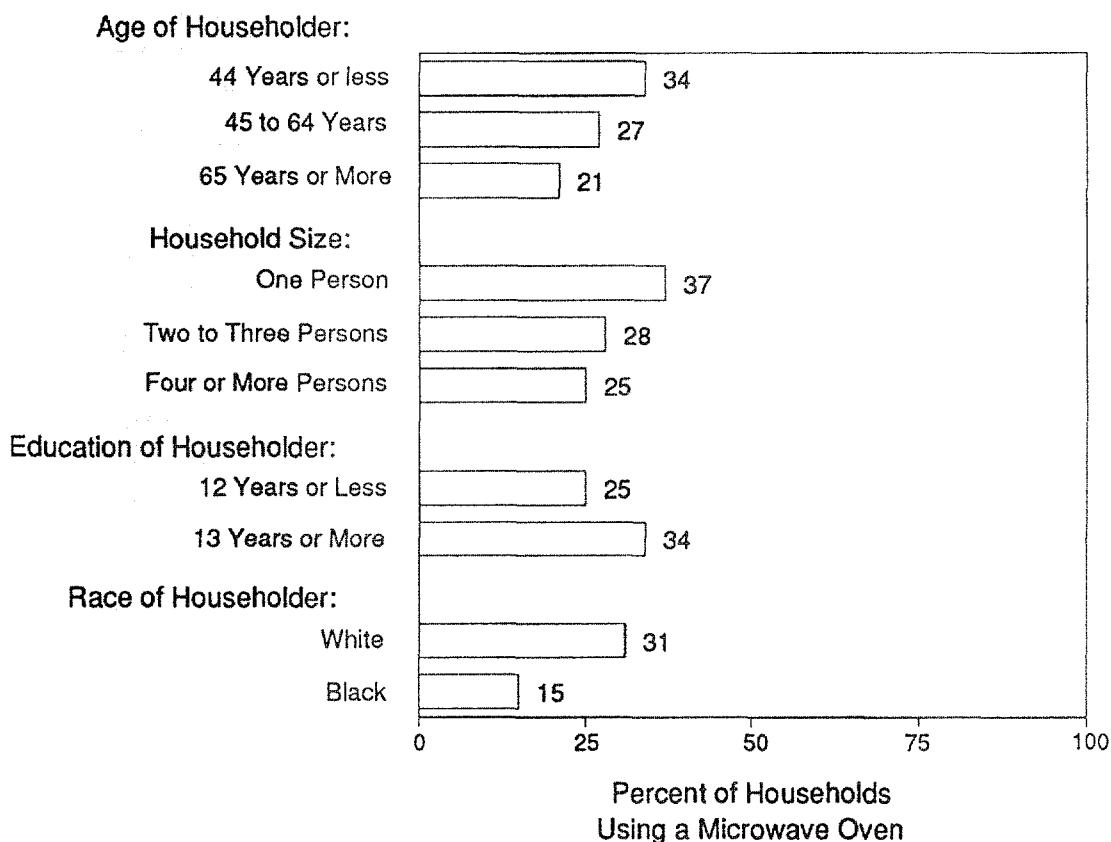
Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1980 and 1990 Residential Energy Consumption Surveys (RECS). Table 34 and RECS Public Use Data Files.

Microwave Ovens

The use of microwave ovens increased dramatically, nationally and across all Census regions. In 1980, only 14 percent of households used a microwave oven. By 1990, presence of microwave ovens increased to 79 percent of all households (Figure 12). This translates to an increase of 63 million households using microwave ovens since the beginning of the decade.

The rapid growth in use of microwave ovens may have interesting effects on energy consumption. Less energy is used when food is cooked in a microwave oven. In 1990 for the first time, the RECS asked respondents about the percentage of the household's food cooked in their microwave ovens. Nationally, 23 percent of all households used microwave ovens to cook half or more of their food. The households that depend on the microwave oven for much of their food are younger, contain fewer persons, have more education, and are more often white than black, compared with households that use their microwave oven to cook less than half of their food (Figure 12).

Figure 12. Characteristics of U.S. Households Using Microwave Ovens to Cook Half or More of Their Food, 1990

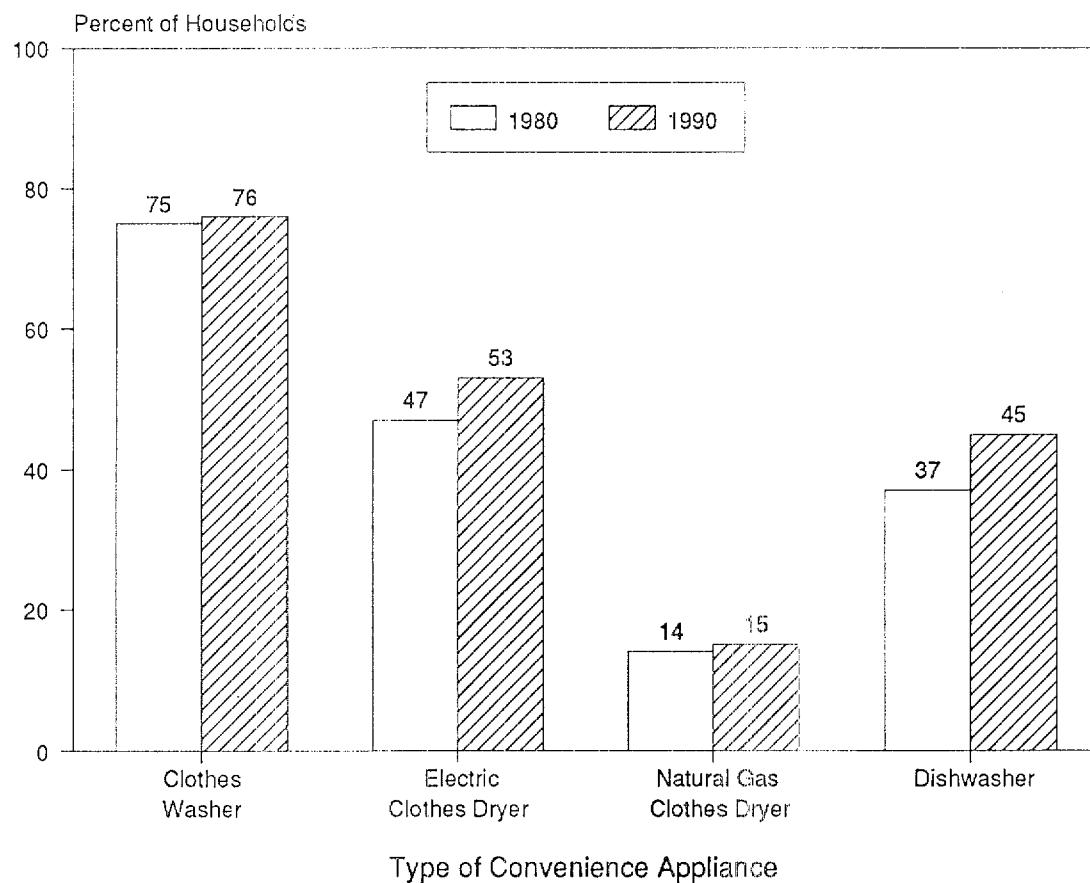


Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1990 Residential Energy Consumption Survey (RECS). RECS Public Use Data File.

Convenience Appliances

The microwave oven and outdoor grill, while classified for energy consumption purposes as cooking appliances, are also convenience appliances; they make people's lives easier. The number of household laundering and dishwashing appliances also increased during the 1980's. About three-fourths of U.S. households in 1990 had clothes washers, a fraction essentially unchanged since 1980 (Figure 13). The percentage of households with electric clothes dryers increased during the 1980's, from 47 percent in 1980 to 53 percent in 1990. Prevalence of natural gas clothes dryers remained about the same during the decade (14 percent in 1980 versus 15 percent in 1990), a finding consistent with the lack of change in use of natural gas for space heating and water heating. Dishwashers became more common conveniences, increasing from 37 percent of households in 1980 to 45 percent in 1990.

Figure 13. Convenience Appliances In U.S. Households, 1980 and 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1980 and 1990 Residential Energy Consumption Surveys (RECS). Table 34 and RECS Public Use Data Files.

Age of Major Household Appliances and Equipment

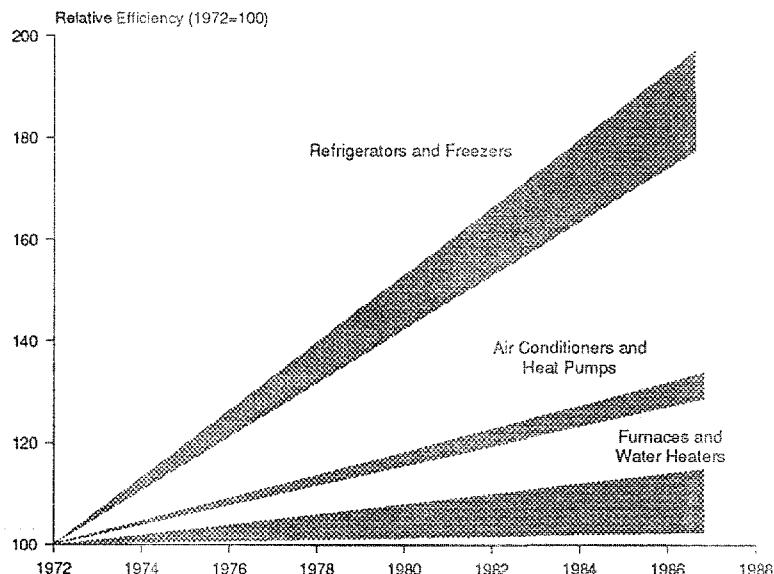
The 1990 Residential Energy Consumption Survey, for the first time, collected data on the age of a number of major household appliances and equipment. From average ages one can infer the rate at which improvements in "new" appliance efficiency may affect the average efficiency of the appliance stock. As a general rule, the lower the average age, the larger will be the percentage of the stock that is new, relatively more efficient models.

The average age of major household energy-using appliances and equipment was estimated from the 1990 RECS data (Table 7).¹⁴ The youngest stock of appliances include the heat pump, water heater, and room air conditioner, all an average of 8 years old. In the middle age range fall the primary household refrigerator and the central air conditioner, both averaging 9 years old. The oldest appliances/equipment are the space heating system (excluding heat pumps), household freezer, and second refrigerator. Ranges, ovens, and clothes dryers are not included here because no efficiency improvement information is available and RECS did not collect data on their age.

Efficiency Improvements

An index of appliance efficiency trends for new models shows steady improvement in appliance efficiency from 1972 to 1987,¹⁵ although not uniformly across all types of appliances (Figure 14). New refrigerators and freezers improved

Figure 14. U.S. Appliance Energy Efficiency Trends, 1972 to 1987



Note: Shaded areas indicate the range of efficiency improvement for the appliances indicated.

Source: U.S. Department of Energy, Office of Policy, Planning and Analysis, *Energy Conservation Trends*, (DOE/EIA-0092), September 1989.

¹⁴The 1990 RECS collected categorical age data for major household appliances. To create an average age, the midpoint of the age categories was assigned to households. For the last category "20 years or more," 20 was assigned, even though it is certain that the average for that category would be higher than 20. Average ages are, therefore, likely to be underestimates, particularly for heating systems, which have longer useful lives than other appliances.

¹⁵U.S. Department of Energy, Office of Policy, Planning & Analysis, *Energy Conservation Trends*, DOE/PE-0092, September 1989, p. 19, p. 37. These energy efficiency estimates were derived from unpublished data prepared by J. McMahon, Lawrence Berkeley Laboratory.

Table 7. Age and Estimated Efficiency Improvement of Major U.S. Household Appliances and Equipment, 1990

Major Household Appliance or Equipment	Age Distribution ^a (percent of households)					Average Age ^a	Estimated Efficiency Improvement in the Stock of Equipment Compared to 1972 New Model Efficiencies (percent) ^b
	Fewer than 2 Years	2 to 4 Years	5 to 9 Years	10 to 19 Years	20 Years or More		
Refrigerator (most-used)	13.9	19.4	28.5	29.8	8.4	9	59
Second Refrigerator	4.3	11.7	16.4	35.8	31.7	13	22
Freezer	6.9	11.7	20.9	40.9	19.7	12	36
Central Air Conditioner ^a	12.0	20.1	26.9	32.3	8.7	9	17
Room Air Conditioner	12.4	23.0	30.1	27.5	7.0	8	19
Water Heater ^c	15.0	21.9	27.8	26.8	8.5	8	3
Heat Pump	11.9	22.9	39.3	22.4	3.5	8	23
Electric Warm-Air Furnace	4.2	9.9	24.8	52.4	8.7	11	--
Natural Gas Warm-Air Furnace	8.1	14.2	19.9	31.7	26.2	12	4
Natural Gas Steam or Hot-Water System	8.4	8.1	11.1	25.1	47.4	14	--
Fuel Oil Steam or Hot-Water System	8.3	10.7	12.1	22.5	46.3	14	--

^aData exclude households with missing data and those that did not know the age of their equipment.

^bUsing a household's (most used) refrigerator as an example, these data should be interpreted as follows: the 1990 stock of household refrigerators, with an average age of 9 years old, should be roughly comparable to new refrigerators purchased 9 years ago (purchased in 1981 9 years prior to 1990). The efficiency of 1981 new-model refrigerators improved 59 percent over new models sold in 1972; therefore, the efficiency of the 1990 stock of refrigerators is estimated to have improved by 59 percent when compared to 1972 new-model refrigerators.

^cExcludes systems that are used by more than one housing unit and water heaters that are not separate from the furnace.

-- Data not available.

Note: Because of rounding, data may not sum to 100 percent.

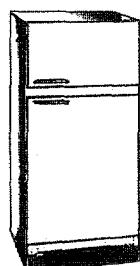
Sources: Age data are from: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1990 Residential Energy Consumption Survey (RECS). RECS Public Use Data File. Efficiency data used to derive stock improvements are taken from: U.S. Department of Energy, Office of Policy, Planning & Analysis, *Energy Conservation Trends*, DOE/PE-0092, September 1989 p. 37.

the most, 96 percent and 77 percent, respectively. Air conditioners and heat pumps fell into a second group, with a 30 to 35 percent range of efficiency improvement over 1972 levels. New model efficiencies for water heaters and furnaces (oil and gas) were between 5 to 20 percent higher in 1987 than in 1972.

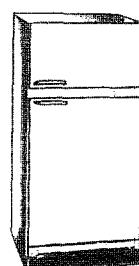
Increases in the efficiency of new appliances and equipment affect the overall efficiency of the U.S. appliance/equipment stock differentially, depending on the rate of replacement of old appliances/equipment with new, more efficient models and depending on the rate of efficiency improvements for the various types of appliances and equipment.

Refrigerators and Freezers

The efficiency of new refrigerators increased dramatically from 1972. The stock of primary refrigerators, with an average age of 9 years in 1990, is estimated to be comparable in efficiency to 1981 new-model refrigerators, which improved 59 percent over 1972 models (Table 7). Although "new" freezer efficiency improvement in 1987 was 77 percent above the 1972 level,¹⁶ the average efficiency of freezers in 1990 is estimated to be only 36 percent above that of 1972 new-model levels. The relatively older age of freezers (12 years) slowed the rate at which new freezer models improved the average efficiency of the stock of home freezers.



Refrigerators

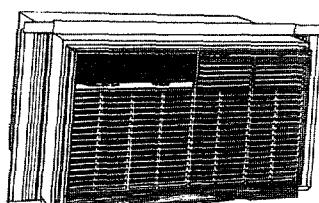


Heat Pumps, Air Conditioners, Water Heaters

The heat pump tends to be the newest type of space-heating system. With an average age of 8 years, the 1990 stock of heat pumps are 23 percent more efficient than units sold in 1972. Heat pumps are still a small proportion of space-heating equipment, since they are the main space-heating equipment for only about 7 percent of U.S. households in 1990 (Table 28). Given this small penetration of heat pumps as the main space-heating equipment, increases in efficiency of heat pumps are not likely to affect the overall efficiency of U.S. heating/cooling equipment for some time.

Room and central air conditioners were about 35 percent more efficient in 1987 than they were in 1972. Central air-conditioning units have an average age of 9 years, compared with an average age of 8 years for room air conditioners. Given the average age of air conditioners and their increases in efficiency, we estimate that the average air conditioner in 1990 is about as efficient as were the new models in 1981-1982 (17 to 19 percent above 1972 new-model levels).

The average water heater, although only 8 years old, is estimated to be only 3 percent more efficient than 1972 models, because of very low "new" appliance efficiency improvement.



Air Conditioner

¹⁶U.S. Department of Energy, Office of Policy, Planning & Analysis, *Energy Conservation Trends*, DOE/PE-0092, September 1989, p. 37.

Household Energy Conservation Activities

Energy conservation in the residential sector is influenced by structural characteristics and location of the housing unit, demographics and behavior of household residents, and types of appliances in the home. For instance, newer homes, having more insulation, are more energy-efficient than older ones. In 85 percent of the 2.2 million single-family homes built between 1980 and 1990, the roof or ceiling was entirely insulated, whereas in the oldest homes, the 15 million homes built before 1940, this percentage was only 51. Homes in colder regions of the country had greater energy conservation features than homes in warmer regions. For example, in the Northeast, 91 percent of single-family homes had storm windows for all of the windows, versus 55 percent of the single-family homes in the South.

Differences Between 1980 and 1990

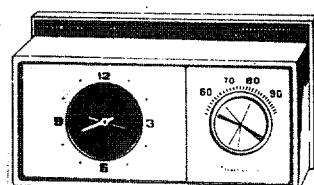
During the decade of RECS (1980 to 1990), differences in specific energy conservation features or behavior have been few. There have been statistically significant changes in three major factors contributing to energy conservation--roof or ceiling insulation, temperature-setting behavior, and use of air conditioning.

Roof or Ceiling Insulation

Presence of roof or ceiling insulation in single-family housing units has increased since 1980. In 1990, 81 percent of U.S. single-family housing units had roof or ceiling insulation, compared with 77 percent of households in 1980. It is interesting that roof or ceiling insulation is as common in the South, with less space-heating demand, than it is in the Northeast, with greater space-heating demand. This may be a function of vintage of housing units (newer homes tend to be better insulated than older ones, and there was more construction during the 1980's in the South than in the other regions), but RECS sample sizes are not large enough to confirm this hypothesis.

Indoor Temperatures

The setting of home thermostats is an important factor influencing residential energy consumption. Since the 1981 RECS, respondents have been asked what indoor temperatures they keep in the winter during waking and sleeping hours. Data from the 1981 through 1990 RECS show that the percentage of households maintaining temperatures above 70 degrees Fahrenheit increased (Figures 15 and 16). The reported increase in temperatures occurred during daytime hours when someone was home and during sleeping hours. For example, in 1981, 17 percent of households reported daytime temperatures above 70 degrees when someone was home; by 1990, this percentage had doubled to 34 percent (Figure 15). The percentage of households keeping temperatures above 70 degrees during sleeping hours increased from 8 percent in 1981 to 17 percent in 1990 (Figure 16).



Thermostat

Figure 15. Daytime Temperatures In U.S. Households, 1981 and 1990

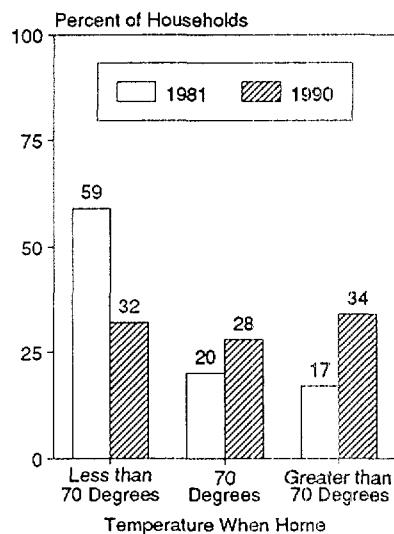
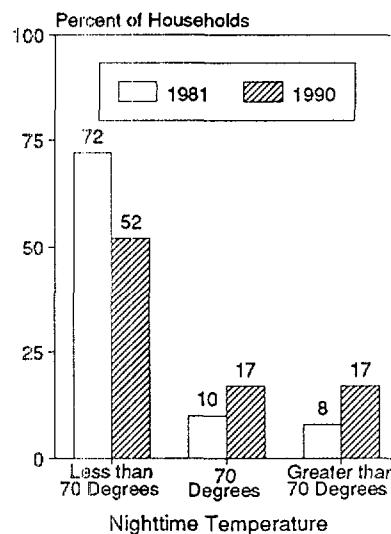


Figure 16. Nighttime Temperatures In U.S. Households, 1981 and 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1981 and 1990 Residential Energy Consumption Surveys (RECS). Table 52 and RECS Public Use Data Files.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of 1981 and 1990 Residential Energy Consumption Surveys (RECS). Table 52 and RECS Public Use Data Files.

As average indoor temperatures became higher, householders also became more likely to set back thermostats during sleeping hours or when they were away. Nighttime temperature setbacks were more common in 1990 than they were in 1981 (43 percent versus 34 percent). Similarly, the percentage who say they set back their temperatures during the day when they are away was higher than it was in 1981 (40 percent versus 33 percent).

Use of Air Conditioning

Indoor winter temperature settings are one indication of the level of concern about energy conservation. Although respondents were not asked about summer temperature settings, whether or not the air conditioner is turned on all summer is another indicator of energy conservation trends. The percentage answering "yes" increased from 22 percent in 1981 to 35 percent in 1990. This difference is only partly explained by the higher proportion of homes located in the warmest climate zone. In the South, the percentage keeping their air conditioners on all summer increased from 37 percent in 1981 to 57 percent in 1990; however, increases also occurred in all other regions of the country. A major factor related to increased use of air conditioning is the greater prevalence of central air conditioning in 1990, which is more likely than are room units to be left on all summer. Finally, the summer of 1990 was warmer (had more cooling degree-days) than the summer of 1981.

Demand-Side Management Programs

Future demand for electricity can be satisfied either by building new generating capacity or by reducing demand through use of conservation, load control, more efficient technology, and other such programs for consumers of electricity. At least 31 States, through a process referred to as Integrated Resource Planning (IRP), look not only at the supply side but also at the demand side when planning for the future provision of electricity. Regulatory commissions in many of the States are requiring utilities to implement programs to reduce electricity demand. In 1988, approximately 485 electric utilities conducted at least 1,022 separate residential programs categorized as Demand-Side Management (DSM) programs.¹⁷ In 1990, an estimated \$2 billion was spent on DSM programs in the United States.¹⁸

The 1990 RECS (for the first time) asked householders if they had participated in any utility-sponsored DSM programs in the past year and, if so, the type of program (audit, rebate, load control, conservation, or other DSM program) with participation in more than one possible. Approximately 4.6 million (5 percent) of the 94 million households responded that they had participated (Table 41). In these households, 1.2 million households reported obtaining rebates, 1.6 million reported participation in load control, 1.1 million reported having energy audits, and 1.3 million reported involvement in some type of conservation activity. The householder's report of having participated in DSM programs can be verified by linking 1990 RECS data to reports filed by electric utilities with EIA. These reports (Form EIA-861) contain information as to whether individual electric utilities do, in fact, have DSM programs. The linkage will increase the accuracy of DSM program participation data and will identify RECS households that could not participate because their electric utility did not offer DSM programs.¹⁹

Participation by the household in DSM is voluntary; therefore, the utilities must undertake marketing approaches to obtain willing participants. The customary dependence on voluntary participants makes analyses of the results of DSM programs difficult, since those who are sufficiently motivated to participate may also be better motivated to conserve energy than are nonparticipants. A second issue in DSM program analyses is whether the participant would have undertaken the conservation activity (e.g., purchasing a high-efficiency furnace) had the DSM program incentive not been offered at all. This "free rider" issue is of major concern to those promoting and evaluating DSM programs. A third issue is whether participants in DSM programs view their participation as sufficient fulfillment of their socially desirable charge to conserve energy; that is, having insulated their attic, do they then feel that it is acceptable to raise their thermostat settings?

A portrait of DSM-participant households from the 1990 RECS may provide insight into the impact of DSM in the residential sector. At this time, 1990 RECS consumption and expenditures data are not yet available. Future analyses could compare consumption and expenditures between DSM participants and nonparticipants, while holding constant characteristics such as size and type of housing units.

Since 89 percent of the DSM participants lived in single-family or mobile homes, this analysis is focused on only those types of households.

¹⁷Electric Power Research Institute, *1988 Survey of Residential-Sector Demand-Side Management Programs* (EPRI CU-6548), (Palo Alto, California, 1989), p. III.

¹⁸Eric Hirst, "A Rose by Any Other Name: Defining Key Terms on Utility DSM Programs," *Energy Systems and Policy*, Vol. 14, 1990, pp. 305-318. See also Eric Hirst and Carol Sabo, *Electric-Utility DSM Programs: Terminology and Reporting Formats*, (Oak Ridge, Tennessee: Oak Ridge National Laboratory, October 1991.)

¹⁹This information will be discussed in the forthcoming report *Household Energy Consumption and Expenditures 1990*.

DSM Participant Characteristics: Single-Family and Mobile Homes

The 1990 RECS data show that participants in DSM programs tend to be owners rather than renters, more affluent, better educated, and older (Table 8). Among DSM households in the 1990 RECS, 50 percent had family incomes of \$35,000 or more, as compared to 41 percent of nonparticipants. Additionally, fewer DSM participants were below poverty level (11 percent versus 17 percent for nonparticipants). Only 11 percent of the DSM-participant households had less than a high school education, compared with 21 percent of the nonparticipants.

Table 8. Characteristics of Participants as Compared to Nonparticipants in Demand-Side Management Programs in U.S. Single-Family and Mobile Homes, 1990

Characteristics	Percent of DSM Participants	Percent of DSM Nonparticipants
Homeowner	89	83
At least \$35,000 Family Income	50	41
Below 125 Percent of Poverty Line	11	17
Education of Householder		
More than 16 Years	22	10
13 to 16 Years	38	33
12 Years	30	36
Less Than 12 Years	11	21
Age of Householder		
34 Years or Less	19	24
35 to 44 Years Old	26	23
45 to 64 Years Old	38	31
65 Years or Older	17	22

Note: Because of rounding, data may not sum to 100 percent.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1990 Residential Energy Consumption Survey (RECS). RECS Public Use Data File.

Age and Size of Housing Units

Analyses of the RECS data show that housing units built since 1980 tend to be better insulated than older housing units and thus in principle are less in need of electricity savings. Given this finding, it is interesting that a higher percentage of DSM than nonparticipant households were built in 1980 or later (29 percent of DSM participants versus 17 percent of nonparticipants), possibly because households with a higher income tend to occupy new housing (Table 14). The explanation may be that DSM housing units were, on average, larger (1,935 heated square feet versus 1,786 heated square feet for nonparticipants); larger housing units tend to have higher fuel bills and greater incentive to participate in such programs. Higher fuel bills also offer a greater target of opportunity for electric utility savings.

Heating and Cooling Equipment and Fuels

Central air conditioning was more common in DSM households than in nonparticipant households (Table 9). Central air conditioning was present in 57 percent of the DSM households and in only 39 percent of the nonparticipant households. Of all single-family households and mobile homes, 40 percent had central air conditioning (Table 35).

Table 9. Appliances and Fuels Used by Participants Compared to Nonparticipants in Demand-Side Management Programs In U.S. Single-Family and Mobile Homes, 1990

Appliances and Fuels	Percent of DSM Participants	Percent of DSM Nonparticipants
Central Air Conditioning	57	39
Room Air Conditioning	23	31
Main Space-Heating Fuel		
Electricity	30	19
Natural Gas	45	56
Main Water-Heating Fuel		
Electricity	45	38
Natural Gas	47	52
Use Secondary Space-Heating Fuel	58	49

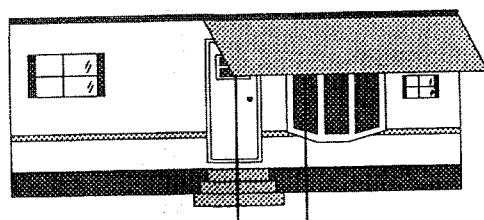
Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1990 Residential Energy Consumption Survey (RECS). RECS Public Use Data File.

Electricity is used more often as the main space-heating fuel in DSM households than in nonparticipant households (30 percent versus 19 percent), most likely because electricity is more expensive than alternative fuels. DSM households are also more likely than nonparticipant households to use a secondary space-heating fuel in addition to their main space-heating fuel. Use of secondary space-heating fuels can be motivated by a desire to reduce total space-heating cost, increase comfort levels at the same cost, or to provide heat, in case of the loss of the main space-heating source. Participation in DSM programs may be, at least in part, motivated by dissatisfaction with space-heating cost and/or comfort.

Comparisons of DSM participation by main water-heating fuels are similar to those by space-heating fuels. In 45 percent of the DSM households, compared with 38 percent of the nonparticipant households, electricity is the water-heating fuel.



Single-family home

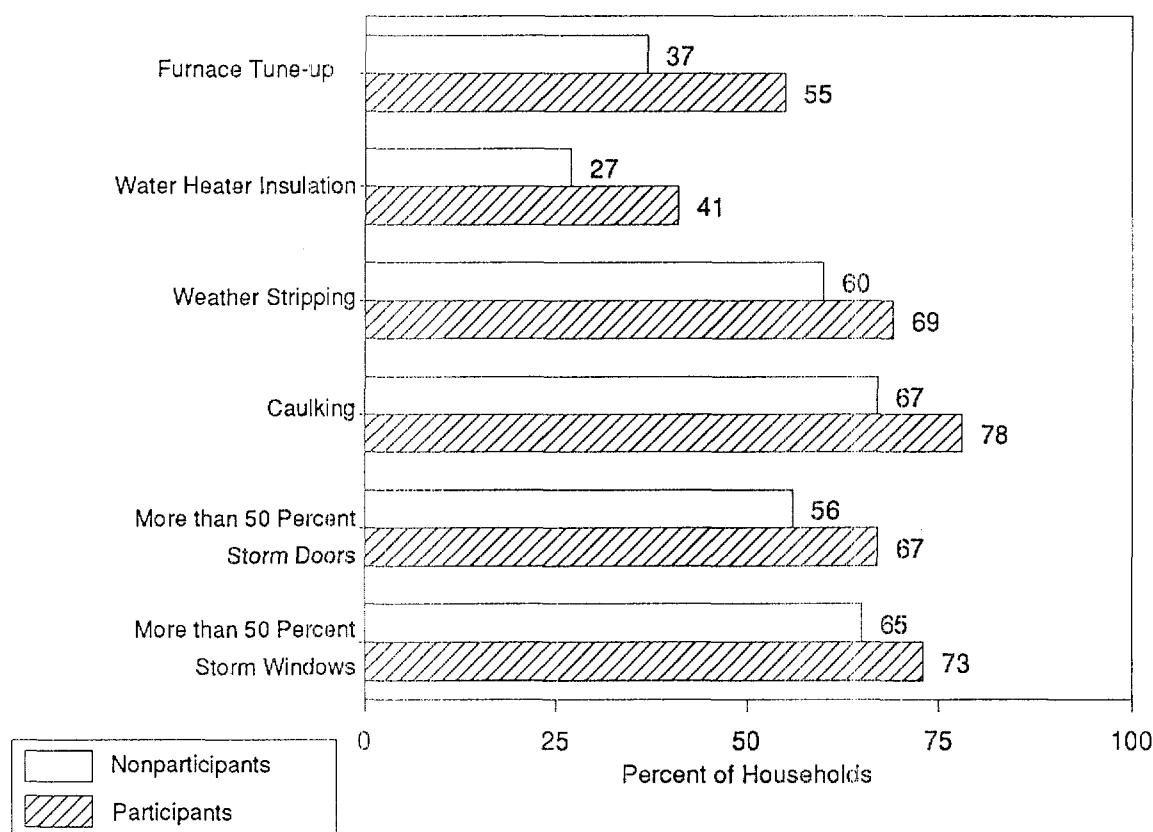


Mobile home

Conservation Activities

As Figure 17 shows, DSM households were more likely than nonparticipant households to have taken active conservation measures such as furnace tune-up, weather stripping and caulking, and thermostat setbacks. The DSM program may not be a cause of the conservation behavior; DSM participation and conservation behavior may both be a result of concern about household energy consumption, for economic or environmental reasons. For whatever reasons, DSM households undertook (at statistically significant percentage levels) more of the easier and less expensive conservation activities. Of the DSM households, 55 percent had their furnaces tuned, 41 percent had their water heater insulated, 69 percent had weather stripping, and 78 percent had caulking. Incidence of all of these activities was lower for nonparticipant households.

Figure 17. Comparison of Participants and Nonparticipants in Demand-Side Management Programs in U.S. Single-Family and Mobile Homes, 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1990 Residential Energy Consumption Survey (RECS). RECS Public Use Data File.

Renewable Resources: A Portrait of Households Using Solar or Wood as a Source of Energy

The 1990 RECS provides data on characteristics of households using two renewable energy sources, solar and wood.²⁰ Although wood is far more prevalent than solar, both of these sources are still minor in the overall U.S. residential energy profile.

Active Solar Energy

In 1990, less than 1 percent, or approximately 0.8 million households, used solar for water heating and/or space heating. Most (approximately 0.7 million) of these solar-using households were single-family households. In 0.4 million of these households, solar was used primarily as the main water-heating fuel. The number of RECS households using solar as their main space-heating fuel was statistically negligible. Approximately 0.2 million households used active solar for secondary space-heating and for auxiliary water heating. The RECS does not collect data on passive solar energy.

Not surprisingly, users of solar are almost all homeowners (96 percent). Nationally, 83 percent of single-family homes are owner-occupied. The small number of solar users are, on average, better educated and more affluent than nonusers: more solar users have at least 1 year of college (61 percent versus 45 percent of nonusers), and more have family incomes of \$35,000 or more (66 percent versus 43 percent.) One would suspect that users of solar technology are more likely to be conservation-minded. The 1990 RECS data, because of small sample sizes, do not show statistically significant differences between solar users and nonusers in measures of conservation. However, the data indicate a prevalence of storm doors and roof or ceiling insulation in solar households.

Trends in Use of Solar Energy, 1980-1990

During the decade of the 1980's, there was a small increase in the use of active solar energy for any purpose, from 0.2 percent in 1980 to 1.0 percent in 1990. This increase was strongest in the West, where use of solar increased from 0.8 percent in 1980 to 3.1 percent in 1990. In 1990, households in the West were a little more than one-third of all U.S. households (36 percent) but constituted two-thirds of all solar-using households (67 percent).

Wood Energy

Wood is used as an energy source by 27 percent of U.S. households. This percentage has not changed significantly since 1980. Of the 24.7 million wood-using households, only 16 percent (3.9 million households) used wood as their main space-heating fuel (Table 19). Almost all (92 percent) of the households using wood as their main space-heating fuel were single-family units.

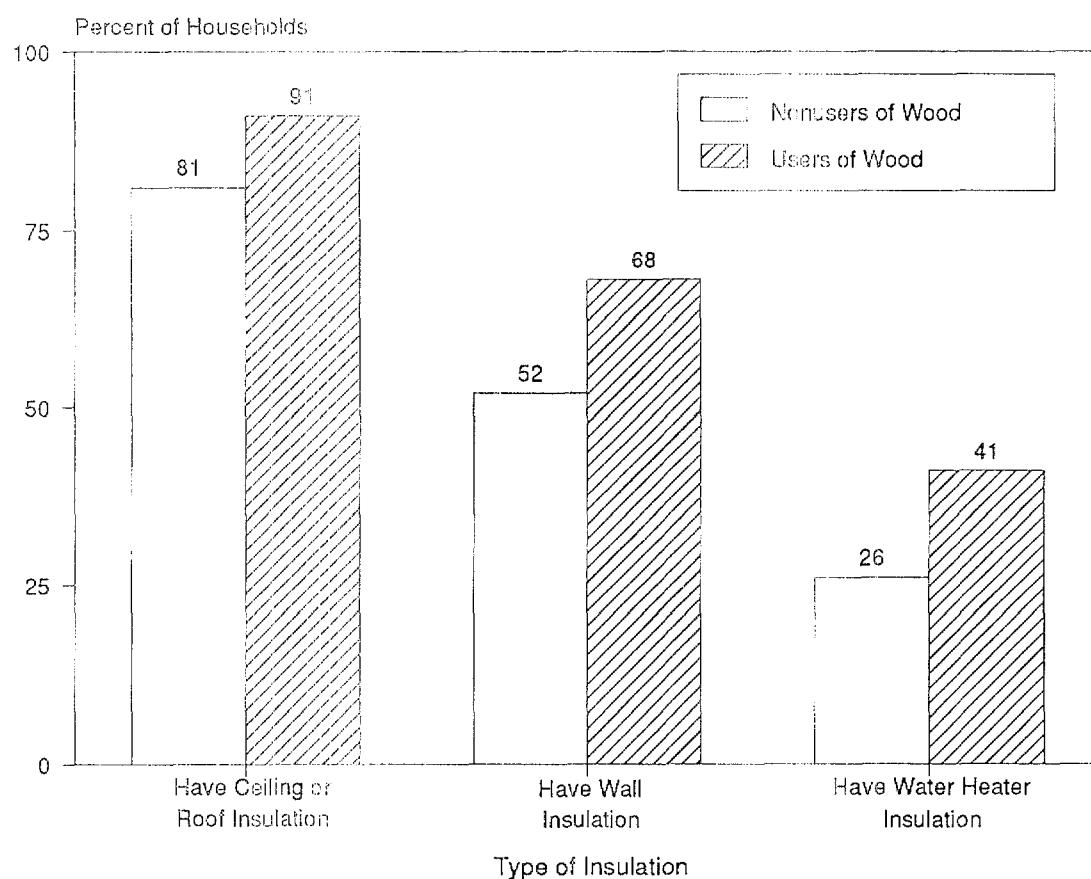
Wood was used as a secondary space-heating fuel in 18.9 million single-family households, 20 percent of all U.S. households. Among those households using wood for supplemental heat, though, the great majority (73 percent) burned wood only in a fireplace.

²⁰Unless otherwise noted, the source for data in this section is the 1990 RECS Public Use Data File.

Users Versus Nonusers of Wood in Single-Family Households

Single-family households using wood as their main space-heating fuel were better insulated than were single-family households using other main space-heating fuels. As shown in Figure 18, more of the wood-heating households had roof or ceiling insulation (91 percent of wood users versus 81 percent of nonwood-using households), all walls insulated (68 percent of users versus 52 percent of nonusers), and water heater insulation (41 percent versus 26 percent).

Figure 18. Insulation In U.S. Single-Family Homes of Users Compared to Nonusers of Wood as the Main Space-Heating Fuel, 1990



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1990 Residential Energy Consumption Survey (RECS). RECS Public Use Data File.

Detailed Tables

The following tables present detailed characteristics of households in the residential sector. Data are from the 1990 Residential Energy Consumption Survey. The "Glossary" contains the definitions of terms used in the tables.

Table Organization

The "Detailed Tables" section consists of 2 types of tables: (1) The number of households by the indicated topic and (2) the percent of households by the indicated topics. The tables are grouped to facilitate finding related information. The Quick-Reference Guide (Table 10) to the detailed statistics indicates major topics of each table.

Row and Column Factors

The tables present estimates of characteristics for all occupied households in the United States. Since the estimates are based on a sample survey, they are subject to sampling error. To help the reader compute an approximate Relative Standard Error (RSE) for each of the estimates in the detailed tables, row and column factors are displayed on the top line and in the far right column of each table. To calculate the RSE for a specific estimate, multiply the row factor by the column factor.

The use of the row and column RSE factors is illustrated in Figure 19, a sample table from this report. Using the first column of the table labeled "Total" and the eleventh row labeled "Natural Gas" under the category labeled "Main Space-Heating Fuel and Equipment" gives an estimate of 51.7 million for the number of households where the main space-heating fuel is natural gas. The RSE row factor is 4.90. The RSE column factor is 0.641. The approximate RSE for the estimate is, therefore,

$$RSE_{\text{Natural Gas for Main Space-Heat, Total Households}} = (4.90)(0.641) = 3.14 \text{ percent.}$$

For more information about the derivation of the row and column RSE factors, see Appendix B, "Quality of the Data."

Figure 19. Use of RSE Row and Column Factors

**Table 19. Fuel Use by Census Region and Urban Status,
Million U.S. Households, 1990**

Housing Unit Characteristics	Total	Census Region				Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban		Central City	Suburban	Rural	
						Total	Central City				
RSE Column Factors:	0.641	1.075	1.253	1.119	1.255	0.739	1.033	0.913	1.183		
Total	94.0	19.2	23.1	32.3	19.4	72.9	29.8	43.0	21.1	0.00	
Fuels Used for Any Use (more than one often used)											
Electricity	94.0	19.2	23.1	32.3	19.4	72.9	29.8	43.0	21.1	0.00	
Natural Gas	57.7	11.9	16.9	15.3	13.7	48.6	22.3	26.3	9.1	4.24	
Wood	24.9	4.4	5.7	8.5	6.3	18.3	4.6	13.8	6.5	6.65	
Fuel Oil and/or Kerosene	16.3	8.9	2.8	4.0	.6	11.5	3.9	7.6	4.8	8.96	
Fuel Oil	11.7	8.0	1.6	1.7	Q	8.8	2.9	5.9	2.9	10.08	
Kerosene	5.3	1.2	1.4	2.5	.2	3.1	1.0	2.1	2.2	14.22	
LPG ¹	8.2	1.2	2.4	3.5	1.1	3.8	.5	3.3	4.4	16.13	
Coal7	.3	Q	Q	Q	.3	Q	.2	Q	36.03	
Solar Collectors9	Q	Q	Q	.6	.8	.3	.5	.1	23.74	
Main Heating Fuel and Equipment											
Natural Gas	51.7	8.7	16.5	14.1	12.4	43.1	19.4	23.7	8.7	4.90	
Central Warm-Air Furnace	34.9	4.1	13.1	9.6	8.1	29.1	11.3	17.8	5.8	6.24	
For One Housing Unit	33.3	3.9	12.4	9.2	7.8	27.6	10.5	17.2	5.6	6.38	
For Two or More Units	1.6	Q	.8	.4	.2	1.5	.8	.7	.2	22.29	
Steam or Hot-Water System	8.3	4.5	2.5	.7	.5	7.7	4.5	3.1	.6	12.16	
For One Housing Unit	4.5	2.7	1.1	.4	.3	4.2	2.1	2.1	.3	17.41	
For Two or More Units	3.7	1.8	1.4	.3	.2	3.5	2.4	1.0	.3	18.03	
Floor, Wall, or Pipeless Furnace	5.1	Q	.4	1.6	3.0	4.0	2.1	1.9	1.1	12.66	
Room Heater/Other	3.5	.1	.4	2.2	.7	2.3	1.4	.9	1.2	20.55	

Row Factor (Use Natural Gas for Main Heat) = 4.90
 Column Factor (Total Households) = 0.641

Approximate RSE (Total Households Using Natural Gas for Main Heat) = (4.90) * (0.641)
 = 3.14 percent

Approximate Standard Error (Total Households Using Natural Gas for Main Heat) = (.0314) * (51.7)
 = 1.62 million households

Approximate 2 Standard Errors (95 percent Confidence Interval) = (1.96) * (1.62)
 = 3.18 million households

Therefore, with 95 percent confidence, the number of households using natural gas for main space heating is between 48.5 and 54.9 million households (51.7 ± 3.18)

Source: Energy Information Administration, Office of Energy Markets and End Use, the 1990 Residential Energy Consumption Survey.

Table 10. Quick-Reference Guide to the Detailed Tables of 1990 U.S. Housing Characteristics

Topic	Table Number
Household Characteristics	
By Census Region and Urban Status	11, 12
By Year of Construction	13, 14
Average Floorspace	15
Total Floorspace	16
By Family Income	17, 18
Fuel Use	
By Census Region and Urban Status	19, 20
By Family Income	21, 22
By Type and Ownership of Housing Unit	23, 24
Average Floorspace	25
Total Floorspace	26
By Main Space-Heating Fuel	27, 28
By Climate Zone and Census Region	29, 30
By Year of Construction	31, 32
Appliance Use	
By Census Region and Urban Status	33, 34
By Type and Ownership of Housing Unit	35, 36
By Family Income	37, 38
By Year of Construction	39, 40
Conservation	
By Census Region and Urban Status	41, 42
By Type and Ownership of Housing Unit	43, 44
By Climate Zone and Census Region	45, 46
By Year of Construction	47, 48
By Family Income	49, 50
Consumption Usage Indicators	
Indoor Winter Temperature	51, 52
Setback Temperature	53
Air-Conditioning Usage	54
Annual Heating Degree-Days	55
Annual Cooling Degree-Days	56

Source: Energy Information Administration, Office of Energy Markets and End Use, the 1990 Residential Energy Consumption Survey.

Table 11. Household Characteristics by Census Region and Urban Status, Million U.S. Households, 1990

Housing Unit and Household Characteristics	Total	Census Region				Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			Rural		
						Total	Central City	Suburban	Rural		
RSE Column Factors:	0.612	1.157	1.175	1.176	1.236	0.700	0.986	0.987	1.212		
Total	94.0	19.2	23.1	32.3	19.4	72.9	29.8	43.0	21.1	0.00	
Housing Unit Characteristics											
Climate Zone											
Under 2,000 CDD and--											
Over 7,000 HDD	10.1	2.4	6.5	NC	1.2	5.1	2.2	2.9	5.0	21.37	
5,500 to 7,000 HDD	26.7	10.0	13.2	Q	3.5	22.4	8.1	14.3	4.2	10.71	
4,000 to 5,499 HDD	20.9	6.9	3.4	8.3	2.4	16.2	6.7	9.6	4.7	15.14	
Under 4,000 HDD	19.3	NC	NC	9.3	10.0	15.1	6.2	9.0	4.1	11.35	
2,000 CDD or More and --											
Under 4,000 HDD	17.0	NC	NC	14.7	2.3	13.9	6.7	7.2	3.1	11.42	
Heated Floorspace Category (square feet)											
Fewer than 600	8.0	1.6	1.4	2.2	2.8	6.5	4.1	2.4	1.6	10.14	
600 to 999	22.5	3.5	5.1	8.7	5.2	17.4	8.1	9.3	5.1	6.43	
1,000 to 1,599	26.5	4.9	5.2	10.3	6.2	20.1	8.2	12.0	6.4	5.41	
1,600 to 1,999	12.6	2.2	3.6	4.4	2.4	9.7	3.4	6.3	2.9	7.16	
2,000 to 2,399	9.0	2.3	2.7	2.9	1.2	7.2	2.5	4.7	1.8	8.01	
2,400 to 2,999	7.8	2.3	2.2	2.4	.9	5.8	1.9	3.8	2.1	10.15	
3,000 or More	7.4	2.4	2.8	1.3	.8	6.1	1.6	4.5	1.3	13.04	
Ownership of Unit											
Owned	62.3	13.0	16.4	21.6	11.3	46.2	15.8	30.4	16.0	2.65	
Rented	31.7	6.2	6.7	10.7	8.1	26.6	14.0	12.6	5.1	5.19	
Type and Ownership of Housing Unit											
Single-Family Detached	58.4	9.8	15.3	21.8	11.5	42.3	13.8	28.5	16.1	3.35	
Owned	50.0	9.2	13.4	18.4	9.0	36.5	11.2	25.3	13.5	3.70	
Rented	8.4	.6	1.9	3.4	2.5	5.8	2.6	3.2	2.6	9.34	
Single-Family Attached	6.0	2.1	.7	1.9	1.2	5.7	2.3	3.4	.3	18.10	
Owned	3.7	1.6	.4	1.0	.7	3.5	1.4	2.2	Q	20.44	
Rented	2.3	.4	.4	.9	.6	2.2	1.0	1.3	Q	25.20	
Multifamily (2 to 4 units)	10.0	3.5	2.5	2.4	1.7	8.8	5.3	3.5	1.2	13.24	
Owned	2.5	1.0	.6	Q	.4	2.3	1.2	1.1	.2	24.18	
Rented	7.5	2.5	1.9	1.7	1.3	6.5	4.1	2.4	1.0	12.82	
Multifamily (5 or more units)	14.4	3.3	3.0	4.3	3.8	13.6	7.6	6.0	.8	11.67	
Owned	1.8	.7	Q	Q	.3	1.8	1.4	.4	Q	24.70	
Rented	12.6	2.6	2.3	4.3	3.5	11.8	6.3	5.5	.8	12.30	
Mobile Home	5.2	.5	1.6	1.9	1.2	2.5	.8	1.7	2.7	21.31	
Owned	4.3	.5	1.4	1.5	.9	2.1	.7	1.4	2.1	24.17	
Rented	1.0	Q	.2	.4	.3	.4	Q	.3	.6	26.18	
Year of Construction											
1939 or Before	21.5	7.5	6.8	3.9	3.3	15.9	9.9	6.0	5.6	7.24	
1940 to 1949	7.0	1.4	2.2	2.2	1.3	5.1	2.5	2.6	1.9	10.26	
1950 to 1959	13.4	3.3	2.8	4.1	3.1	10.9	4.2	6.7	2.4	7.25	
1960 to 1969	14.8	2.6	3.1	6.0	3.1	11.8	4.1	7.6	3.1	9.17	
1970 to 1979	21.4	2.8	5.4	8.7	4.6	16.8	5.9	11.0	4.6	7.52	
1980 to 1984	8.0	.6	1.3	3.5	2.7	6.2	2.0	4.2	1.9	13.63	
1985 to 1987	5.1	.6	.7	2.8	1.0	4.3	1.0	3.3	.8	20.10	
1988 to 1990 ¹	2.8	.4	.8	1.2	.4	1.9	.3	1.6	.9	22.85	

See footnotes at end of table.

**Table 11. Household Characteristics by Census Region and Urban Status,
Million U.S. Households, 1990 (Continued)**

Housing Unit and Household Characteristics	Total	Census Region				Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			Rural		
						Total	Central City	Suburban	Rural		
RSE Column Factors:	0.612	1.157	1.175	1.176	1.236	0.700	0.986	0.987	1.212		
Household Characteristics											
1990 Family Income Category											
Less than \$5,000	5.2	0.9	1.1	2.5	0.8	3.7	2.5	1.2	1.5	13.51	
\$5,000 to \$9,999	10.7	2.0	2.7	3.9	2.1	7.2	3.7	3.5	3.5	9.33	
\$10,000 to \$14,999	11.4	1.9	3.3	3.8	2.3	8.0	4.2	3.8	3.4	7.26	
\$15,000 to \$19,999	8.4	1.4	1.8	3.2	1.9	6.4	2.9	3.5	2.0	9.13	
\$20,000 to \$24,999	9.0	1.4	2.6	3.3	1.7	7.0	3.4	3.6	2.0	9.43	
\$25,000 to \$34,999	15.3	3.1	3.8	5.0	3.4	11.4	3.9	7.5	3.9	6.00	
\$35,000 to \$49,999	16.7	3.9	4.1	5.4	3.4	13.9	4.6	9.3	2.9	6.01	
\$50,000 to \$74,999	10.5	2.3	2.5	3.6	2.1	9.0	2.7	6.3	1.5	9.12	
\$75,000 or More	6.7	2.3	1.1	1.6	1.7	6.3	2.0	4.4	.4	12.59	
Below Poverty Line											
100 Percent	13.2	2.2	2.7	5.5	2.8	9.0	5.3	3.7	4.2	9.05	
125 Percent	18.2	3.0	3.9	7.5	3.8	12.3	7.1	5.2	6.0	7.31	
Eligible for Federal Assistance²											
Payment Method for Utilities											
All Paid by Household	79.3	14.5	19.5	29.5	15.9	59.4	21.8	37.6	20.0	1.94	
Some Paid, Some in Rent	8.7	3.0	2.3	1.2	2.2	8.3	4.7	3.7	.3	13.43	
All Included in Rent	3.8	1.3	.6	1.3	.5	3.2	2.3	.9	.5	17.69	
Other Method	2.2	.5	.6	.3	.7	1.9	1.1	.8	.3	22.19	
Age of Householder											
Under 25 Years	5.8	.9	1.4	2.0	1.4	4.7	2.6	2.2	1.0	10.91	
25 to 34 Years	21.8	4.4	5.3	7.2	5.0	17.7	7.1	10.6	4.1	5.87	
35 to 44 Years	20.2	4.2	4.8	6.7	4.4	16.1	6.6	9.5	4.0	5.04	
45 to 59 Years	19.7	4.1	4.6	7.4	3.6	15.0	5.6	9.4	4.7	5.49	
60 Years and Over	26.6	5.6	7.0	9.1	4.9	19.3	8.0	11.3	7.3	5.06	
Race of Householder											
White	80.9	16.7	21.6	25.7	16.9	62.2	23.0	39.2	18.7	1.64	
Black	10.6	2.2	1.2	6.1	1.1	8.7	5.9	2.9	1.9	11.19	
Other	2.5	.3	.2	.5	1.4	1.9	1.0	.9	.6	16.25	
Householder of Hispanic Descent											
Yes	6.3	1.1	.7	2.1	2.5	5.7	3.2	2.5	.6	14.98	
No	87.6	16.2	22.3	30.2	16.9	67.2	26.6	40.6	20.5	1.56	
Household Size											
1 Person	23.4	4.5	6.0	7.8	5.0	18.5	9.2	9.3	4.9	4.30	
2 Persons	30.6	6.2	7.9	10.2	6.3	23.5	8.8	14.7	7.0	3.44	
3 Persons	15.8	3.3	3.7	6.1	2.8	12.4	4.9	7.5	3.4	6.57	
4 Persons	13.9	3.0	3.5	4.6	2.8	10.5	3.6	6.9	3.4	5.64	
5 Persons	6.7	1.5	1.4	2.3	1.5	5.2	2.0	3.2	1.5	8.49	
6 or More Persons	3.6	.7	.6	1.2	1.2	2.8	1.3	1.5	.9	12.15	
Household Owns or Has Regular Use of a Vehicle											
Yes	83.9	15.8	21.0	29.3	17.8	64.6	24.0	40.6	19.3	1.17	
No	10.1	3.5	2.1	3.0	1.6	8.2	5.8	2.4	1.9	8.16	

¹ Does not include all new construction for 1990.

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

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 12. Household Characteristics by Census Region and Urban Status, Percent of U.S. Households, 1990

Housing Unit and Household Characteristics	Total	Census Region					Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			Rural			
						Total	Central City	Suburban	Rural			
RSE Column Factors:	0.612	1.157	1.175	1.176	1.236	0.700	0.986	0.987	1.212			
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00		
Housing Unit Characteristics												
Climate Zone												
Under 2,000 CDD and--												
Over 7,000 HDD	10.8	12.4	28.2	NC	6.4	7.1	7.4	6.8	23.6	21.37		
5,500 to 7,000 HDD	28.4	51.8	57.1	Q	18.0	30.8	27.2	33.3	20.0	10.71		
4,000 to 5,499 HDD	22.3	35.9	14.7	25.7	12.1	22.3	22.3	22.3	22.2	15.14		
Under 4,000 HDD	20.5	NC	NC	28.7	51.5	20.8	20.6	20.9	19.6	11.35		
2,000 CDD or More and --												
Under 4,000 HDD	18.1	NC	NC	45.5	11.9	19.1	22.5	16.8	14.6	11.42		
Heated Floorspace Category (square feet)												
Fewer than 600	8.5	8.3	6.1	6.8	14.5	8.9	13.7	5.6	7.3	10.14		
600 to 999	24.0	18.2	22.2	27.0	26.8	23.9	27.3	21.5	24.3	6.43		
1,000 to 1,599	28.2	25.3	22.3	32.0	31.8	27.6	27.4	27.8	30.2	5.41		
1,600 to 1,999	13.4	11.5	15.6	13.7	12.3	13.3	11.3	14.8	13.8	7.16		
2,000 to 2,399	9.6	11.9	11.8	8.8	6.0	9.9	8.5	10.9	8.6	8.01		
2,400 to 2,999	8.3	12.1	9.6	7.5	4.5	7.9	6.5	8.9	9.8	10.15		
3,000 or More	7.9	12.6	12.3	4.2	4.3	8.4	5.4	10.5	6.1	13.04		
Ownership of Unit												
Owned	66.3	67.8	71.0	66.8	58.3	63.4	53.1	70.6	76.0	2.65		
Rented	33.7	32.2	29.0	33.2	41.7	36.6	46.9	29.4	24.0	5.19		
Type and Ownership of Housing Unit												
Single-Family Detached	62.1	50.9	66.2	67.4	59.4	58.0	46.2	66.2	76.1	3.35		
Owned	53.2	48.0	57.9	56.9	46.5	50.1	37.5	58.8	63.9	3.70		
Rented	8.9	2.9	8.2	10.6	12.9	8.0	8.7	7.4	12.2	9.34		
Single-Family Attached	6.4	10.8	3.2	6.0	6.4	7.9	7.8	7.9	1.2	18.10		
Owned	3.8	8.5	1.6	3.1	3.6	4.9	4.6	5.0	Q	20.43		
Rented	2.5	2.3	1.7	2.9	2.9	3.0	3.2	2.9	Q	25.20		
Multifamily (2 to 4 units)	10.6	18.2	10.7	7.3	8.6	12.0	17.7	8.1	5.9	13.24		
Owned	2.7	5.0	2.6	Q	1.9	3.1	4.0	2.5	1.1	24.18		
Rented	8.0	13.2	8.2	5.4	6.7	8.9	13.7	5.6	4.7	12.82		
Multifamily (5 or more units)	15.3	17.3	12.9	13.5	19.4	18.6	25.5	13.9	4.0	11.67		
Owned	1.9	3.9	Q	Q	1.6	2.5	4.6	1.0	Q	24.70		
Rented	13.4	13.5	10.0	13.2	17.8	16.2	21.0	12.9	3.8	12.30		
Mobile Home	5.5	2.7	7.0	5.8	6.2	3.4	2.7	3.9	12.8	21.31		
Owned	4.5	2.4	6.0	4.6	4.8	2.9	2.4	3.3	10.0	24.17		
Rented	1.0	Q	.9	1.3	1.4	.5	Q	.6	2.8	26.18		
Year of Construction												
1939 or Before	22.8	38.8	29.5	12.0	17.2	21.8	33.2	13.9	26.4	7.24		
1940 to 1949	7.5	7.3	9.4	6.7	6.7	7.0	8.3	6.1	9.0	10.26		
1950 to 1959	14.2	17.1	12.3	12.8	16.0	15.0	14.1	15.6	11.6	7.25		
1960 to 1969	15.8	13.8	13.3	18.7	15.7	16.1	13.8	17.8	14.4	9.17		
1970 to 1979	22.8	14.7	23.2	26.8	23.7	23.1	19.7	25.5	21.9	7.52		
1980 to 1984	8.5	3.1	5.4	10.8	13.8	8.5	6.7	9.7	8.8	13.63		
1985 to 1987	5.4	3.2	3.2	8.6	5.0	5.9	3.3	7.7	3.8	20.10		
1988 to 1990 ¹	2.9	2.1	3.7	3.6	1.9	2.6	.9	3.7	4.3	22.85		

See footnotes at end of table.

Table 12. Household Characteristics by Census Region and Urban Status, Percent of U.S. Households, 1990 (Continued)

Housing Unit and Household Characteristics	Total	Census Region					Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			Rural			
						Total	Central City	Suburban	Rural			
RSE Column Factors:	0.612	1.157	1.175	1.176	1.236	0.700	0.986	0.987	1.212			
Household Characteristics												
1990 Family Income Category												
Less than \$5,000	5.6	4.6	4.6	7.6	4.2	5.1	8.3	2.8	7.2	13.51		
\$5,000 to \$9,999	11.4	10.3	11.6	12.2	10.8	9.9	12.3	8.2	16.6	9.33		
\$10,000 to \$14,999	12.1	10.0	14.4	11.8	12.0	10.9	14.1	8.7	16.2	7.26		
\$15,000 to \$19,999	9.0	7.4	8.0	9.9	10.0	8.8	9.6	8.2	9.6	9.13		
\$20,000 to \$24,999	9.6	7.4	11.3	10.2	8.6	9.6	11.3	8.4	9.6	9.43		
\$25,000 to \$34,999	16.3	16.2	16.6	15.4	17.3	15.7	13.1	17.4	18.3	6.00		
\$35,000 to \$49,999	17.8	20.1	17.6	16.8	17.4	19.0	15.5	21.5	13.5	6.01		
\$50,000 to \$74,999	11.2	12.0	11.0	11.0	10.9	12.3	9.1	14.6	7.2	9.12		
\$75,000 or More	7.2	11.9	4.9	5.0	8.7	8.7	6.7	10.1	1.8	12.59		
Below Poverty Line												
100 Percent	14.0	11.6	11.5	17.2	14.2	12.4	17.7	8.7	19.7	9.05		
125 Percent	19.4	15.7	16.8	23.1	19.8	16.8	23.7	12.0	28.2	7.31		
Eligible for Federal Assistance²												
29.7	27.4	28.0	32.1	29.8	26.7	33.8	21.8	40.0	5.07			
Payment Method for Utilities												
All Paid by Household	84.4	75.3	84.6	91.2	81.9	81.5	73.0	87.4	94.5	1.94		
Some Paid, Some in Rent	9.2	15.4	10.0	3.6	11.5	11.4	15.7	8.5	1.5	13.43		
All Included in Rent	4.0	6.6	2.8	4.1	2.8	4.5	7.8	2.1	2.5	17.69		
Other Method	2.4	2.8	2.6	1.0	3.8	2.6	3.5	2.0	1.5	22.19		
Age of Householder												
Under 25 Years	6.1	4.7	6.2	6.3	7.3	6.5	8.6	5.1	4.9	10.91		
25 to 34 Years	23.1	22.8	22.8	22.1	25.6	24.2	23.6	24.7	19.4	5.87		
35 to 44 Years	21.5	22.1	20.8	20.7	22.8	22.1	22.3	22.0	19.1	5.04		
45 to 59 Years	20.9	21.2	20.0	22.8	18.8	20.6	18.8	21.9	22.0	5.49		
60 Years and Over	28.3	29.4	30.2	28.1	25.5	26.5	26.7	26.3	34.6	5.06		
Race of Householder												
White	86.1	86.9	93.7	79.5	87.2	85.4	77.0	91.2	88.5	1.64		
Black	11.3	11.5	5.2	18.9	5.6	12.0	19.7	6.7	8.8	11.19		
Other	2.6	1.6	1.0	1.6	7.3	2.6	3.3	2.1	2.7	16.25		
Householder of Hispanic Descent												
Yes	6.8	5.5	3.1	6.3	12.9	7.8	10.9	5.7	3.0	14.98		
No	93.2	94.5	96.9	93.7	87.1	92.2	89.1	94.3	97.0	1.56		
Household Size												
1 Person	24.9	23.7	26.1	24.3	25.6	25.4	30.7	21.6	23.2	4.30		
2 Persons	32.5	32.2	34.1	31.7	32.3	32.3	29.7	34.1	33.3	3.44		
3 Persons	16.8	17.3	15.8	18.8	14.2	17.0	16.3	17.5	16.1	6.57		
4 Persons	14.8	15.5	15.3	14.4	14.3	14.4	12.1	16.0	16.2	5.64		
5 Persons	7.1	7.6	6.2	7.2	7.5	7.1	6.8	7.3	7.0	8.49		
6 or More Persons	3.9	3.7	2.6	3.6	6.0	3.8	4.4	3.4	4.1	12.15		
Household Owns or Has Regular Use of a Vehicle												
Yes	89.3	82.0	91.1	90.7	91.9	88.7	80.5	94.4	91.2	1.17		
No	10.7	18.0	8.9	9.3	8.1	11.3	19.5	5.6	8.8	8.16		

¹ Does not include all new construction for 1990.

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

NC = No cases in sample.

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. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 13. Household Characteristics by Year of Construction,
Million U.S. Households, 1990**

Housing Unit and Household Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	RSE Column Factors:	0.337	2.117	2.001	1.388	0.801	0.952	0.860	1.114	0.691
Total	94.0	2.8	5.1	8.0	21.4	14.8	13.4	7.0	21.5	6.07
Housing Unit Characteristics										
Census Region and Division										
Northeast	19.2	.4	.6	.6	2.8	2.6	3.3	1.4	7.5	12.05
New England	4.5	.2	.2	Q	.7	.6	.6	.3	1.7	16.43
Middle Atlantic	14.7	Q	.4	.5	2.1	2.1	2.7	1.1	5.7	12.09
Midwest	23.1	.8	.7	1.3	5.4	3.1	2.8	2.2	6.8	12.21
East North Central	16.6	.7	.5	1.0	3.7	2.2	1.9	1.7	5.0	13.84
West North Central	6.5	.2	.3	.3	1.7	.8	.9	.5	1.8	13.85
South	32.3	1.2	2.8	3.5	8.7	6.0	4.1	2.2	3.9	11.14
South Atlantic	16.6	.5	2.2	2.0	4.2	2.9	1.8	1.1	1.9	14.64
East South Central	6.4	Q	.4	.4	1.5	1.2	1.0	.4	1.0	17.02
West South Central	9.3	Q	Q	1.1	2.9	1.9	1.3	.7	1.0	16.86
West	19.4	.4	1.0	2.7	4.6	3.1	3.1	1.3	3.3	10.44
Mountain	4.8	Q	.3	.8	1.0	.7	.8	.4	.8	18.88
Pacific	14.6	.3	.7	1.9	3.6	2.3	2.3	.9	2.5	11.15
Urban Status										
Urban	72.9	1.9	4.3	6.2	16.8	11.8	10.9	5.1	15.9	7.26
Central City	29.8	.3	1.0	2.0	5.9	4.1	4.2	2.5	9.9	10.95
Suburban	43.0	1.6	3.3	4.2	11.0	7.6	6.7	2.6	6.0	9.43
Rural	21.1	.9	.8	1.9	4.6	3.1	2.4	1.9	5.6	9.74
Climate Zone										
Under 2,000 CDD and--										
Over 7,000 HDD	10.1	.5	.2	.7	2.6	1.0	1.1	.9	3.1	23.44
5,500 to 7,000 HDD	26.7	.8	.9	1.5	5.5	3.6	3.6	2.1	8.7	13.12
4,000 to 5,499 HDD	20.9	.6	1.4	1.1	3.6	3.4	3.9	1.8	5.1	17.17
Under 4,000 HDD	19.3	.6	1.2	2.6	5.0	3.0	2.7	1.1	3.1	14.78
2,000 CDD or More and --										
Under 4,000 HDD	17.0	.4	1.3	2.1	4.7	3.8	2.2	1.1	1.4	17.00
Heated Floorspace Category (square feet)										
Fewer than 600	8.0	.2	.2	.4	2.1	1.4	1.2	.4	2.1	18.54
600 to 999	22.5	.4	1.3	2.4	6.3	3.6	2.4	2.0	4.1	11.84
1,000 to 1,599	26.5	.7	1.4	2.4	5.5	4.2	4.0	2.2	6.0	10.19
1,600 to 1,999	12.6	Q	1.0	1.0	2.8	1.9	2.0	.9	3.0	14.03
2,000 to 2,399	9.0	Q	.4	.7	1.8	1.3	1.7	.7	2.2	14.63
2,400 to 2,999	7.8	.4	.3	.6	1.7	1.3	1.0	.5	2.0	16.44
3,000 or More	7.4	.7	.5	.4	1.3	1.2	1.0	.3	2.0	18.83
Ownership of Unit										
Owned	62.3	2.2	3.8	5.3	13.4	9.1	10.3	4.8	13.4	6.82
Rented	31.7	.5	1.3	2.8	8.1	5.7	3.0	2.2	8.1	9.85

See footnotes at end of table.

**Table 13. Household Characteristics by Year of Construction,
Million U.S. Households, 1990 (Continued)**

Housing Unit and Household Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	RSE Column Factors:	0.337	2.117	2.001	1.388	0.801	0.952	0.860	1.114	0.691
Housing Unit Characteristics										
Type and Ownership of Housing Unit										
Single-Family Detached	58.4	1.8	2.2	4.3	10.5	9.4	10.9	5.4	13.8	7.19
Owned	50.0	1.6	2.0	3.9	9.5	7.9	9.6	4.5	11.0	7.61
Rented	8.4	Q	.2	.5	.9	1.5	1.3	.9	2.8	17.48
Single-Family Attached	6.0	Q	1.0	.8	1.5	.6	.5	.3	1.2	26.20
Owned	3.7	Q	Q	.5	.7	.3	.3	Q	.8	31.62
Rented	2.3	Q	.3	.3	.8	.3	.2	Q	.3	33.42
Multifamily (2 to 4 units)	10.0	Q	Q	.5	1.5	1.3	8	1.0	4.2	19.71
Owned	2.5	Q	Q	Q	Q	.3	.2	.2	1.1	35.08
Rented	7.5	Q	Q	.3	1.4	.9	.6	.8	3.1	20.99
Multifamily (5 or more units)	14.4	.2	.6	1.6	5.5	2.8	1.1	.4	2.2	18.76
Owned	1.8	Q	NC	Q	1.0	Q	Q	NC	.5	45.54
Rented	12.6	.2	.6	1.6	4.5	2.7	.9	.4	1.8	19.62
Mobile Home	5.2	.5	.6	.8	2.5	.7	Q	NC	Q	17.56
Owned	4.3	.5	.6	.7	2.0	.4	Q	NC	Q	20.42
Rented	1.0	Q	Q	Q	.5	.2	Q	NC	Q	39.30
Household Characteristics										
1990 Family Income Category										
Less than \$5,000	5.2	Q	Q	.4	1.3	.8	.5	.4	1.8	21.89
\$5,000 to \$9,999	10.7	Q	.3	.6	2.2	1.7	1.4	1.1	3.3	15.41
\$10,000 to \$14,999	11.4	.3	.5	.7	2.2	1.9	1.7	1.0	3.1	12.72
\$15,000 to \$19,999	8.4	.2	Q	.8	1.9	1.1	1.2	.9	2.0	15.83
\$20,000 to \$24,999	9.0	Q	.4	.7	2.2	1.3	1.4	.8	2.1	14.90
\$25,000 to \$34,999	15.3	.4	.9	1.1	2.9	2.7	2.3	1.4	3.5	11.24
\$35,000 to \$49,999	16.7	.5	1.3	1.9	4.4	2.7	2.5	.8	2.7	12.02
\$50,000 to \$74,999	10.5	.3	.8	1.3	2.3	1.6	1.7	.5	1.8	15.10
\$75,000 or More	6.7	.6	.6	.5	2.1	1.0	.7	.2	1.1	18.47
Below Poverty Line										
100 Percent	13.2	Q	.3	.9	2.8	2.0	1.7	1.1	4.1	14.64
125 Percent	18.2	.3	.5	1.2	4.0	3.0	2.2	1.6	5.5	12.31
Eligible for Federal Assistance²										
27.9	.5	.8	1.7	5.9	4.5	3.8	2.7	8.1	9.81	
Payment Method for Utilities										
All Paid by Household	79.3	2.7	4.9	7.3	17.2	11.9	11.9	6.2	17.1	6.08
Some Paid, Some in Rent	8.7	Q	Q	.4	2.7	1.9	.8	.4	2.4	22.03
All Included in Rent	3.8	Q	Q	Q	1.0	.7	.5	.4	1.1	29.78
Other Method	2.2	Q	Q	Q	.6	.3	.2	Q	.8	32.50
Age of Householder										
Under 25 Years	5.8	.2	.4	.7	1.6	1.0	.4	.4	1.2	19.23
25 to 34 Years	21.8	.9	1.8	2.3	5.0	3.2	2.5	1.3	4.8	10.51
35 to 44 Years	20.2	.9	1.3	2.5	4.5	2.5	2.8	1.5	4.3	10.25
45 to 59 Years	19.7	.4	.9	1.4	5.3	3.8	2.7	1.3	3.8	10.88
60 Years and Over	26.6	.4	.7	1.2	5.0	4.4	5.1	2.6	7.3	10.40
Race of Householder										
White	80.9	2.5	4.7	7.0	18.5	12.6	11.8	5.8	18.0	5.93
Black	10.6	Q	Q	.5	2.4	1.8	1.3	1.1	3.0	18.09
Other	2.5	Q	.2	.5	.6	.4	.3	Q	.4	25.35
Householder of Hispanic Descent										
Yes	6.3	Q	.3	.4	1.7	.8	1.1	.6	1.3	20.86
No	87.6	2.7	4.8	7.6	19.7	14.0	12.3	6.5	20.1	6.12

See footnotes at end of table.

**Table 13. Household Characteristics by Year of Construction,
Million U.S. Households, 1990 (Continued)**

Housing Unit and Household Characteristics	Total	Year of Construction								RSE Row Factors	
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before		
		RSE Column Factors:	0.337	2.117	2.001	1.388	0.801	0.952	0.860	1.114	0.691
Household Characteristics											
Household Size											
1 Person	23.4	0.2	1.0	1.7	5.5	3.9	3.2	2.0	6.0	12.05	
2 Persons	30.6	1.0	2.0	2.1	6.5	5.0	5.1	2.0	6.8	8.27	
3 Persons	15.8	.5	.8	1.7	3.5	2.7	1.7	1.2	3.6	11.71	
4 Persons	13.9	.7	.9	1.6	3.4	2.0	1.8	.9	2.7	11.57	
5 Persons	6.7	.2	.4	.6	1.7	.8	1.1	.5	1.3	16.26	
6 or More Persons	3.6	Q	Q	.3	.9	.4	.4	.4	1.1	22.21	
Household Owns or Has Regular Use of a Vehicle											
Yes	83.9	2.6	5.0	7.4	20.0	13.3	12.0	6.0	17.6	6.40	
No	10.1	Q	Q	.6	1.4	1.5	1.4	1.0	3.9	15.06	

¹ Does not include all new construction for 1990.

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

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 14. Household Characteristics by Year of Construction,
Percent of U.S. Households, 1990**

Housing Unit and Household Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	RSE Column Factors:	0.375	2.043	1.891	1.373	0.812	0.938	0.869	1.127	0.674
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Housing Unit Characteristics.										
Census Region and Division										
Northeast	20.5	14.3	12.0	7.4	13.2	17.9	24.6	19.9	34.7	11.84
New England	4.8	8.5	3.8	Q	3.3	3.9	4.7	4.9	8.1	16.89
Middle Atlantic	15.6	Q	8.2	5.9	9.9	14.0	20.0	15.0	26.6	11.78
Midwest	24.5	30.5	14.4	15.6	25.0	20.8	21.2	31.0	31.7	10.96
East North Central	17.7	24.4	8.9	12.2	17.3	15.1	14.5	23.6	23.2	12.63
West North Central	6.9	6.1	5.5	3.4	7.7	5.6	6.7	7.4	8.5	14.55
South	34.4	41.9	54.6	43.6	40.4	40.8	30.9	30.6	18.1	8.30
South Atlantic	17.6	17.4	43.5	24.4	19.6	19.3	13.7	15.8	8.8	12.92
East South Central	6.8	19.0	7.4	5.4	7.1	8.4	7.1	5.2	4.7	17.80
West South Central	9.9	Q	Q	13.8	13.6	13.1	10.1	9.6	4.5	15.94
West	20.6	13.3	19.1	33.4	21.4	20.6	23.2	18.6	15.5	10.39
Mountain	5.2	Q	5.2	10.0	4.6	4.9	6.2	5.3	3.7	19.12
Pacific	15.5	10.7	13.9	23.4	16.8	15.7	17.0	13.2	11.8	11.11
Urban Status										
Urban	77.5	67.5	84.3	76.9	78.5	79.4	81.7	73.0	74.1	2.90
Central City	31.8	10.0	19.1	25.0	27.4	27.8	31.5	35.4	46.1	9.58
Suburban	45.8	57.6	65.2	51.9	51.1	51.6	50.2	37.6	27.9	6.07
Rural	22.5	32.5	15.7	23.1	21.5	20.6	18.3	27.0	25.9	9.87
Climate Zone										
Under 2,000 CDD and--										
Over 7,000 HDD	10.8	16.4	4.5	9.1	12.3	6.8	7.9	12.5	14.5	23.11
5,500 to 7,000 HDD	28.4	27.8	18.7	18.7	25.5	24.1	26.6	30.4	40.7	12.30
4,000 to 5,499 HDD	22.3	22.3	28.1	13.6	16.8	23.0	28.9	25.1	24.0	15.92
Under 4,000 HDD	20.5	20.1	23.7	31.9	23.4	20.2	20.3	15.9	14.5	14.22
2,000 CDD or More and --										
Under 4,000 HDD	18.1	13.3	25.0	26.8	22.0	25.9	16.3	16.1	6.3	15.80
Heated Floorspace Category (square feet)										
Fewer than 600	8.5	7.3	4.7	4.5	9.7	9.4	9.0	6.0	10.0	18.66
600 to 999	24.0	15.2	26.1	29.8	29.2	24.5	18.3	27.9	19.2	10.24
1,000 to 1,599	28.2	26.8	28.5	30.3	25.7	28.2	30.0	31.5	27.9	8.61
1,600 to 1,999	13.4	Q	18.8	12.7	12.9	12.5	15.3	12.1	13.8	13.12
2,000 to 2,399	9.6	Q	7.3	9.2	8.2	8.8	12.4	10.6	10.4	13.96
2,400 to 2,999	8.3	13.8	5.7	7.9	8.1	8.9	7.2	7.5	9.3	15.57
3,000 or More	7.9	23.6	8.9	5.5	6.3	7.8	7.8	4.5	9.4	18.02
Ownership of Unit										
Owned	66.3	80.4	73.9	65.5	62.4	61.4	77.3	68.7	62.4	3.67
Rented	33.7	19.6	26.1	34.5	37.6	38.6	22.7	31.3	37.6	8.21

See footnotes at end of table.

Table 14. Household Characteristics by Year of Construction, Percent of U.S. Households, 1990 (Continued)

Housing Unit and Household Characteristics	Total	Year of Construction								RSE Row Factors	
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before		
		RSE Column Factors:	0.375	2.043	1.891	1.373	0.812	0.938	0.869	1.127	0.674
Housing Unit Characteristics											
Type and Ownership of Housing Unit											
Single-Family Detached	62.1	64.3	43.2	54.2	48.8	63.5	81.8	77.3	64.3	4.80	
Owned	53.2	57.5	38.7	48.0	44.5	53.2	72.1	64.4	51.2	5.41	
Rented	8.9	Q	4.5	6.2	4.3	10.2	9.7	12.8	13.2	16.68	
Single-Family Attached	6.4	Q	20.6	9.6	6.8	4.1	3.8	3.6	5.4	25.07	
Owned	3.9	Q	15.4	5.9	3.3	2.3	2.6	Q	3.8	29.60	
Rented	2.5	Q	5.2	3.6	3.6	1.8	1.2	Q	1.6	33.07	
Multifamily (2 to 4 units)	10.6	Q	Q	5.8	7.1	8.6	5.8	13.9	19.5	18.76	
Owned	2.7	Q	Q	Q	Q	2.3	1.2	2.6	5.2	33.73	
Rented	8.0	Q	Q	3.7	6.6	6.3	4.6	11.3	14.4	20.31	
Multifamily (5 or more units)	15.3	7.6	11.0	20.3	25.6	19.2	8.0	5.2	10.5	18.00	
Owned	1.9	Q	NC	Q	4.6	Q	Q	NC	2.2	43.49	
Rented	13.4	6.6	11.0	19.4	21.0	18.6	6.9	5.2	8.2	18.95	
Mobile Home	5.5	17.2	12.0	10.1	11.7	4.6	Q	NC	Q	17.94	
Owned	4.5	16.5	11.7	8.5	9.5	3.0	Q	NC	Q	20.83	
Rented	1.0	Q	Q	Q	2.2	1.6	Q	NC	Q	38.26	
Household Characteristics											
1990 Family Income Category											
Less than \$5,000	5.6	Q	Q	4.7	5.9	5.4	3.8	5.5	8.2	21.31	
\$5,000 to \$9,999	11.4	Q	5.0	7.5	10.2	11.5	10.4	15.7	15.3	14.58	
\$10,000 to \$14,999	12.1	9.2	10.0	8.5	10.3	12.6	13.0	14.3	14.6	12.51	
\$15,000 to \$19,999	9.0	8.7	Q	10.6	8.7	7.6	9.1	12.2	9.5	14.81	
\$20,000 to \$24,999	9.6	Q	6.9	8.3	10.3	8.7	10.4	11.0	9.9	14.12	
\$25,000 to \$34,999	16.3	15.2	18.0	13.9	13.7	18.2	17.4	20.0	16.1	9.69	
\$35,000 to \$49,999	17.8	16.5	25.7	23.2	20.4	18.5	18.3	11.4	12.7	10.40	
\$50,000 to \$74,999	11.2	12.2	16.6	16.7	10.9	10.8	12.5	7.7	8.6	13.74	
\$75,000 or More	7.2	21.7	12.1	6.6	9.6	6.6	5.2	2.2	5.2	17.33	
Below Poverty Line											
100 Percent	14.0	Q	6.9	11.6	13.2	13.4	12.7	15.3	19.0	14.10	
125 Percent	9.4	10.4	9.0	14.9	18.9	20.0	16.6	22.8	25.4	11.63	
Eligible for Federal Assistance²											
Payment Method for Utilities											
All Paid by Household	84.4	96.4	96.7	91.5	80.4	80.6	89.2	88.5	79.6	1.99	
Some Paid, Some in Rent	9.2	Q	Q	4.9	12.4	13.2	5.9	5.0	11.4	21.31	
All Included in Rent	4.0	Q	Q	Q	4.5	4.4	3.6	5.1	5.1	29.21	
Other Method	2.4	Q	Q	Q	2.7	1.8	1.3	Q	3.9	31.36	
Age of Householder											
Under 25 Years	6.1	6.2	8.0	8.7	7.3	6.4	2.7	5.0	5.8	18.53	
25 to 34 Years	23.1	33.2	35.6	28.4	23.1	21.3	18.6	19.0	22.4	8.66	
35 to 44 Years	21.5	32.3	25.1	30.6	21.1	17.0	20.6	21.1	19.9	8.38	
45 to 59 Years	20.9	14.3	18.1	17.3	24.9	25.7	20.3	18.3	17.9	9.44	
60 Years and Over	28.3	14.1	13.2	15.0	23.5	29.6	37.8	36.7	34.0	8.94	
Race of Householder											
White	86.1	90.2	92.7	87.7	86.3	85.1	87.9	81.9	84.1	2.14	
Black	11.3	Q	Q	6.4	11.0	12.4	10.0	16.3	14.1	17.10	
Other	2.6	Q	3.7	5.9	2.7	2.4	2.2	Q	1.9	24.96	
Householder of Hispanic Descent											
Yes	6.8	Q	6.2	4.8	7.9	5.7	8.2	8.2	6.2	19.62	
No	93.2	96.3	93.8	95.2	92.1	94.3	91.8	91.8	93.8	1.31	

See footnotes at end of table.

**Table 14. Household Characteristics by Year of Construction,
Percent of U.S. Households, 1990 (Continued)**

Housing Unit and Household Characteristics		Year of Construction								RSE Row Factors
		Total	1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	
	RSE Column Factors:	0.375	2.043	1.891	1.373	0.812	0.938	0.869	1.127	0.674
Household Characteristics										
Household Size										
1 Person	24.9	7.8	19.0	21.2	25.4	26.1	23.8	28.8	27.8	9.74
2 Persons	32.5	36.7	38.8	25.9	30.4	33.9	38.1	29.1	31.9	6.62
3 Persons	16.8	19.7	16.0	20.9	16.4	18.3	13.1	17.3	16.6	10.53
4 Persons	14.8	26.1	17.4	20.5	15.7	13.5	13.5	12.1	12.5	10.47
5 Persons	7.1	9.0	7.6	7.5	7.9	5.6	8.4	7.3	6.0	15.09
6 or More Persons	3.9	Q	Q	4.1	4.2	2.7	3.2	5.4	5.2	21.39
Household Owns or Has Regular Use of a Vehicle										
Yes	89.3	94.8	97.5	92.5	93.3	89.7	89.9	85.4	82.0	1.46
No	10.7	Q	Q	7.5	6.7	10.3	10.1	14.6	18.0	13.90

¹ Does not include all new construction for 1990.

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

NC = No cases in sample.

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. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 15. Average Floorspace, Characteristics of U.S. Households, 1990

Housing Unit and Household Characteristics	Total Households (millions)	Average Square Feet per Housing Unit		Average Heated Square Feet per Household Member				Average Heated Square Feet per Housing Unit			RSE Row Factors
		Total	Heated	All Households	Single-Family	Multi-family	Mobile Home	Single-Family	Multi-family	Mobile Home	
		RSE Column Factors:	1.135	0.695	0.695	0.770	0.863	1.364	2.270	0.758	0.995
Total	94.0	1,800	1,569	602	663	454	342	1,865	928	921	2.94
Housing Unit Characteristics											
Census Region and Division											
Northeast	19.2	2,099	1,798	680	781	483	319	2,266	1,052	913	4.60
New England	4.5	2,046	1,673	667	817	456	317	2,210	998	968	5.50
Middle Atlantic	14.7	2,115	1,836	684	772	494	321	2,281	1,072	890	5.29
Midwest	23.1	2,035	1,767	705	766	570	365	2,108	1,008	937	4.21
East North Central	16.6	2,032	1,773	701	766	577	348	2,141	1,024	921	4.31
West North Central	6.5	2,041	1,752	714	785	547	428	2,031	960	989	4.31
South	32.3	1,624	1,453	557	610	412	291	1,673	836	879	4.01
South Atlantic	16.6	1,607	1,437	568	623	446	301	1,673	865	881	5.10
East South Central	6.4	1,675	1,507	597	665	410	309	1,776	757	893	3.08
West South Central	9.3	1,618	1,444	514	559	349	Q	1,607	832	853	5.44
West	19.4	1,521	1,301	484	525	371	423	1,543	807	969	4.66
Mountain	4.8	1,614	1,418	517	561	373	365	1,654	747	956	6.69
Pacific	14.6	1,489	1,263	473	511	370	475	1,602	818	978	5.12
Urban Status											
Urban	72.9	1,809	1,584	611	675	451	369	1,926	924	917	2.55
Central City	29.8	1,553	1,395	556	622	458	341	1,787	937	895	4.32
Suburban	43.0	1,987	1,715	647	703	441	384	1,996	905	928	3.08
Rural	21.1	1,770	1,518	571	624	483	320	1,685	980	925	4.51
Climate Zone											
Under 2,000 CDD and--											
Over 7,000 HDD	10.1	2,075	1,719	707	781	570	320	2,029	1,015	916	3.01
5,500 to 7,000 HDD	26.7	2,044	1,785	686	761	496	382	2,179	958	1,009	4.21
4,000 to 5,499 HDD	20.9	1,880	1,656	636	699	479	371	1,966	1,020	870	4.92
Under 4,000 HDD	19.3	1,485	1,310	502	548	403	325	1,533	856	882	4.80
2,000 CDD or More and --											
Under 4,000 HDD	17.0	1,514	1,328	488	534	362	290	1,536	791	880	4.68
Heated Floorspace Category (square feet)											
Fewer than 600	8.0	554	428	231	148	271	214	359	444	497	6.76
600 to 999	22.5	885	817	362	353	394	299	851	793	824	2.10
1,000 to 1,599	26.5	1,499	1,267	466	462	491	438	1,286	1,203	1,201	2.36
1,600 to 1,999	12.6	2,114	1,778	642	635	787	685	1,777	1,804	1,713	3.97
2,000 to 2,399	9.0	2,479	2,182	771	758	910	Q	2,182	2,187	Q	3.60
2,400 to 2,999	7.8	2,997	2,649	852	843	1,029	Q	2,653	2,580	Q	3.44
3,000 or More	7.4	4,379	3,924	1304	1,295	1,726	NC	3,922	4,015	NC	4.89
Ownership of Unit											
Owned	62.3	2,180	1,870	689	714	713	354	1,978	1,429	956	2.48
Rented	31.7	1,055	979	408	428	399	286	1,297	820	768	3.07

See footnotes at end of table.

Table 15. Average Floorspace, Characteristics of U.S. Households, 1990 (Continued)

Housing Unit and Household Characteristics	Total Households (millions)	Average Square Feet per Housing Unit		Average Heated Square Feet per Household Member				Average Heated Square Feet per Housing Unit			RSE Row Factors	
		Total	Heated	All Households	Single-Family	Multi-family	Mobile Home	Single-Family	Multi-family	Mobile Home		
		RSE Column Factors:	1.135	0.695	0.695	0.770	0.863	1.364	2.270	0.758	0.995	1.175
Housing Unit Characteristics												
Type and Ownership of Housing Unit												
Single-Family Detached	58.4	2,242	1,904	668	668	--	--	1,904	--	--	2.19	
Owned	50.0	2,359	1,999	713	713	--	--	1,999	--	--	2.24	
Rented	8.4	1,543	1,337	426	426	--	--	1,337	--	--	4.66	
Single-Family Attached	6.0	1,669	1,486	608	608	--	--	1,486	--	--	8.05	
Owned	3.7	1,926	1,693	729	729	--	--	1,693	--	--	9.53	
Rented	2.3	1,256	1,152	436	436	--	--	1,152	--	--	8.11	
Multifamily (2 to 4 units)	10.0	1,179	1,108	494	--	494	--	--	1,108	--	4.81	
Owned	2.5	1,742	1,602	749	--	749	--	--	1,602	--	10.66	
Rented	7.5	989	941	413	--	413	--	--	941	--	4.33	
Multifamily (5 or more units)	14.4	810	804	422	--	422	--	--	804	--	3.71	
Owned	1.8	1,209	1,189	653	--	653	--	--	1,189	--	7.99	
Rented	12.6	753	749	390	--	390	--	--	749	--	3.68	
Mobile Home	5.2	939	921	342	--	--	342	--	--	921	4.13	
Owned	4.3	974	956	354	--	--	354	--	--	956	4.41	
Rented	1.0	784	768	286	--	--	286	--	--	768	7.93	
Year of Construction												
1939 or Before	21.5	1,900	1,637	638	690	492	Q	1,875	1,090	Q	3.73	
1940 to 1949	7.0	1,649	1,468	565	586	456	NC	1,575	1,019	NC	5.32	
1950 to 1959	13.4	1,846	1,616	631	678	324	Q	1,758	774	Q	5.36	
1960 to 1969	14.8	1,768	1,545	625	693	454	302	1,887	848	735	4.97	
1970 to 1979	21.4	1,692	1,478	557	636	457	331	1,951	876	914	3.74	
1980 to 1984	8.0	1,695	1,480	527	579	431	336	1,832	817	972	5.08	
1985 to 1987	5.1	1,817	1,581	606	680	467	387	1,939	938	978	8.33	
1988 to 1990 ¹	2.8	2,482	2,143	722	823	498	382	2,570	1,075	1,104	12.29	
Household Characteristics												
1990 Family Income Category												
Less than \$5,000	5.2	1,123	998	467	603	391	272	1,276	819	670	7.60	
\$5,000 to \$9,999	10.7	1,294	1,138	546	645	429	360	1,371	831	854	4.73	
\$10,000 to \$14,999	11.4	1,383	1,207	524	599	416	345	1,467	826	872	4.03	
\$15,000 to \$19,999	8.4	1,483	1,316	561	646	430	310	1,591	857	893	5.64	
\$20,000 to \$24,999	9.0	1,550	1,385	541	591	448	343	1,644	896	930	4.90	
\$25,000 to \$34,999	15.3	1,798	1,562	568	607	480	345	1,824	954	1,044	3.97	
\$35,000 to \$49,999	16.7	1,982	1,712	603	642	456	362	1,919	1,004	1,065	3.49	
\$50,000 to \$74,999	10.5	2,439	2,093	692	707	562	Q	2,242	1,201	Q	4.37	
\$75,000 or More	6.7	3,128	2,716	859	884	639	Q	2,889	1,572	Q	6.08	
Below Poverty Line												
100 Percent	13.2	1,223	1,105	385	437	343	246	1,348	847	807	4.19	
125 Percent	18.2	1,271	1,127	406	457	359	262	1,359	852	820	3.61	
Eligible for Federal Assistance²												
Payment Method for Utilities												
All Paid by Household	79.3	1,953	1,684	622	664	461	342	1,875	949	939	2.21	
Some Paid, Some in Rent	8.7	915	904	436	755	424	NC	1,346	885	NC	8.00	
All Included in Rent	3.8	804	773	400	479	381	Q	1,238	690	Q	9.56	
Other Method	2.2	1,509	1,413	624	753	713	334	1,628	1,605	788	13.99	

See footnotes at end of table.

Table 15. Average Floorspace, Characteristics of U.S. Households, 1990 (Continued)

Housing Unit and Household Characteristics	Total Households (millions)	Average Square Feet per Housing Unit		Average Heated Square Feet per Household Member				Average Heated Square Feet per Housing Unit			RSE Row Factors
		Total	Heated	All Households	Single-Family	Multi-family	Mobile Home	Single-Family	Multi-family	Mobile Home	
	RSE Column Factors:	1.135	0.695	0.695	0.770	0.863	1.364	2.270	0.758	0.995	1.175
Household Characteristics											
Age of Householder											
Under 25 Years	5.8	1,021	955	377	471	335	276	1,391	746	882	5.07
25 to 34 Years	21.8	1,512	1,350	443	496	373	254	1,698	877	896	3.47
35 to 44 Years	20.2	2,000	1,741	537	567	434	282	1,973	1,007	868	3.46
45 to 59 Years	19.7	2,091	1,801	697	739	528	452	2,034	1,025	1,002	4.28
60 Years and Over	26.6	1,840	1,580	877	933	703	565	1,798	996	927	3.44
Race of Householder											
White	80.9	1,865	1,618	635	698	467	350	1,910	920	931	2.02
Black	10.6	1,408	1,298	452	467	445	247	1,557	991	808	6.96
Other	2.5	1,369	1,135	339	365	280	Q	1,353	784	Q	8.26
Householder of Hispanic Descent											
Yes	6.3	1,379	1,239	375	416	311	213	1,479	883	814	6.10
No	87.6	1,831	1,593	623	683	475	351	1,889	933	927	2.27
Household Size											
1 Person	23.4	1,329	1,159	1159	1,518	763	859	1,518	763	859	3.18
2 Persons	30.6	1,864	1,630	815	956	508	479	1,913	1,016	959	3.04
3 Persons	15.8	1,854	1,613	538	613	349	315	1,838	1,047	945	3.12
4 Persons	13.9	2,224	1,931	483	531	287	226	2,125	1,149	906	3.41
5 Persons	6.7	2,051	1,793	359	391	226	191	1,954	1,130	955	4.45
6 or More Persons	3.6	1,986	1,705	258	282	146	144	1,877	938	917	8.39

¹ Does not include all new construction for 1990.² Below 150 percent of poverty line or 60 percent of median State income.

NC = No cases in sample.

-- = 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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Household Characteristics

Table 16. Total Floorspace, Characteristics of U.S. Households, 1990

Housing Unit and Household Characteristics	Total Households		Total Square Footage				RSE Row Factors	
	(millions)	(percent)	Total		Heated			
			(billions)	(percent)	(billions)	(percent)		
RSE Column Factors:	0.927	0.927	1.060	1.011	1.065	1.020		
Total	94.0	100.0	169.2	100.0	147.5	100.0	1.57	
Housing Unit Characteristics								
Census Region and Main Heating Fuel								
Northeast	19.2	20.5	40.3	23.8	34.6	23.4	3.40	
Fuel Oil	7.4	7.9	16.4	9.7	13.9	9.4	7.37	
Kerosene	.3	.3	.3	.2	.3	.2	44.74	
Natural Gas	8.7	9.3	18.1	10.7	16.0	10.8	10.51	
Electricity	2.0	2.1	3.5	2.1	2.8	1.9	11.39	
Wood	.5	.5	1.4	.8	1.1	.7	44.40	
Other	.3	.3	.6	.3	.5	.3	31.15	
Midwest	23.1	24.5	46.9	27.7	40.8	27.6	2.71	
Natural Gas	16.5	17.5	34.1	20.1	30.0	20.3	5.81	
Electricity	2.6	2.8	4.0	2.4	3.5	2.4	25.24	
Fuel Oil	1.2	1.3	3.1	1.9	2.5	1.7	24.57	
LPG	1.6	1.7	3.3	2.0	2.7	1.8	18.69	
Wood	1.0	1.1	2.2	1.3	1.9	1.3	22.62	
Other	Q	Q	Q	Q	Q	Q	99.99	
South	32.3	34.4	52.4	31.0	46.9	31.8	3.13	
Natural Gas	14.1	15.0	24.6	14.6	22.0	14.9	8.98	
Electricity	12.3	13.1	18.9	11.2	16.9	11.5	7.92	
Fuel Oil	1.5	1.6	2.7	1.6	2.4	1.7	20.93	
Kerosene	.7	.7	.7	.4	.7	.4	21.23	
LPG	2.2	2.3	3.1	1.8	2.7	1.9	25.69	
Wood	1.2	1.3	2.2	1.3	2.0	1.3	18.97	
Other/None	.3	.3	.3	.2	Q	Q	44.56	
West	19.4	20.6	29.5	17.4	25.2	17.1	2.94	
Natural Gas	12.4	13.2	19.7	11.6	17.2	11.7	5.22	
Electricity	4.6	4.9	6.0	3.5	5.3	3.6	13.80	
Wood	1.2	1.2	1.9	1.1	1.5	1.0	24.55	
Other/None	1.2	1.3	1.9	1.1	1.2	.8	29.03	
Urban Status								
Urban	72.9	77.5	131.8	77.9	115.4	78.3	1.90	
Central City	29.8	31.8	46.4	27.4	41.6	28.2	2.42	
Suburban	43.0	45.8	85.5	50.5	73.8	50.0	1.77	
Rural	21.1	22.5	37.4	22.1	32.1	21.7	2.69	
Climate Zone								
Under 2,000 CDD and--								
Over 7,000 HDD	10.1	10.8	21.0	12.4	17.4	11.8	13.03	
5,500 to 7,000 HDD	26.7	28.4	54.5	32.2	47.6	32.3	6.88	
4,000 to 5,499 HDD	20.9	22.3	39.3	23.2	34.6	23.5	10.12	
Under 4,000 HDD	19.3	20.5	28.6	16.9	25.2	17.1	8.56	
2,000 CDD or More and --								
Under 4,000 HDD	17.0	18.1	25.7	15.2	22.6	15.3	7.39	

See footnotes at end of table.

Table 16. Total Floorspace, Characteristics of U.S. Households, 1990 (Continued)

Housing Unit and Household Characteristics	Total Households		Total Square Footage				RSE Row Factors	
	(millions)	(percent)	Total		Heated			
			(billions)	(percent)	(billions)	(percent)		
RSE Column Factors:	0.927	0.927	1.060	1.011	1.065	1.020		
Housing Unit Characteristics								
Heated Floorspace Category (square feet)								
Fewer than 600	8.0	8.5	4.5	2.6	3.4	2.3	6.41	
600 to 999	22.5	24.0	19.9	11.8	18.4	12.5	4.31	
1,000 to 1,599	26.5	28.2	39.8	23.5	33.6	22.8	3.77	
1,600 to 1,999	12.6	13.4	26.7	15.8	22.4	15.2	4.41	
2,000 to 2,399	9.0	9.6	22.4	13.2	19.7	13.3	4.84	
2,400 to 2,999	7.8	8.3	23.5	13.9	20.8	14.1	5.97	
3,000 or More	7.4	7.9	32.5	19.2	29.1	19.8	7.42	
Ownership of Unit								
Owned	62.3	66.3	135.8	80.2	116.4	78.9	1.52	
Rented	31.7	33.7	33.4	19.8	31.1	21.1	3.52	
Type and Ownership of Housing Unit								
Single-Family Detached	58.4	62.1	130.9	77.3	111.1	75.3	2.01	
Owned	50.0	53.2	117.9	69.7	99.9	67.7	2.29	
Rented	8.4	8.9	12.9	7.6	11.2	7.6	5.61	
Single-Family Attached	6.0	6.4	10.0	5.9	8.9	6.0	11.41	
Owned	3.7	3.9	7.1	4.2	6.3	4.2	13.95	
Rented	2.3	2.5	2.9	1.7	2.7	1.8	16.52	
Multifamily (2 to 4 units)	10.0	10.6	11.8	7.0	11.1	7.5	3.21	
Owned	2.5	2.7	4.4	2.6	4.0	2.7	15.37	
Rented	7.5	8.0	7.4	4.4	7.0	4.8	7.29	
Multifamily (5 or more units)	14.4	15.3	11.7	6.9	11.6	7.9	7.57	
Owned	1.8	1.9	2.2	1.3	2.2	1.5	20.87	
Rented	12.6	13.4	9.5	5.6	9.4	6.4	7.62	
Mobile Home	5.2	5.5	4.9	2.9	4.8	3.3	12.06	
Owned	4.3	4.5	4.1	2.5	4.1	2.8	13.73	
Rented	1.0	1.0	.7	.4	.7	.5	18.13	
Year of Construction								
1939 or Before	21.5	22.8	40.8	24.1	35.1	23.8	4.61	
1940 to 1949	7.0	7.5	11.6	6.8	10.3	7.0	6.59	
1950 to 1959	13.4	14.2	24.7	14.6	21.6	14.7	5.22	
1960 to 1969	14.8	15.8	26.2	15.5	22.9	15.5	6.05	
1970 to 1979	21.4	22.8	36.3	21.4	31.7	21.5	6.04	
1980 to 1984	8.0	8.5	13.6	8.0	11.9	8.1	8.47	
1985 to 1987	5.1	5.4	9.2	5.5	8.0	5.4	14.89	
1988 to 1990 ¹	2.8	2.9	6.9	4.1	5.9	4.0	18.17	
Household Characteristics								
1990 Family Income Category								
Less than \$5,000	5.2	5.6	5.9	3.5	5.2	3.5	6.36	
\$5,000 to \$9,999	10.7	11.4	13.8	8.2	12.2	8.2	6.17	
\$10,000 to \$14,999	11.4	12.1	15.7	9.3	13.7	9.3	4.69	
\$15,000 to \$19,999	8.4	9.0	12.5	7.4	11.1	7.5	6.10	
\$20,000 to \$24,999	9.0	9.6	14.0	8.3	12.5	8.5	6.69	
\$25,000 to \$34,999	15.3	16.3	27.5	16.2	23.9	16.2	3.64	
\$35,000 to \$49,999	16.7	17.8	33.1	19.6	28.6	19.4	4.01	
\$50,000 to \$74,999	10.5	11.2	25.6	15.2	22.0	14.9	5.42	
\$75,000 or More	6.7	7.2	21.1	12.4	18.3	12.4	7.90	

See footnotes at end of table.

Table 16. Total Floorspace, Characteristics of U.S. Households, 1990 (Continued)

Housing Unit and Household Characteristics	Total Households		Total Square Footage				RSE Row Factors	
	(millions)	(percent)	Total		Heated			
			(billions)	(percent)	(billions)	(percent)		
	RSE Column Factors:	0.927	0.927	1.060	1.011	1.065	1.020	
Household Characteristics								
Below Poverty Line								
100 Percent	13.2	14.0	16.1	9.5	14.5	9.9	5.88	
125 Percent	18.2	19.4	23.2	13.7	20.5	13.9	4.78	
Eligible for Federal Assistance²	27.9	29.7	37.9	22.4	33.3	22.6	3.55	
Payment Method for Utilities								
All Paid by Household	79.3	84.4	154.9	91.5	133.6	90.6	1.53	
Some Paid, Some in Rent	8.7	9.2	7.9	4.7	7.8	5.3	8.11	
All Included in Rent	3.8	4.0	3.0	1.8	2.9	2.0	11.29	
Other Method	2.2	2.4	3.3	2.0	3.1	2.1	14.88	
Age of Householder								
Under 25 Years	5.8	6.1	5.9	3.5	5.5	3.7	7.06	
25 to 34 Years	21.8	23.1	32.9	19.4	29.4	19.9	4.30	
35 to 44 Years	20.2	21.5	40.3	23.8	35.1	23.8	3.30	
45 to 59 Years	19.7	20.9	41.2	24.3	35.5	24.0	3.88	
60 Years and Over	26.6	28.3	49.0	28.9	42.0	28.5	3.12	
Race of Householder								
White	60.9	86.1	150.9	89.2	130.9	88.8	1.45	
Black	10.6	11.3	14.9	8.8	13.7	9.3	7.76	
Other	2.5	2.6	3.4	2.0	2.8	1.9	10.38	
Householder of Hispanic Descent								
Yes	6.3	6.8	8.8	5.2	7.9	5.3	9.55	
No	87.6	93.2	160.5	94.8	139.6	94.7	1.72	
Household Size								
1 Person	23.4	24.9	31.1	18.4	27.1	18.4	2.20	
2 Persons	30.6	32.5	57.0	33.7	49.8	33.8	2.67	
3 Persons	15.8	16.8	29.3	17.3	25.5	17.3	4.48	
4 Persons	13.9	14.8	31.0	18.3	26.9	18.2	3.89	
5 Persons	6.7	7.1	13.7	8.1	12.0	8.1	5.61	
6 or More Persons	3.6	3.9	7.2	4.3	6.2	4.2	8.83	

¹ Does not include all new construction for 1990.² 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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 17. Household Characteristics by Family Income,
Million U.S. Households, 1990**

Housing Unit and Household Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent			
	RSE Column Factors:	0.439	1.778	1.276	1.078	0.935	0.971	1.022	1.103	1.177	0.995	0.775	
Total	94.0	5.2	10.7	11.4	17.4	15.3	16.7	17.3	13.2	18.2	27.9	4.06	
Housing Unit Characteristics													
Census Region and Division													
Northeast	19.2	.9	2.0	1.9	2.9	3.1	3.9	4.6	2.2	3.0	5.3	9.01	
New England	4.5	.2	.6	.5	.6	.8	1.0	.9	.6	.8	1.4	10.98	
Middle Atlantic	14.7	.7	1.4	1.4	2.2	2.4	2.9	3.7	1.6	2.2	3.8	10.63	
Midwest	23.1	1.1	2.7	3.3	4.5	3.8	4.1	3.7	2.7	3.9	6.5	8.16	
East North Central	16.6	.8	1.9	2.3	3.1	2.7	3.0	2.8	2.0	2.8	4.6	9.42	
West North Central	6.5	.3	.8	1.0	1.3	1.1	1.1	.9	.6	1.1	1.8	11.02	
South	32.3	2.5	3.9	3.8	6.5	5.0	5.4	5.2	5.5	7.5	10.4	7.32	
South Atlantic	16.6	.9	1.8	1.9	3.5	2.5	2.8	3.1	2.0	3.0	4.9	10.61	
East South Central	6.4	.6	1.0	.8	1.3	.9	1.0	.8	1.3	1.8	2.1	13.88	
West South Central	9.3	.9	1.2	1.1	1.8	1.5	1.6	1.2	2.2	2.7	3.3	13.74	
West	19.4	.8	2.1	2.3	3.6	3.4	3.4	3.8	2.8	3.8	5.8	7.98	
Mountain	4.8	.3	.6	.5	.9	1.0	1.0	.6	.7	1.0	1.4	15.52	
Pacific	14.6	.6	1.5	1.8	2.7	2.4	2.4	3.2	2.1	2.8	4.4	8.94	
Urban Status													
Urban	72.9	3.7	7.2	8.0	13.4	11.4	13.9	15.3	9.0	12.3	19.4	4.77	
Central City	29.8	2.5	3.7	4.2	6.2	3.9	4.6	4.7	5.3	7.1	10.1	6.96	
Suburban	43.0	1.2	3.5	3.8	7.2	7.5	9.3	10.6	3.7	5.2	9.4	6.83	
Rural	21.1	1.5	3.5	3.4	4.1	3.9	2.9	1.9	4.2	6.0	8.4	8.10	
Climate Zone													
Under 2,000 CDD and--													
Over 7,000 HDD	10.1	.3	1.5	1.3	1.6	2.0	1.8	1.6	1.2	1.9	2.8	19.53	
5,500 to 7,000 HDD	26.7	1.4	2.9	3.3	5.1	4.5	4.7	5.0	3.2	4.4	7.4	9.89	
4,000 to 5,499 HDD	20.9	1.0	2.1	2.6	3.4	3.3	4.0	4.6	2.4	3.5	6.2	13.77	
Under 4,000 HDD	19.3	1.4	2.1	2.1	4.3	2.9	2.9	3.5	3.4	4.4	5.9	12.32	
2,000 CDD or More and --													
Under 4,000 HDD	17.0	1.2	2.0	2.1	3.1	2.6	3.4	2.5	2.9	4.0	5.6	12.74	
Heated Floorspace Category (square feet)													
Fewer than 600	8.0	1.5	1.9	1.6	1.5	.8	.5	.3	2.5	3.1	4.2	12.85	
600 to 999	22.5	2.0	3.7	4.1	5.5	3.4	2.7	1.2	4.7	6.5	9.2	8.19	
1,000 to 1,599	26.5	1.1	3.2	3.2	5.2	5.1	5.5	3.3	3.7	5.3	8.4	7.83	
1,600 to 1,999	12.6	.3	1.0	1.1	2.2	2.3	2.6	3.1	1.2	1.6	2.8	11.58	
2,000 to 2,399	9.0	Q	.5	.6	1.3	1.3	2.3	2.8	.4	.7	1.4	13.31	
2,400 to 2,999	7.8	.2	.3	.5	1.0	1.4	1.7	2.7	.4	.6	1.2	15.74	
3,000 or More	7.4	Q	.2	.3	.7	1.0	1.3	3.8	.2	.3	.6	19.39	
Ownership of Unit													
Owned	62.3	1.7	5.5	6.1	10.0	10.3	13.2	15.4	5.3	8.2	14.0	5.64	
Rented	31.7	3.5	5.2	5.2	7.5	4.9	3.5	1.8	7.9	10.0	13.9	6.83	

See footnotes at end of table.

**Table 17. Household Characteristics by Family Income,
Million U.S. Households, 1990 (Continued)**

Housing Unit and Household Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors	
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent				
		RSE Column Factors:	0.439	1.778	1.276	1.078	0.935	0.971	1.022	1.103	1.177	0.995	0.775	
Housing Unit Characteristics														
Type and Ownership of Housing Unit														
Single-Family Detached	58.4	2.0	5.6	6.2	9.8	9.6	11.5	13.8	6.2	9.1	15.1	5.66		
Owned	50.0	1.3	4.2	4.8	7.7	8.3	10.4	13.2	4.1	6.3	11.0	6.52		
Rented	8.4	.7	1.3	1.4	2.1	1.3	1.1	.6	2.1	2.7	4.0	11.86		
Single-Family Attached	6.0	.2	.5	.5	1.3	1.0	1.4	1.1	.6	.9	.9	1.3	19.35	
Owned	3.7	Q	.2	Q	.7	.6	1.1	.9	.2	.3	.6	26.26		
Rented	2.3	Q	.2	.3	.6	.4	.3	.2	.5	.7	.7	26.71		
Multifamily (2 to 4 units)	10.0	1.0	1.6	1.5	2.2	1.3	1.2	1.3	2.0	2.6	3.9	13.19		
Owned	2.5	Q	.3	.3	.3	.4	.4	.8	.2	.3	.7	29.01		
Rented	7.5	.9	1.3	1.2	2.0	.9	.8	.5	1.8	2.3	3.2	13.69		
Multifamily (5 or more units)	14.4	1.6	2.2	2.3	2.9	2.6	1.9	1.1	3.0	3.9	5.3	12.30		
Owned	1.8	Q	Q	Q	.3	.2	.6	.5	Q	Q	Q	33.48		
Rented	12.6	1.6	2.1	2.2	2.5	2.3	1.3	.6	2.9	3.8	5.2	12.99		
Mobile Home	5.2	.5	1.0	.9	1.2	.8	.7	Q	1.2	1.7	2.3	17.12		
Owned	4.3	.2	.7	.8	1.0	.8	.7	Q	.7	1.1	1.6	20.13		
Rented	1.0	.2	.3	.2	.2	Q	Q	NC	.5	.6	.7	25.75		
Year of Construction														
1939 or Before	21.5	1.8	3.3	3.1	4.2	3.5	2.7	3.0	4.1	5.5	8.1	8.01		
1940 to 1949	7.0	.4	1.1	1.0	1.6	1.4	.8	.7	1.1	1.6	2.7	13.56		
1950 to 1959	13.4	.5	1.4	1.7	2.6	2.3	2.5	2.4	1.7	2.2	3.8	10.26		
1960 to 1969	14.8	.8	1.7	1.9	2.4	2.7	2.7	2.6	2.0	3.0	4.5	11.11		
1970 to 1979	21.4	1.3	2.2	2.2	4.1	2.9	4.4	4.4	2.8	4.0	5.9	9.65		
1980 to 1984	8.0	.4	.6	.7	1.5	1.1	1.9	1.9	.9	1.2	1.7	17.80		
1985 to 1987	5.1	Q	.3	.5	.6	.9	1.3	1.5	.3	.5	.8	26.71		
1988 to 1990 ²	2.8	Q	Q	.3	.5	.4	.5	.9	Q	.3	.5	26.97		
Household Characteristics														
Payment Method for Utilities														
All Paid by Household	79.3	3.3	8.3	9.1	14.5	12.9	15.2	16.0	9.6	13.8	21.7	4.47		
Some Paid, Some in Rent	8.7	1.1	1.1	1.4	1.8	1.5	.9	.9	2.0	2.3	3.3	14.92		
All Included in Rent	3.8	.6	.9	.5	.7	.5	.3	.2	1.2	1.5	2.0	18.36		
Other Method	2.2	.2	.3	.4	.4	.4	.3	.2	.4	.5	.9	25.17		
Age of Householder														
Under 25 Years	5.8	1.0	.8	1.2	1.3	.8	.5	.2	1.8	2.0	2.6	14.73		
25 to 34 Years	21.8	.8	1.7	2.4	4.0	4.4	4.6	3.8	2.9	4.0	6.0	8.65		
35 to 44 Years	20.2	.8	1.0	1.4	3.1	3.4	4.7	5.9	2.3	2.8	4.0	9.36		
45 to 59 Years	19.7	.8	1.3	1.5	3.4	3.3	4.2	5.2	2.0	2.8	3.9	9.27		
60 Years and Over	26.6	1.9	5.8	5.0	5.7	3.3	2.7	2.2	4.2	6.6	11.3	6.67		
Race of Householder														
White	80.9	3.5	8.6	9.6	14.7	13.6	15.0	16.0	9.3	13.6	21.7	4.37		
Black	10.6	1.5	1.9	1.5	2.2	1.3	1.4	.8	3.3	4.0	5.1	12.32		
Other	2.5	.2	.3	.3	.6	.4	.3	.5	.6	.7	1.0	20.35		
Householder of Hispanic Descent														
Yes	6.3	.5	.8	.9	1.3	1.0	1.2	.7	1.5	2.0	2.8	17.08		
No	87.6	4.7	9.9	10.5	16.1	14.3	15.5	16.5	11.7	16.3	25.1	4.28		

See footnotes at end of table.

**Table 17. Household Characteristics by Family Income,
Million U.S. Households, 1990 (Continued)**

Housing Unit and Household Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Flow Factors	
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent				
	RSE Column Factors:	0.439	1.778	1.276	1.078	0.935	0.971	1.022	1.103	1.177	0.995	0.775		
Household Characteristics														
Household Size														
1 Person	23.4	2.3	5.1	4.0	4.9	3.2	2.2	1.6	3.9	5.6	8.5	7.13		
2 Persons	30.6	1.5	2.8	3.6	6.0	5.1	6.1	5.5	3.2	4.6	7.3	3.69		
3 Persons	15.8	.6	1.1	1.8	2.9	2.6	3.4	3.5	1.6	2.4	4.0	10.04		
4 Persons	13.9	.4	.9	1.0	2.0	2.3	3.0	4.3	1.9	2.5	3.6	10.01		
5 Persons	6.7	.2	.4	.5	1.1	1.3	1.5	1.7	1.1	1.5	2.3	12.76		
6 or More Persons	3.6	.2	.4	.5	.6	.8	.5	.6	1.4	1.6	2.1	16.87		
Household Owns or Has Regular Use of a Vehicle														
Yes	83.9	2.8	7.2	9.5	16.0	14.8	16.4	17.1	8.7	12.5	20.7	4.67		
No1	2.4	3.5	1.9	1.4	.4	.3	Q	4.5	5.7	7.2	9.69		

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

² Does not include all new construction for 1990.

NC = No cases in sample.

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-467 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 18. Household Characteristics by Family Income,
Percent of U.S. Households, 1990**

Housing Unit and Household Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent			
	RSE Column Factors:	0.480	1.755	1.253	1.068	0.942	0.981	1.023	1.069	1.151	0.987	0.774	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Housing Unit Characteristics													
Census Region and Division													
Northeast	20.5	17.1	18.5	16.9	16.4	20.4	23.0	26.7	16.9	16.6	18.9	8.31	
New England	4.8	4.1	5.3	4.3	3.7	5.0	5.7	5.3	4.4	4.4	5.2	11.59	
Middle Atlantic	15.6	13.0	13.2	12.5	12.7	15.4	17.3	21.4	12.4	12.2	13.7	9.90	
Midwest	24.5	20.2	25.1	29.1	25.6	25.1	24.3	21.2	20.1	21.3	23.1	7.36	
East North Central	17.7	15.4	17.5	20.5	18.0	17.8	17.8	16.1	15.2	15.4	16.6	8.72	
West North Central	6.9	4.8	7.6	8.7	7.6	7.3	6.6	5.1	4.9	6.0	6.5	11.19	
South	34.4	47.1	36.8	33.6	37.3	32.6	32.4	30.0	42.1	41.0	37.2	5.67	
South Atlantic	17.6	17.3	16.4	17.0	19.8	16.5	17.0	18.2	15.5	16.7	17.5	9.92	
East South Central	6.8	12.0	9.5	7.1	7.3	6.2	5.8	4.6	10.1	9.7	7.6	13.76	
West South Central	9.9	17.7	10.9	9.5	10.1	9.9	9.7	7.2	16.5	14.6	12.0	12.92	
West	20.6	15.7	19.6	20.4	20.7	22.0	20.2	22.1	20.9	21.1	20.8	7.50	
Mountain	5.2	5.1	5.6	4.4	5.2	6.4	5.7	3.7	5.3	5.7	4.9	15.32	
Pacific	15.5	10.6	14.0	16.0	15.5	15.5	14.5	18.5	15.6	15.4	15.9	8.53	
Urban Status													
Urban	77.5	70.9	67.2	69.9	76.7	74.7	82.9	88.9	68.4	67.3	69.7	2.43	
Central City	31.8	47.7	34.3	36.9	35.8	25.6	27.6	27.3	40.2	38.9	36.1	5.78	
Suburban	45.8	23.1	33.0	33.0	41.0	49.1	55.3	61.6	28.3	28.5	33.6	5.42	
Rural	22.5	29.1	32.8	30.1	23.3	25.3	17.1	11.1	31.6	32.7	30.3	7.12	
Climate Zone													
Under 2,000 CDD and--													
Over 7,000 HDD	10.8	5.7	13.8	11.4	9.2	13.1	10.8	9.5	9.4	10.5	10.2	19.19	
5,500 to 7,000 HDD	28.4	26.1	27.2	28.6	29.0	29.3	27.8	28.8	24.5	24.3	26.5	9.47	
4,000 to 5,499 HDD	22.3	18.6	20.0	22.4	19.5	21.3	23.7	26.9	18.4	19.0	22.1	12.99	
Under 4,000 HDD	20.5	26.6	20.1	18.7	24.5	18.9	17.6	20.3	25.6	24.3	21.2	11.79	
2,000 CDD or More and --													
Under 4,000 HDD	18.1	23.0	19.0	18.9	17.8	17.3	20.2	14.5	22.1	21.9	20.0	11.90	
Heated Floorspace Category (square feet)													
Fewer than 600	8.5	28.1	17.4	13.6	8.9	5.5	2.9	1.6	19.1	17.2	15.2	12.27	
600 to 999	24.0	37.4	34.2	36.2	31.5	22.0	16.2	7.1	35.6	35.9	33.0	6.66	
1,000 to 1,599	28.2	20.9	29.6	28.1	29.9	33.2	32.9	18.9	28.2	29.0	30.2	6.80	
1,600 to 1,999	13.4	6.3	9.1	9.6	12.6	14.8	15.8	18.0	9.1	9.0	10.1	10.95	
2,000 to 2,399	9.6	Q	4.6	5.7	7.6	8.6	13.7	16.3	3.3	3.8	5.1	12.79	
2,400 to 2,999	8.3	3.6	2.7	4.6	5.8	9.2	10.4	15.7	3.2	3.4	4.2	15.78	
3,000 or More	7.9	Q	2.2	2.2	3.9	6.7	8.0	22.3	1.6	1.6	2.2	18.87	
Ownership of Unit													
Owned	66.3	32.6	51.5	54.0	57.1	67.7	78.9	89.4	40.3	45.0	50.3	3.81	
Rented	33.7	67.4	48.5	46.0	42.9	32.3	21.1	10.6	59.7	55.0	49.7	5.51	

See footnotes at end of table.

Table 18. Household Characteristics by Family Income,
Percent of U.S. Households, 1990 (Continued)

Housing Unit and Household Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors	
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent				
	RSE Column Factors:	0.480	1.755	1.253	1.068	0.942	0.981	1.023	1.069	1.151	0.987	0.774		
Housing Unit Characteristics														
Type and Ownership of Housing Unit														
Single-Family Detached	62.1	38.1	52.1	54.6	56.1	62.6	68.6	79.8	47.3	49.8	54.0	4.14		
Owned	53.2	25.5	39.6	42.5	44.0	54.4	62.3	76.5	31.5	34.8	39.6	5.18		
Rented	8.9	12.6	12.5	12.1	12.1	8.2	6.4	3.3	15.8	15.0	14.4	11.57		
Single-Family Attached	6.4	3.9	4.2	4.3	7.6	6.7	8.4	6.4	4.8	5.0	4.7	19.22		
Owned	3.9	Q	1.9	Q	4.0	4.0	6.6	5.1	1.2	1.4	2.0	26.82		
Rented	2.5	Q	2.3	2.9	3.7	2.7	1.8	1.3	3.7	3.6	2.7	26.52		
Multifamily (2 to 4 units)	10.6	18.3	14.6	12.8	12.9	8.5	7.3	7.3	15.4	14.2	14.1	12.70		
Owned	2.7	Q	2.8	2.6	1.5	2.5	2.4	4.7	1.6	1.8	2.5	28.59		
Rented	8.0	17.0	11.9	10.2	11.4	5.9	5.0	2.6	13.8	12.4	11.6	13.44		
Multifamily (5 or more units)	15.3	31.1	20.1	20.1	16.4	16.7	11.3	6.1	22.9	21.5	19.1	11.28		
Owned	1.9	Q	Q	Q	1.8	1.6	3.4	2.8	Q	Q	Q	32.74		
Rented	13.4	30.6	19.4	19.3	14.6	15.1	7.8	3.4	22.4	20.7	18.5	11.98		
Mobile Home	5.5	8.7	8.9	8.3	7.0	5.5	4.4	Q	9.5	9.4	8.2	16.50		
Owned	4.5	4.1	6.5	6.8	5.8	5.2	4.2	Q	5.5	6.2	5.7	19.66		
Rented	1.0	4.6	2.4	1.5	1.2	Q	Q	NC	3.9	3.3	2.4	25.32		
Year of Construction														
1939 or Before	22.8	33.6	30.6	27.4	23.8	22.6	16.3	17.2	31.1	30.0	28.9	7.30		
1940 to 1949	7.5	7.4	10.3	8.8	9.3	9.2	4.8	4.0	8.2	8.8	9.6	12.95		
1950 to 1959	14.2	9.8	13.0	15.2	14.9	15.2	14.7	13.7	12.9	12.2	13.6	9.40		
1960 to 1969	15.8	15.5	16.0	16.4	13.9	17.6	16.4	14.9	15.1	16.3	16.3	10.65		
1970 to 1979	22.8	24.1	20.5	19.3	23.4	19.2	26.2	25.5	21.6	22.2	21.0	8.65		
1980 to 1984	8.5	7.3	5.6	6.0	8.7	7.3	11.1	10.8	7.1	6.6	5.9	17.24		
1985 to 1987	5.4	Q	2.4	4.4	3.4	6.0	7.8	8.5	2.6	2.5	2.8	26.05		
1988 to 1990 ²	2.9	Q	Q	2.2	2.6	2.8	2.7	5.4	Q	1.6	1.8	26.45		
Household Characteristics														
Payment Method for Utilities														
All Paid by Household	84.4	62.4	78.0	80.0	83.0	84.7	91.0	92.7	73.0	76.0	77.9	2.19		
Some Paid, Some in Rent	9.2	21.5	10.1	12.3	10.5	9.5	5.4	5.1	15.2	12.7	11.7	14.33		
All Included in Rent	4.0	12.4	8.8	4.0	4.1	3.4	1.7	1.3	9.0	8.4	7.1	18.19		
Other Method	2.4	3.6	3.1	3.7	2.4	2.4	2.0	.9	2.9	2.8	3.3	24.95		
Age of Householder														
Under 25 Years	6.1	18.5	7.7	10.4	7.4	5.1	3.0	1.3	13.4	11.2	9.5	14.45		
25 to 34 Years	23.1	14.6	16.1	21.2	23.2	29.1	27.6	21.8	22.3	22.1	21.6	7.35		
35 to 44 Years	21.5	15.0	9.8	12.2	17.6	22.1	27.8	34.0	17.1	15.4	14.5	8.04		
45 to 59 Years	20.9	15.5	12.5	12.7	19.3	21.9	25.2	30.0	15.5	15.4	13.9	8.48		
60 Years and Over	28.3	36.4	53.9	43.5	32.7	21.8	16.4	13.0	31.6	36.0	40.6	5.89		
Race of Householder														
White	86.1	67.4	80.0	84.3	84.0	89.2	89.4	92.7	70.8	74.4	78.0	2.09		
Black	11.3	29.1	17.4	13.0	12.7	8.4	8.5	4.6	24.8	21.9	18.5	11.52		
Other	2.6	3.5	2.6	2.6	3.2	2.3	2.1	2.7	4.3	3.6	3.6	20.09		
Householder of Hispanic Descent														
Yes	6.8	10.2	7.3	7.7	7.5	6.2	7.2	4.1	11.5	10.8	10.1	16.53		
No	93.2	89.8	92.7	92.3	92.5	93.8	92.8	95.9	88.5	89.2	89.9	1.63		

See footnotes at end of table.

**Table 18. Household Characteristics by Family Income,
Percent of U.S. Households, 1990 (Continued)**

Housing Unit and Household Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors	
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent				
	RSE Column Factors:	0.480	1.755	1.253	1.068	0.942	0.981	1.023	1.069	1.151	0.987	0.774		
Household Characteristics														
Household Size														
1 Person	24.9	44.2	47.9	35.1	28.2	21.0	13.4	9.2	29.9	30.5	30.4	5.83		
2 Persons	32.5	29.1	26.0	31.6	34.2	33.3	36.2	32.1	24.6	25.1	26.2	5.57		
3 Persons	16.8	11.3	9.8	16.1	16.4	17.0	20.3	20.2	11.8	13.4	14.5	9.40		
4 Persons	14.8	6.9	8.8	8.8	11.5	15.3	18.0	24.8	14.8	13.7	13.0	9.42		
5 Persons	7.1	3.8	4.1	4.2	6.2	8.3	8.8	10.1	8.3	8.4	8.4	8.4	12.19	
6 or More Persons	3.9	4.7	3.4	4.3	3.4	5.1	3.2	3.5	10.6	8.9	7.6	7.6	15.36	
Household Owns or Has Regular Use of a Vehicle														
Yes	89.3	54.3	67.7	83.4	91.7	97.1	98.0	99.2	65.9	68.7	74.2	2.49		
No	10.7	45.7	32.3	16.6	8.3	2.9	2.0	Q	34.1	31.3	25.8	8.67		

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

² Does not include all new construction for 1990.

NC = No cases in sample.

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. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 19. Fuel Use by Census Region and Urban Status,
Million U.S. Households, 1990**

Housing Unit Characteristics	Total	Census Region					Urban Status			RSE Row Factors
		Northeast	Midwest	South	West	Urban			RSE Row Factors	
						Total	Central City	Suburban	Rural	
RSE Column Factors:	0.641	1.075	1.253	1.119	1.255	0.739	1.033	0.913	1.183	RSE Row Factors
Total	94.0	19.2	23.1	32.3	19.4	72.9	29.8	43.0	21.1	0.00
Fuels Used for Any Use (more than one often used)										
Electricity	94.0	19.2	23.1	32.3	19.4	72.9	29.8	43.0	21.1	0.00
Natural Gas	57.7	11.9	16.9	15.3	13.7	48.6	22.3	26.3	9.1	4.24
Wood	24.9	4.4	5.7	8.5	6.3	18.3	4.6	13.8	6.5	6.65
Fuel Oil and/or Kerosene	16.3	8.9	2.8	4.0	.6	11.5	3.9	7.6	4.8	8.96
Fuel Oil	11.7	8.0	1.6	1.7	Q	8.8	2.9	5.9	2.9	10.08
Kerosene	5.3	1.2	1.4	2.5	.2	3.1	1.0	2.1	2.2	14.22
LPG ¹	8.2	1.2	2.4	3.5	1.1	3.8	.5	3.3	4.4	16.13
Coal	.7	.3	Q	Q	Q	.3	Q	.2	Q	36.03
Solar Collectors	.9	Q	Q	Q	.6	.8	.3	.5	.1	23.74
Main Heating Fuel and Equipment										
Natural Gas	51.7	8.7	16.5	14.1	12.4	43.1	19.4	23.7	8.7	4.90
Central Warm-Air Furnace	34.9	4.1	13.1	9.6	8.1	29.1	11.3	17.8	5.8	6.24
For One Housing Unit	33.3	3.9	12.4	9.2	7.8	27.6	10.5	17.2	5.6	6.38
For Two or More Units	1.6	Q	.8	.4	.2	1.5	.8	.7	.2	22.29
Steam or Hot-Water System	8.3	4.5	2.5	.7	.5	7.7	4.5	3.1	.6	12.16
For One Housing Unit	4.5	2.7	1.1	.4	.3	4.2	2.1	2.1	.3	17.41
For Two or More Units	3.7	1.8	1.4	.3	.2	3.5	2.4	1.0	.3	18.03
Floor, Wall, or Pipeless Furnace	5.1	Q	.4	1.6	3.0	4.0	2.1	1.9	1.1	12.66
Room Heater/Other	3.5	.1	.4	2.2	.7	2.3	1.4	.9	1.2	20.55
Electricity	21.5	2.0	2.6	12.3	4.6	17.4	7.1	10.3	4.1	10.27
Built-In Electric Units	6.7	1.3	1.5	1.7	2.2	4.9	1.9	3.0	1.8	15.62
Central Warm-Air Furnace	7.4	Q	.8	5.2	1.2	6.1	3.0	3.2	1.3	20.26
For One Housing Unit	7.2	Q	.8	5.1	1.2	6.0	2.8	3.2	1.3	20.55
Heat Pump	6.4	.5	.3	4.8	.8	5.6	1.9	3.7	.8	22.27
Other	.9	Q	Q	.6	.3	.8	.4	.3	.2	28.97
Fuel Oil	10.4	7.4	1.2	1.5	Q	8.0	2.6	5.3	2.5	10.88
Steam or Hot-Water System	5.7	5.3	Q	Q	Q	5.1	1.9	3.1	.6	11.68
For One Housing Unit	3.6	3.3	Q	Q	Q	3.1	.6	2.5	.5	14.31
For Two or More Units	2.1	2.0	Q	Q	NC	1.9	1.3	.6	Q	26.89
Central Warm-Air Furnace	4.4	2.0	1.0	1.0	Q	2.7	.7	2.1	1.6	15.70
Other	.3	Q	Q	.2	Q	Q	Q	Q	.2	32.54
Wood	3.9	.5	1.0	1.2	1.2	1.5	.2	1.3	2.4	20.32
Heating Stove	2.9	Q	.5	1.0	1.0	.9	Q	.8	2.0	18.11
Other	1.0	Q	.5	.3	Q	.6	Q	.6	.3	28.21
LPG	4.4	.2	1.6	2.2	.4	2.0	Q	1.9	.8	22.08
Central Warm-Air Furnace	2.6	Q	1.2	1.1	.2	1.3	Q	1.2	1.3	23.52
Room Heater	1.2	Q	.2	.9	Q	.4	NC	.4	.8	38.39
Other	.6	Q	.2	Q	Q	.3	Q	.3	.3	42.37
Kerosene	1.1	.3	Q	.7	Q	.5	Q	.3	.6	26.75
Other	.3	Q	Q	Q	Q	Q	NC	Q	Q	55.33
None	.6	NC	NC	Q	.5	Q	Q	Q	.4	24.55
Secondary Heating Fuel (more than one may apply)										
No	53.6	11.9	14.0	17.1	10.6	42.8	20.0	22.8	10.8	2.84
Yes	40.4	7.3	9.1	15.2	8.8	30.1	9.8	20.2	10.3	3.86
Wood	20.8	3.9	4.6	7.2	5.1	16.8	4.4	12.4	4.0	7.26
Electricity	16.6	3.0	3.4	6.4	3.8	12.1	4.8	7.3	4.5	6.87
Natural Gas	2.5	.4	.5	1.0	.6	1.9	1.0	.9	.6	17.24
Fuel Oil	.7	.3	Q	Q	Q	.4	Q	.3	.3	34.16
Kerosene	4.2	.9	1.3	1.9	.2	2.6	.8	1.8	1.6	14.55
LPG	.9	.1	.3	.4	Q	.4	Q	.3	.6	29.74
Other	.6	.2	Q	Q	.2	.4	Q	.2	Q	34.03

See footnotes at end of table.

**Table 19. Fuel Use by Census Region and Urban Status,
Million U.S. Households, 1990 (Continued)**

Housing Unit Characteristics	Total	Census Region				Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban					
		Total	Central City	Suburban	Rural						
RSE Column Factors:	0.641	1.075	1.253	1.119	1.255	0.739	1.033	0.913	1.183		
Secondary Heating Equipment (more than one may apply)											
No	53.6	11.9	14.0	17.1	10.6	42.8	20.0	22.8	10.8	2.84	
Yes	40.4	7.3	9.1	15.2	8.8	30.1	9.8	20.2	10.3	3.86	
Fireplace	17.2	2.9	3.8	6.2	4.4	14.8	4.0	10.7	2.4	8.01	
Portable Electric Heater	12.8	2.2	2.8	5.0	2.8	9.8	3.8	5.9	3.1	7.34	
Portable Kerosene Heater	4.2	.9	1.3	1.9	.2	2.6	.8	1.8	1.6	15.23	
Oil or Gas Room Heater	1.4	.2	.3	.8	Q	.9	.4	.5	.5	21.66	
Wood or Coal Heating Stove	5.2	1.4	1.1	1.4	1.3	3.2	.8	2.4	2.0	12.82	
Cooking Stove	1.2	.2	.3	.4	.2	.8	.4	.4	.3	25.58	
Built-In Electric Units	4.1	.7	.5	1.6	1.2	2.6	1.2	1.5	1.4	20.42	
Central Warm-Air Furnace	1.0	Q	.3	.3	.3	.5	Q	.3	.6	26.75	
Forced Air	1.0	Q	.3	.3	.3	.4	Q	.3	.6	27.37	
Heat Pump4	Q	Q	.3	Q	.3	Q	Q	.2	33.05	
Other	1.0	.3	.2	.2	.3	.7	.2	.5	.3	22.38	
Main Water-Heating Fuel											
Natural Gas	50.0	9.5	14.8	12.8	12.9	43.4	19.6	23.8	6.6	4.83	
Electricity	35.1	4.3	7.0	18.2	5.6	22.9	8.2	14.7	12.1	6.74	
Fuel Oil	5.1	4.9	Q	Q	Q	4.7	1.8	2.9	.4	10.69	
LPG	3.2	.3	1.2	1.1	.5	1.5	Q	1.4	1.7	21.84	
Solar Collectors4	Q	NC	Q	.3	.3	.2	.2	.1	32.21	
Other/None2	Q	Q	Q	Q	Q	Q	Q	.1	38.87	
Main Cooking Fuel											
Electricity	54.8	9.2	12.6	22.0	10.9	41.1	14.5	26.6	13.7	3.73	
Natural Gas	33.7	8.9	9.0	8.1	7.7	29.1	14.9	14.2	4.6	5.60	
LPG	5.4	1.0	1.4	2.2	.7	2.5	.3	2.2	2.8	18.56	
Other/None2	Q	Q	NC	Q	Q	Q	Q	Q	48.31	
Air Conditioning											
No	30.3	8.5	6.1	4.2	11.6	22.3	10.8	11.5	8.0	6.05	
Yes ²	63.7	10.8	17.0	28.1	7.8	50.6	19.0	31.6	13.1	2.97	
Electric	63.3	10.7	16.9	28.0	7.7	50.3	18.9	31.4	13.1	3.01	
Number of Rooms Usually Air-Conditioned											
All	41.6	4.2	10.5	21.7	5.1	33.7	12.2	21.5	7.9	4.43	
Some	22.0	6.5	6.4	6.4	2.7	16.8	6.8	10.0	5.2	6.60	
None	30.4	8.5	6.1	4.2	11.6	22.4	10.8	11.5	8.0	6.05	
Natural Gas Available in Neighborhood											
No	26.3	5.2	4.4	12.8	4.0	15.9	3.8	12.1	10.4	8.93	
Yes	67.7	14.0	18.7	19.5	15.4	56.9	26.0	31.0	10.7	3.17	
Uses Natural Gas	57.7	11.9	16.9	15.3	13.7	48.6	22.3	26.3	9.1	4.24	
Does not Use Natural Gas	10.0	2.1	1.9	4.2	1.7	8.3	3.7	4.6	1.6	10.97	
Wood Burned in Past 12 Months											
No	71.1	15.3	17.7	24.5	13.6	56.1	25.6	30.5	15.0	2.11	
Yes	22.9	3.9	5.4	7.8	5.8	16.8	4.2	12.5	6.1	6.76	
One-Third Cord or Less	10.8	2.0	2.4	3.4	2.9	9.5	2.9	6.6	1.3	10.38	
More than One-Third Cord	12.1	2.0	3.0	4.3	2.9	7.3	1.3	5.9	4.8	8.14	

¹ Excludes 20.1 million households that use LPG only for outdoor grills.

² An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 20. Fuel Use by Census Region and Urban Status,
Percent of U.S. Households, 1990**

Household Characteristics	Total	Census Region				Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			RSE Row Factors		
						Total	Central City	Suburban	Rural		
RSE Column Factors:	0.641	1.075	1.253	1.119	1.255	0.739	1.033	0.913	1.183		
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00	
Fuels Used for Any Use (more than one often used)											
Electricity	100.0	100.0	100.0	100.0	99.8	100.0	100.0	100.0	99.8	NE	
Natural Gas	61.4	61.9	73.1	47.3	70.7	66.7	74.7	61.2	43.1	4.24	
Wood	26.5	23.0	24.6	26.2	32.7	25.2	15.4	32.0	31.0	6.65	
Fuel Oil and/or Kerosene	17.3	46.1	12.2	12.3	3.3	15.8	13.1	17.7	22.5	8.96	
Fuel Oil	12.5	41.6	6.8	5.4	Q	12.1	9.8	13.7	13.6	10.08	
Kerosene	5.7	6.2	6.0	7.7	1.2	4.3	3.3	5.0	10.4	14.22	
LPG ¹	8.8	6.3	10.4	10.8	5.9	5.3	1.8	7.7	20.8	16.13	
Coal	.8	1.4	Q	Q	Q	.4	Q	.5	Q	36.03	
Solar Collectors	1.0	Q	Q	Q	3.1	1.1	1.0	1.1	.6	23.74	
Main Heating Fuel and Equipment											
Natural Gas	55.0	45.5	71.5	43.7	68.9	59.1	65.0	55.1	41.0	4.90	
Central Warm-Air Furnace	37.1	21.2	56.9	29.8	41.7	40.0	37.9	41.4	27.4	6.24	
For One Housing Unit	35.4	20.2	53.6	28.4	40.4	37.9	35.2	39.9	26.6	6.38	
For Two or More Units	1.7	Q	3.3	1.4	1.3	2.0	2.7	1.5	.8	22.29	
Steam or Hot-Water System	8.8	23.5	11.0	2.1	2.7	10.5	15.2	7.3	2.8	12.16	
For One Housing Unit	4.8	14.1	4.8	1.2	1.6	5.7	7.0	4.9	1.5	17.41	
For Two or More Units	4.0	9.4	6.2	.9	1.2	4.8	8.2	2.4	1.3	18.03	
Floor, Wall, or Pipelineless Furnace	5.4	Q	1.9	5.0	15.6	5.5	7.1	4.3	5.2	12.66	
Room Heater/Other	3.7	.7	1.7	6.9	3.9	3.2	4.8	2.0	5.6	20.55	
Electricity	22.9	10.4	11.4	38.1	23.7	23.9	23.9	23.8	19.6	10.27	
Built-In Electric Units	7.1	6.7	6.5	5.3	11.4	6.7	6.2	7.1	8.6	15.62	
Central Warm-Air Furnace	7.9	Q	3.5	16.3	6.4	8.4	9.9	7.4	6.1	20.26	
For One Housing Unit	7.7	Q	3.5	15.7	6.4	8.2	9.3	7.4	6.1	20.55	
Heat Pump	6.9	2.6	1.4	14.8	4.3	7.7	6.4	8.6	4.0	22.27	
Other	1.0	Q	Q	1.7	1.6	1.0	1.4	.8	.9	28.97	
Fuel Oil	11.1	38.5	5.2	4.7	Q	10.9	8.8	12.4	11.6	10.88	
Steam or Hot-Water System	6.1	27.8	Q	Q	Q	6.9	6.5	7.3	3.0	11.68	
For One Housing Unit	3.8	17.4	Q	Q	Q	4.3	2.0	5.9	2.3	14.31	
For Two or More Units	2.2	10.4	Q	Q	NC	2.7	4.5	1.4	Q	26.69	
Central Warm-Air Furnace	4.6	10.5	4.5	3.2	Q	3.8	2.2	4.8	7.7	15.70	
Other	.4	Q	Q	.7	Q	Q	Q	Q	.9	32.54	
Wood	4.1	2.6	4.4	3.8	6.1	2.1	.6	3.1	11.3	20.32	
Heating Stove	3.1	Q	2.3	3.0	5.4	1.2	Q	1.8	9.6	18.11	
Other	1.0	Q	2.1	.8	Q	.9	Q	1.3	1.6	28.21	
LPG	4.7	.9	6.9	6.8	2.2	2.8	Q	4.3	11.1	22.08	
Central Warm-Air Furnace	2.8	Q	5.3	3.4	1.0	1.8	Q	2.7	6.1	23.52	
Room Heater	1.2	Q	.7	2.9	Q	.5	NC	.9	3.6	38.39	
Other	.6	Q	.9	Q	Q	.4	Q	.7	1.3	42.37	
Kerosene	1.2	1.6	Q	2.0	Q	.7	Q	.7	2.7	26.75	
Other	.3	Q	Q	Q	Q	Q	NC	Q	Q	55.33	
None	.7	NC	NC	Q	2.5	Q	Q	Q	2.0	24.55	
Secondary Heating Fuel (more than one may apply)											
No	57.0	62.0	60.6	52.8	54.9	58.7	67.0	53.0	51.3	2.84	
Yes	43.0	38.0	39.4	47.2	45.1	41.3	33.0	47.0	48.7	3.86	
Wood	22.1	20.2	20.1	22.2	26.4	23.0	14.7	28.8	19.0	7.26	
Electricity	17.7	15.6	14.6	19.9	19.6	16.6	16.0	17.1	21.2	6.87	
Natural Gas	2.7	2.0	2.4	2.9	3.3	2.6	3.4	2.0	2.9	17.24	
Fuel Oil	.8	1.8	Q	Q	Q	.8	Q	.7	1.6	34.16	
Kerosene	4.5	4.6	5.5	5.8	1.1	3.6	2.7	4.2	7.6	14.55	
LPG	1.0	.6	1.4	1.3	Q	.5	Q	.6	2.7	29.74	
Other	.7	1.0	Q	Q	.8	.5	Q	.6	Q	34.03	

See footnotes at end of table.

Table 20. Fuel Use by Census Region and Urban Status, Percent of U.S. Households, 1990 (Continued)

Household Characteristics	Total	Census Region				Urban Status				RSE Row Factors
		Northeast	Midwest	South	West	Total	Central City	Suburban	Rural	
		0.641	1.075	1.253	1.119	1.255	0.739	1.033	0.913	1.183
Secondary Heating Equipment (more than one may apply)										
No	57.0	62.0	60.6	52.8	54.9	58.7	67.0	53.0	51.3	2.84
Yes	43.0	38.0	39.4	47.2	45.1	41.3	33.0	47.0	48.7	3.86
Fireplace	18.3	14.9	16.3	19.2	22.6	20.3	13.5	24.9	11.6	8.01
Portable Electric Heater	13.6	11.2	12.3	15.4	14.6	13.4	12.9	13.8	14.5	7.34
Portable Kerosene Heater	4.5	4.5	5.4	5.8	1.0	3.5	2.6	4.2	7.7	15.23
Oil or Gas Room Heater	1.5	1.1	1.3	2.5	Q	1.2	1.2	1.2	2.5	21.66
Wood or Coal Heating Stove	5.5	7.3	5.0	4.3	6.5	4.4	2.7	5.6	9.3	12.82
Cooking Stove	1.2	1.0	1.4	1.2	1.3	1.2	1.4	1.0	1.5	25.58
Built-In Electric Units	4.3	3.8	2.3	4.8	6.4	3.6	3.9	3.4	6.8	20.42
Central Warm-Air Furnace	1.1	Q	1.1	1.0	1.5	.6	Q	.7	2.7	26.75
Forced Air	1.0	Q	1.1	.9	1.3	.5	Q	.6	2.7	27.37
Heat Pump5	Q	Q	.9	Q	.4	Q	Q	.8	33.05
Other	1.1	1.4	.9	.7	1.5	.9	.7	1.1	1.6	22.38
Main Water-Heating Fuel										
Natural Gas	53.2	49.6	64.0	39.6	66.6	59.5	65.6	55.3	31.5	4.83
Electricity	37.3	22.3	30.3	56.3	28.9	31.5	27.5	34.2	57.4	6.74
Fuel Oil	5.4	25.5	Q	Q	Q	6.4	5.9	6.7	2.0	10.69
LPG	3.4	1.7	5.2	3.5	2.7	2.0	Q	3.2	8.0	21.84
Solar Collectors5	Q	NC	Q	1.7	.5	.6	.4	.5	32.20
Other/None2	Q	Q	Q	Q	Q	Q	Q	.5	38.87
Main Cooking Fuel										
Electricity	58.3	47.9	54.7	68.0	56.4	56.4	48.6	61.8	64.6	3.73
Natural Gas	35.8	46.3	38.9	25.1	39.6	40.0	50.0	33.0	21.6	5.60
LPG	5.7	5.4	6.1	6.9	3.6	3.5	1.1	5.1	13.3	18.56
Other/None2	Q	Q	NC	Q	Q	Q	Q	Q	48.31
Air Conditioning										
No	32.2	44.1	26.5	12.9	59.7	30.6	36.3	26.6	37.9	6.05
Yes ²	67.7	55.9	73.5	87.1	40.3	69.4	63.7	73.4	62.1	2.97
Electric	67.4	55.9	73.3	86.7	39.5	69.0	63.3	72.9	61.8	3.01
Number of Rooms Usually Air-Conditioned										
All	44.2	22.0	45.7	67.3	26.2	46.3	40.9	50.0	37.3	4.43
Some	23.4	33.8	27.7	19.8	14.1	23.1	22.8	23.2	24.8	6.60
None	32.3	44.2	26.6	12.9	59.7	30.7	36.3	26.8	37.9	6.05
Natural Gas Available In Neighborhood										
No	28.0	27.0	18.9	39.6	20.4	21.8	12.9	28.1	49.2	8.93
Yes	72.0	73.0	81.1	60.4	79.6	78.2	87.1	71.9	50.8	3.17
Uses Natural Gas	61.4	61.9	73.1	47.3	70.7	66.7	74.7	61.2	43.1	4.24
Does Not Use Natural Gas	10.6	11.1	8.0	13.1	8.9	11.4	12.4	10.7	7.7	10.97
Wood Burned in Past 12 Months										
No	75.7	79.5	76.6	76.0	70.2	77.0	85.8	70.9	71.0	2.11
Yes	24.3	20.5	23.4	24.0	29.8	23.0	14.2	29.1	29.0	6.76
One-Third Cord or Less	11.4	10.2	10.5	10.6	15.1	13.0	9.7	15.3	6.0	10.38
More than One-Third Cord	12.9	10.3	12.9	13.4	14.7	10.0	4.5	13.8	22.9	8.14

¹ Excludes 20.1 million households that use LPG only for outdoor grills.² An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

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

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 21. Fuel Use by Family Income,
Million U.S. Households, 1990**

Housing Unit Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Fede- ral Assist- ance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Per- cent	125 Per- cent			
		RSE Column Factors:	0.490	1.840	1.244	1.126	0.931	0.917	0.905	0.991	1.238	1.039	0.804
Total	94.0	5.2	10.7	11.4	17.4	15.3	16.7	17.3	13.2	18.2	27.9	4.10	
Fuels Used for Any Use (more than one often used)													
Electricity	94.0	5.2	10.7	11.4	17.4	15.3	16.7	17.3	13.1	18.2	27.8	4.10	
Natural Gas	57.7	3.1	6.5	6.9	10.4	9.0	10.4	11.5	7.9	10.7	16.7	5.82	
Wood	24.9	.6	1.3	1.5	3.4	4.1	5.4	8.6	2.0	2.8	4.2	11.08	
Fuel Oil and/or Kerosene	16.3	.8	1.9	1.9	2.9	3.0	2.9	2.9	2.1	3.0	5.1	10.14	
Fuel Oil	11.7	.6	1.4	1.3	1.9	2.0	2.2	2.3	1.4	2.1	3.6	12.02	
Kerosene	5.3	.2	.7	.6	1.2	1.2	.9	.6	.8	1.1	1.8	18.11	
LPG ²	8.2	1.0	1.3	1.2	1.4	1.3	1.2	.9	2.1	2.7	3.7	16.37	
Coal	.7	Q	Q	Q	Q	Q	Q	.2	Q	Q	Q	46.37	
Solar Collectors	.9	Q	Q	Q	Q	.2	.2	.3	Q	Q	.1	34.87	
Main Heating Fuel and Equipment													
Natural Gas	51.7	2.6	5.9	6.2	9.5	8.1	9.1	10.5	6.9	9.4	14.7	5.07	
Central Warm-Air Furnace	34.9	1.0	2.9	3.5	6.3	5.8	7.1	8.4	3.0	4.5	7.6	7.82	
For One Housing Unit	33.3	.9	2.6	3.2	5.9	5.5	6.9	8.3	2.7	4.1	7.0	7.93	
For Two or More Units	1.6	Q	.3	.3	.5	.3	2	Q	.3	.3	.6	27.25	
Steam or Hot-Water System	8.3	.5	1.0	1.1	1.4	1.2	1.4	1.6	1.2	1.4	2.5	14.47	
For One Housing Unit	4.5	Q	.5	.5	.6	.7	.9	1.2	.4	.5	1.1	20.77	
For Two or More Units	3.7	.4	.6	.6	.8	.5	.4	.4	.8	.9	1.4	18.59	
Floor, Wall, or Pipeless Furnace	5.1	.5	1.0	.8	1.2	.7	.4	.4	1.4	1.9	2.6	15.69	
Room Heater/Other	3.5	.5	.9	.8	.5	.4	.3	Q	1.3	1.7	2.0	18.77	
Electricity	21.5	1.2	2.1	2.5	4.1	3.8	4.2	3.7	2.7	3.8	5.6	11.18	
Built-In Electric Units	6.7	.5	1.1	1.1	1.2	1.3	1.0	.6	1.3	1.7	2.5	17.25	
Central Warm-Air Furnace	7.4	.3	.4	.7	1.6	1.4	1.7	1.3	.6	1.0	1.4	21.82	
For One Housing Unit	7.2	.2	.4	.7	1.6	1.4	1.7	1.3	.6	.9	1.3	22.23	
Heat Pump	6.4	Q	.5	.5	1.1	.9	1.5	1.8	.4	.6	1.2	22.86	
Other	.9	Q	Q	Q	Q	Q	Q	Q	.4	.5	.6	31.98	
Fuel Oil	10.4	.5	1.3	1.1	1.6	1.8	1.9	2.2	1.2	1.8	3.1	12.69	
Steam or Hot-Water System	5.7	.3	.6	.5	.8	1.0	1.1	1.4	.6	1.0	1.6	17.12	
For One Housing Unit	3.6	Q	.3	.2	.4	.6	.8	1.2	.2	.3	.8	16.92	
For Two or More Units	2.1	.3	.3	.3	.4	.3	.3	Q	Q	.7	.8	27.71	
Central Warm-Air Furnace	4.4	.2	.6	.5	.8	.8	.8	.8	.6	.7	1.4	18.39	
Other	.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	52.91	
Wood	3.9	Q	.5	.5	.8	.7	.7	.5	.8	1.1	1.5	24.88	
Heating Stove	2.9	Q	.5	.3	.6	.5	.5	.4	.8	.9	1.2	27.30	
Other	1.0	NC	Q	Q	.2	.2	.2	Q	Q	.2	.3	39.83	
LPG	4.4	.6	.6	.7	.9	.6	.6	.3	1.1	1.5	2.1	21.13	
Central Warm-Air Furnace	2.6	.2	.2	.5	.5	.4	.5	.3	.4	.6	1.0	25.04	
Room Heater	1.2	.4	.2	.2	Q	Q	Q	Q	.6	.7	.8	27.94	
Other	.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	.3	54.31	
Kerosene	1.1	Q	Q	.2	.4	.2	Q	NC	.3	.4	.5	34.72	
Other	.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	72.30	
None	.6	NC	Q	Q	.2	Q	.1	Q	Q	Q	.2	36.67	
Secondary Heating Fuel (more than one may apply)													
No	53.6	3.8	7.2	7.9	10.9	8.6	8.9	6.2	8.8	12.3	18.8	4.92	
Yes	40.4	1.4	3.4	3.4	6.6	6.7	7.8	11.1	4.4	5.9	9.1	7.21	
Wood	20.8	.4	.7	1.0	2.6	3.4	4.7	8.0	1.2	1.7	2.7	12.53	
Electricity	16.6	.7	1.9	1.9	3.2	2.6	2.7	3.7	2.1	2.8	4.4	10.12	
Natural Gas	2.5	Q	.3	.2	.4	.4	.6	.5	.4	.5	.7	29.05	
Fuel Oil	.7	Q	Q	Q	Q	Q	Q	Q	Q	Q	.3	38.81	
Kerosene	4.2	Q	.5	.4	.8	1.0	.8	.6	.6	.8	1.4	18.70	
LPG	.9	Q	.2	Q	Q	.2	Q	.2	.2	.3	.4	40.86	
Other	.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	41.02	

See footnotes at end of table.

**Table 21. Fuel Use by Family Income,
Million U.S. Households, 1990 (Continued)**

Housing Unit Characteristics	Total	1990 Family Income							Below Poverty Line		Eli-gible for Fed-er-al Assis-tance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent		
		RSE Column Factors:	0.490	1.840	1.244	1.126	0.931	0.917	0.905	0.991	1.238	1.039
Secondary Heating Equipment (more than one may apply)												
No	53.6	3.8	7.2	7.9	10.9	8.6	8.9	6.2	8.8	12.3	18.8	4.92
Yes	40.4	1.4	3.4	3.4	6.6	6.7	7.8	11.1	4.4	5.9	9.1	7.21
Fireplace	17.2	.3	.4	.7	2.0	2.4	3.9	7.6	.7	1.0	1.8	13.72
Portable Electric Heater	12.8	.6	1.4	1.5	2.7	1.9	1.8	2.9	1.6	2.2	3.5	10.53
Portable Kerosene Heater	4.2	.1	.5	.4	.8	1.0	.8	.6	.6	.8	1.4	19.11
Oil or Gas Room Heater	1.4	Q	Q	Q	.3	.3	.2	.3	.2	.2	.3	30.01
Wood or Coal Heating Stove	5.2	Q	.4	.4	.9	1.2	1.1	1.1	.5	.7	1.1	19.05
Cooking Stove	1.2	.3	.4	Q	Q	Q	Q	Q	.5	.7	.8	23.09
Built-In Electric Units	4.1	Q	.3	.3	.6	.6	.9	1.2	.4	.5	.8	26.17
Central Warm-Air Furnace	1.0	Q	Q	Q	Q	.2	.2	.2	Q	Q	.3	37.02
Forced Air	1.0	Q	Q	Q	Q	.2	.2	.2	Q	Q	.3	38.45
Heat Pump4	Q	Q	NC	Q	Q	Q	Q	Q	Q	Q	46.76
Other	1.0	Q	Q	Q	Q	.2	.3	.2	Q	Q	.2	31.72
Main Water-Heating Fuel												
Natural Gas	50.0	2.5	5.6	5.7	9.0	7.7	9.0	10.4	6.7	8.9	14.0	6.14
Electricity	35.1	2.0	3.9	4.7	7.2	6.1	6.0	5.1	5.0	7.2	10.8	7.44
Fuel Oil	5.1	.4	.6	.4	.6	.9	1.1	1.2	.6	.9	1.5	15.58
LPG	3.2	.3	.5	.4	.6	.5	.5	.4	.8	1.1	1.4	23.37
Solar Collectors4	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	47.26
Other/None2	NC	Q	Q	Q	Q	Q	Q	Q	Q	Q	61.41
Main Cooking Fuel												
Electricity	54.8	2.4	5.2	6.2	9.7	9.8	10.4	11.1	5.9	8.7	13.7	5.76
Natural Gas	33.7	2.2	4.4	4.4	6.6	4.6	5.7	5.8	5.7	7.4	11.4	6.91
LPG	5.4	.6	1.1	.8	1.1	.8	.6	.4	1.5	2.0	2.7	18.23
Other/None2	Q	Q	Q	NC	Q	Q	NC	Q	Q	Q	63.12
Air Conditioning												
No	30.3	2.8	4.7	4.3	6.2	4.9	4.1	3.4	6.8	8.9	12.6	7.06
Yes ³	63.7	2.5	6.0	7.1	11.3	10.4	12.7	13.8	6.4	9.3	15.3	5.37
Electric	63.3	2.5	6.0	7.1	11.2	10.3	12.6	13.7	6.4	9.3	15.2	5.38
Number of Rooms Usually Air-Conditioned												
All	41.6	1.3	3.1	4.1	7.6	6.5	9.1	9.8	3.2	4.9	8.3	7.09
Some	22.0	1.1	2.8	3.0	3.7	3.9	3.6	4.0	3.2	4.4	6.9	8.58
None	30.4	2.8	4.7	4.3	6.2	4.9	4.1	3.5	6.8	9.0	12.6	7.05
Natural Gas Available in Neighborhood												
No	26.3	1.4	3.1	3.3	4.8	4.5	4.7	4.5	3.9	5.5	8.5	9.73
Yes	67.7	3.8	7.6	8.1	12.6	10.8	12.0	12.8	9.3	12.7	19.4	4.91
Uses Natural Gas	57.7	3.1	6.5	6.9	10.4	9.0	10.4	11.5	7.9	10.7	16.7	5.52
Does not Use Natural Gas	10.0	.7	1.1	1.2	2.3	1.8	1.7	1.2	1.4	2.0	2.7	13.39
Wood Burned in Past 12 Months												
No	71.1	4.7	9.5	10.0	14.3	11.5	11.8	9.4	11.2	15.5	23.9	4.31
Yes	22.9	.6	1.2	1.4	3.1	3.8	5.0	7.9	2.0	2.7	4.0	11.39
One-Third Cord or Less	10.8	.2	.3	.4	1.3	1.5	2.1	4.8	.6	.8	1.2	16.60
More than One-Third Cord	12.1	.3	.9	1.0	1.8	2.2	2.9	3.0	1.4	1.9	2.8	14.19

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

² Excludes 20.1 million households that use LPG only for outdoor grills.

³ An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 22. Fuel Use by Family Income,
Percent of U.S. Households, 1990**

Housing Unit Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent			
	RSE Column Factors:	0.540	1.797	1.207	1.138	0.939	0.924	0.910	0.950	1.210	1.024	0.808	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Fuels Used for Any Use (more than one often used)													
Electricity	100.0	99.4	100.0	100.0	100.0	100.0	100.0	100.0	99.7	99.8	99.9	99.9	N.E.
Natural Gas	61.4	59.7	60.9	60.3	59.4	58.9	61.9	66.8	59.8	58.8	59.8	59.8	4.27
Wood	26.5	10.6	12.0	13.2	19.7	26.9	32.6	49.7	15.5	15.3	15.2	15.2	9.78
Fuel Oil and/or Kerosene	17.3	15.3	17.9	16.5	16.9	19.8	17.2	16.6	16.0	16.6	18.4	18.4	9.29
Fuel Oil	12.5	11.4	12.9	11.8	10.6	13.2	13.0	13.6	11.0	11.5	13.0	13.0	11.53
Kerosene	5.7	4.4	6.4	5.4	6.6	7.8	5.1	3.5	6.3	6.1	6.5	6.5	17.52
LPG ²	8.8	19.0	11.8	10.4	8.3	8.2	7.3	5.1	15.6	14.7	13.2	13.2	15.32
Coal8	Q	Q	Q	Q	Q	Q	1.1	Q	Q	Q	Q	45.49
Solar Collectors	1.0	Q	Q	Q	Q	1.1	1.4	1.8	Q	Q	Q	Q	.5
Main Heating Fuel and Equipment													
Natural Gas	55.0	48.9	55.2	54.1	54.2	52.8	54.5	60.7	52.1	51.8	52.7	52.7	4.35
Central Warm-Air Furnace	37.1	19.3	27.1	30.6	36.2	37.8	42.2	48.6	22.7	24.7	27.3	27.3	7.06
For One Housing Unit	35.4	17.7	24.5	28.3	33.6	36.0	41.2	47.9	20.6	22.8	25.1	25.1	7.27
For Two or More Units	1.7	Q	2.7	2.3	2.6	1.8	.9	Q	2.1	1.9	2.2	2.2	26.68
Steam or Hot-Water System	8.8	10.0	9.8	9.7	8.2	7.9	8.1	9.2	8.8	7.7	9.0	9.0	13.38
For One Housing Unit	4.8	Q	4.6	4.3	3.6	4.4	5.6	6.8	2.7	2.8	3.9	3.9	20.20
For Two or More Units	4.0	8.1	5.2	5.4	4.5	3.5	2.5	2.4	6.1	4.9	5.1	5.1	18.25
Floor, Wall, or Pipeless Furnace	5.4	10.2	9.7	7.0	7.0	4.6	2.3	2.5	10.7	10.2	9.3	9.3	15.37
Room Heater/Other	3.7	9.4	8.5	6.8	2.9	2.6	1.9	Q	9.8	9.2	7.2	7.2	18.35
Electricity	22.9	23.6	19.8	21.7	23.6	24.6	25.1	21.2	20.2	20.8	20.0	20.0	10.17
Built-In Electric Units	7.1	10.4	9.9	9.5	7.0	8.4	5.7	3.3	9.9	9.5	8.8	8.8	17.12
Central Warm-Air Furnace	7.9	5.6	3.9	5.9	9.3	9.3	10.2	7.6	4.6	5.4	4.9	4.9	21.38
For One Housing Unit	7.7	4.4	3.7	5.7	9.2	9.0	10.1	7.6	4.2	5.0	4.6	4.6	21.45
Heat Pump	6.9	Q	4.3	4.8	6.2	6.1	8.9	10.2	3.0	3.4	4.1	4.1	22.47
Other	1.0	Q	Q	Q	Q	Q	C	Q	2.8	2.5	2.1	2.1	31.05
Fuel Oil	11.1	9.3	12.3	10.1	9.2	11.6	11.4	12.5	9.4	10.1	11.2	11.2	12.20
Steam or Hot-Water System	6.1	5.9	5.9	4.5	4.4	6.4	6.5	8.1	4.9	5.4	5.7	5.7	17.06
For One Housing Unit	3.8	Q	3.1	1.9	2.3	4.2	4.6	6.9	1.5	1.7	2.7	2.7	17.00
For Two or More Units	2.2	5.0	2.8	2.6	2.1	2.3	1.9	Q	3.4	3.7	3.0	3.0	28.46
Central Warm-Air Furnace	4.6	2.9	5.4	4.7	4.6	5.1	4.6	4.4	4.2	4.0	4.9	4.9	18.10
Other4	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	48.07
Wood	4.1	Q	5.0	4.3	4.5	4.5	4.4	2.9	6.4	6.0	5.4	5.4	23.88
Heating Stove	3.1	Q	4.5	2.6	3.4	3.3	3.1	2.1	5.7	5.1	4.3	4.3	26.71
Other	1.0	NC	Q	Q	1.1	1.2	1.4	Q	Q	.9	1.1	1.1	33.83
LPG	4.7	12.3	5.6	6.5	4.9	4.1	3.4	2.0	8.5	8.4	7.6	7.6	20.65
Central Warm-Air Furnace	2.8	3.2	1.8	4.1	3.1	2.9	3.2	1.6	3.2	3.2	3.7	3.7	24.91
Room Heater	1.2	7.5	2.2	1.8	Q	Q	Q	Q	4.4	3.8	2.9	2.9	27.55
Other6	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.19
Kerosene	1.2	Q	Q	1.8	2.1	1.3	Q	NC	2.3	2.0	1.8	1.8	33.95
Other3	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	65.68
None7	NC	Q	Q	1.3	Q	.5	Q	Q	Q	Q	Q	.7
Secondary Heating Fuel (more than one may apply)													
No	57.0	73.7	67.8	69.8	62.4	56.5	53.3	35.8	66.9	67.8	67.4	67.4	3.46
Yes	43.0	26.3	32.2	30.2	37.6	43.5	46.7	64.2	33.1	32.2	32.6	32.6	3.64
Wood	22.1	7.5	6.7	8.8	15.0	22.0	27.9	46.7	9.0	9.2	9.6	9.6	11.42
Electricity	17.7	13.1	17.4	16.6	18.4	16.8	15.9	21.6	16.2	15.3	15.9	15.9	9.42
Natural Gas	2.7	Q	2.7	2.0	2.3	2.7	3.2	3.2	2.8	2.6	2.5	2.5	22.62
Fuel Oil8	Q	Q	Q	Q	Q	Q	Q	Q	1.1	1.1	1.1	36.73
Kerosene	4.5	Q	4.9	3.9	4.6	6.4	4.6	3.5	4.2	4.2	4.9	4.9	18.12
LPG	1.0	Q	2.1	Q	Q	1.1	Q	1.1	1.5	1.7	1.4	1.4	40.29
Other7	Q	Q	Q	Q	Q	Q	1.4	Q	Q	Q	Q	39.90

See footnotes at end of table.

**Table 22. Fuel Use by Family Income,
Percent of U.S. Households, 1990 (Continued)**

Housing Unit Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors	
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent				
RSE Column Factors:	0.540	1.797	1.207	1.138	0.939	0.924	0.910	0.950	1.210	1.024	0.808			
Secondary Heating Equipment (more than one may apply)														
No	57.0	73.7	67.8	69.8	62.4	56.5	53.3	35.8	66.9	67.8	67.4	3.46		
Yes	43.0	26.3	32.2	30.2	37.6	43.5	46.7	64.2	33.1	32.2	32.6	5.64		
Fireplace	18.3	5.5	3.5	6.2	11.4	15.8	23.3	43.8	5.5	5.6	6.3	12.79		
Portable Electric Heater	13.6	10.7	13.4	13.4	15.5	12.3	11.0	16.7	12.4	11.9	12.5	9.72		
Portable Kerosene Heater	4.5	2.9	4.9	3.9	4.3	6.5	4.5	3.3	4.4	4.4	5.0	18.49		
Oil or Gas Room Heater	1.5	Q	Q	Q	1.9	2.0	1.3	1.5	1.5	1.3	1.0	29.45		
Wood or Coal Heating Stove	5.5	Q	3.7	3.4	4.9	8.0	6.6	6.5	3.9	4.0	4.1	18.41		
Cooking Stove	1.2	4.8	3.5	Q	Q	Q	Q	Q	3.5	3.8	3.0	21.47		
Built-In Electric Units	4.3	Q	2.9	3.0	3.4	4.0	5.3	7.1	2.9	2.6	2.9	26.05		
Central Warm-Air Furnace	1.1	Q	Q	Q	Q	1.2	1.4	1.2	Q	Q	Q	.9	35.86	
Forced Air	1.0	Q	Q	Q	Q	Q	1.0	1.4	1.0	Q	Q	.9	37.35	
Heat Pump5	Q	Q	NC	Q	Q	Q	Q	Q	Q	Q	Q	42.48	
Other	1.1	Q	Q	Q	Q	Q	1.3	1.7	1.4	Q	Q	.8	31.02	
Main Water-Heating Fuel														
Natural Gas	53.2	47.8	52.6	50.5	51.6	50.2	54.0	60.5	50.6	48.9	50.4	4.81		
Electricity	37.3	38.2	36.8	41.3	41.4	40.0	35.9	29.5	38.1	39.4	38.6	6.20		
Fuel Oil	5.4	7.1	5.2	3.7	3.4	5.8	6.3	7.1	4.7	4.9	5.2	15.54		
LPG	3.4	5.6	5.1	3.9	3.3	3.2	2.8	2.1	5.8	6.1	5.0	22.93		
Solar Collectors5	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.93	
Other/None2	NC	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	55.78	
Main Cooking Fuel														
Electricity	58.3	45.2	48.5	54.2	55.9	64.4	62.1	64.2	45.0	47.7	49.0	4.19		
Natural Gas	35.8	42.5	41.2	38.6	37.8	30.3	33.9	33.4	43.0	40.8	41.0	6.03		
LPG	5.7	10.7	9.9	7.0	6.4	5.0	3.9	2.4	11.4	10.8	9.5	17.49		
Other/None2	Q	Q	Q	NC	Q	Q	NC	Q	Q	Q	Q	57.34	
Air Conditioning														
No	32.2	52.8	44.1	37.5	35.4	32.0	24.3	19.9	51.7	49.0	45.2	5.88		
Yes ³	67.7	47.2	55.9	62.4	64.6	68.0	75.7	80.1	48.3	50.9	54.8	3.59		
Electric	67.4	47.2	55.9	62.1	64.2	67.5	75.2	79.6	48.3	50.9	54.7	3.61		
Number of Rooms Usually Air-Conditioned														
All	44.2	25.9	29.3	36.2	43.4	42.7	54.2	57.1	24.2	26.8	29.9	5.80		
Some	23.4	21.3	26.3	26.3	21.1	25.3	21.6	22.9	23.9	24.1	24.8	7.66		
None	32.3	52.8	44.4	37.5	35.5	32.0	24.3	20.0	51.9	49.2	45.2	5.86		
Natural Gas Available in Neighborhood														
No	28.0	26.2	29.0	29.2	27.6	29.4	28.2	26.1	29.5	30.4	30.5	8.48		
Yes	72.0	73.8	71.0	70.8	72.4	70.6	71.8	73.9	70.5	69.6	69.5	3.38		
Uses Natural Gas	61.4	59.7	60.9	60.3	59.4	58.9	61.9	66.8	59.8	58.8	59.8	4.27		
Does not Use Natural Gas	10.6	14.0	10.1	10.5	13.0	11.7	9.9	7.1	10.7	10.8	9.7	12.89		
Wood Burned in Past 12 Months														
No	75.7	89.4	88.7	87.6	82.2	75.3	70.3	54.4	85.0	85.2	85.8	2.33		
Yes	24.3	10.6	11.3	12.4	17.8	24.7	29.7	45.6	15.0	14.8	14.2	10.22		
One-Third Cord or Less	11.4	4.5	3.0	3.9	7.2	10.1	12.6	28.0	4.5	4.3	4.3	16.12		
More than One-Third Cord	12.9	6.1	8.3	8.5	10.6	14.6	17.1	17.6	10.5	10.5	9.9	13.17		

¹ Below 150 percent of poverty line or 60 percent of median State income.² Excludes 20.1 million households that use LPG only for outdoor grills.³ An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

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

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 23. Fuel Use by Type and Ownership of Housing Unit,
Million U.S. Households, 1990**

Housing Unit Characteristics		Type and Ownership of Housing Unit												RSE Row Factors		
		Single-Family			Multifamily						Mobile Home					
					Two to Four Units			Five or More Units								
		Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors:		0.394	0.381	0.407	0.836	1.065	1.769	1.070	1.026	2.373	0.991	1.390	1.559	2.195		
Total		94.0	64.4	53.7	10.7	10.0	2.5	7.5	14.4	1.8	12.6	5.2	4.3	1.0	7.37	
Fuels Used for Any Use (more than one often used)																
Electricity		94.0	64.3	53.7	10.7	10.0	2.5	7.5	14.4	1.8	12.6	5.2	4.3	1.0	7.38	
Natural Gas		57.7	39.5	33.2	6.3	7.4	1.7	5.6	8.8	1.0	7.8	2.0	1.5	.5	8.66	
Wood		24.9	22.7	20.8	1.9	.8	Q	.2	.7	.2	Q	.7	.7	Q	19.35	
Fuel Oil and/or Kerosene		16.3	11.7	10.2	1.5	1.4	.4	1.0	2.0	.4	1.5	1.2	1.0	.3	14.97	
Fuel Oil		11.7	8.2	7.6	.7	1.3	.4	.9	1.8	.4	1.4	.4	.3	Q	17.13	
Kerosene		5.3	4.1	3.3	.8	Q	Q	Q	Q	NC	Q	.9	.7	.2	20.28	
LPG ¹		8.2	6.2	5.2	1.0	.3	Q	.2	Q	NC	Q	1.7	1.4	.3	22.7	
Coal		.7	.7	.7	Q	Q	NC	Q	NC	NC	NC	NC	NC	NC	84.57	
Solar Collectors		.9	.8	.7	Q	Q	Q	NC	Q	NC	Q	Q	Q	NC	46.56	
Main Heating Fuel and Equipment																
Natural Gas		51.7	36.7	30.8	5.9	6.4	1.5	4.9	6.6	.5	6.2	2.0	1.5	.4	10.87	
Central Warm-Air Furnace		34.9	27.4	23.6	3.8	3.0	.6	2.4	2.6	.2	2.3	1.9	1.5	.4	12.18	
For One Housing Unit		33.3	27.4	23.6	3.8	2.4	.5	1.9	1.6	.2	1.4	1.9	1.5	.4	13.36	
For Two or More Units		1.6	Q	Q	Q	.6	Q	.5	.9	Q	.9	NC	NC	NC	23.06	
Steam or Hot-Water System		8.3	3.4	3.0	.3	2.2	.7	1.5	2.7	Q	2.4	NC	NC	NC	21.24	
For One Housing Unit		4.5	3.3	3.0	.3	1.0	.4	.7	.2	NC	.2	NC	NC	NC	26.86	
For Two or More Units		3.7	Q	Q	Q	1.2	.4	.8	2.5	Q	2.3	NC	NC	NC	24.47	
Floor, Wall, or																
Pipeless Furnace		5.1	3.4	2.3	1.1	.6	NC	.6	1.0	Q	1.0	Q	Q	Q	21.92	
Room Heater/Other		3.5	2.5	1.9	.7	.5	Q	.4	.4	Q	.4	Q	Q	Q	30.28	
Electricity		21.5	12.2	9.4	2.8	2.0	Q	1.5	6.2	.9	5.3	1.1	1.0	Q	15.15	
Built-In Electric Units		6.7	3.3	2.5	.8	.7	Q	.7	2.6	.3	2.3	Q	Q	Q	24.95	
Central Warm-Air Furnace		7.4	3.6	2.6	1.0	.5	Q	.4	2.6	Q	2.1	.7	Q	Q	29.66	
For One Housing Unit		7.2	3.6	2.6	1.0	.5	Q	.4	2.4	Q	1.9	.7	.7	Q	30.02	
Heat Pump		6.4	4.6	4.0	.7	Q	Q	.3	.9	Q	.8	Q	Q	NC	39.89	
Other		.9	.6	.3	.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	52.97	
Fuel Oil		10.4	7.4	6.8	.6	1.2	.3	.9	1.5	.4	1.0	.3	Q	Q	19.19	
Steam or Hot-Water System		5.7	3.3	3.1	.2	.9	.3	.7	1.4	.4	1.0	NC	NC	NC	21.65	
For One Housing Unit		3.6	3.3	3.1	.2	.3	Q	.2	NC	NC	NC	NC	NC	NC	26.69	
For Two or More Units		2.1	Q	NC	Q	.6	.2	.5	1.4	.4	1.0	NC	NC	NC	23.81	
Central Warm-Air Furnace		4.4	3.7	3.4	.3	.3	NC	NC	NC	NC	NC	.3	Q	Q	31.11	
Other		.3	.3	.3	Q	NC	NC	NC	NC	NC	NC	NC	NC	NC	73.07	
Wood		3.9	3.6	3.0	.5	Q	Q	Q	Q	NC	Q	.2	Q	Q	34.12	
Heating Stove		2.9	2.6	2.2	.4	Q	Q	Q	Q	NC	Q	Q	Q	Q	39.40	
Other		1.0	.9	.8	Q	Q	Q	Q	Q	NC	Q	Q	Q	NC	54.67	
LPG		4.4	3.2	2.7	.5	Q	Q	Q	Q	NC	NC	NC	1.2	1.0	.2	25.62
Central Warm-Air Furnace		2.6	1.6	1.5	Q	Q	Q	Q	NC	NC	NC	.9	.8	.2	27.61	
Room Heater		1.2	1.0	.8	.2	NC	NC	NC	NC	NC	NC	Q	Q	Q	62.70	
Other		.6	.5	.4	Q	NC	NC	NC	NC	NC	NC	Q	Q	NC	87.04	
Kerosene		1.1	.5	.3	.2	Q	Q	Q	Q	NC	Q	.4	.3	Q	41.83	
Other		.3	.3	.3	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	95.15	
None		.6	.5	.2	.2	Q	Q	Q	Q	NC	NC	NC	NC	NC	86.04	

See footnotes at end of table.

**Table 23. Fuel Use by Type and Ownership of Housing Unit,
Million U.S. Households, 1990 (Continued)**

Housing Unit Characteristics		Type and Ownership of Housing Unit												RSE Row Factors		
		Single-Family			Multifamily						Mobile Home					
					Two to Four Units			Five or More Units								
		Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors:		0.334	0.381	0.407	0.836	1.065	1.769	1.070	1.026	2.373	0.991	1.390	1.559	2.195		
Secondary Heating Fuel (more than one may apply)																
No		53.6	30.4	23.3	7.1	7.9	1.7	6.2	12.1	1.5	10.6	3.2	2.6	.7	8.36	
Yes		40.4	34.0	30.4	3.6	2.1	.8	1.3	2.3	.3	2.0	2.0	1.7	.3	12.87	
Wood		20.8	18.9	17.6	1.3	Q	Q	.2	.7	.2	Q	.4	.4	NC	19.42	
Electricity		16.6	13.2	11.5	1.7	1.1	.3	.8	1.3	.2	1.2	.9	.8	Q	15.09	
Natural Gas		2.5	2.0	1.8	.3	.2	Q	.2	.2	Q	.2	Q	NC	Q	32.49	
Fuel Oil7	.6	.5	Q	Q	NC	Q	Q	NC	Q	Q	Q	NC	63.11	
Kerosene		4.2	3.5	2.9	.6	Q	Q	Q	Q	NC	Q	.6	.5	Q	21.56	
LPG9	.8	.7	Q	Q	Q	NC	NC	NC	NC	.2	Q	Q	45.65	
Other6	.6	.6	Q	Q	NC	Q	NC	NC	NC	NC	NC	NC	69.28	
Secondary Heating Equipment (more than one may apply)																
No		53.6	30.4	23.3	7.1	7.9	1.7	6.2	12.1	1.5	10.6	3.2	2.6	.7	8.36	
Yes		40.4	34.0	30.4	3.6	2.1	.8	1.3	2.3	.3	2.0	2.0	1.7	.3	12.87	
Fireplace		17.2	15.5	14.5	1.0	Q	Q	Q	.7	.2	Q	.3	.3	NC	19.18	
Portable Electric Heater		12.8	10.1	8.8	1.3	.9	.2	.7	.9	.2	.8	.9	.7	Q	16.25	
Portable Kerosene Heater		4.2	3.4	2.8	.6	Q	Q	Q	Q	NC	Q	.6	.5	Q	22.32	
Oil or Gas Room Heater		1.4	1.3	1.2	Q	Q	Q	Q	Q	NC	Q	Q	Q	Q	36.30	
Wood or Coal Heating Stove		5.2	4.9	4.5	.4	Q	Q	Q	Q	NC	NC	NC	.2	.2	NC	25.00
Cooking Stove		1.2	.7	.5	.2	.2	Q	Q	.2	Q	.1	Q	Q	Q	42.04	
Built-In Electric Units		4.1	3.5	3.1	.4	.2	Q	Q	.4	Q	.3	NC	NC	NC	38.05	
Central Warm-Air Furnace		1.0	.8	.8	Q	Q	NC	Q	Q	NC	Q	Q	Q	Q	51.27	
Forced Air		1.0	.8	.7	Q	Q	NC	Q	Q	NC	Q	Q	Q	Q	53.12	
Heat Pump4	.4	.4	Q	Q	NC	Q	Q	NC	Q	NC	NC	NC	64.92	
Other		1.0	.9	.9	Q	Q	NC	Q	NC	NC	Q	NC	NC	NC	36.11	
Main Water-Heating Fuel																
Natural Gas		50.0	34.8	29.3	5.5	6.5	1.6	5.0	7.2	.6	6.6	1.4	1.1	.4	9.83	
Electricity		35.1	23.4	18.8	4.6	2.8	.7	2.0	5.5	Q	4.8	3.4	2.8	.5	13.89	
Fuel Oil		5.1	2.9	2.8	.1	.6	Q	.4	1.6	.4	1.1	NC	NC	NC	18.46	
LPG		3.2	2.7	2.3	.4	Q	Q	Q	NC	NC	NC	.4	.3	Q	32.77	
Solar Collectors4	.4	.3	Q	Q	Q	NC	Q	NC	Q	NC	NC	NC	58.85	
Other/None2	.2	.1	Q	Q	Q	NC	Q	NC	Q	Q	NC	NC	91.36	
Main Cooking Fuel																
Electricity		54.8	39.0	33.3	5.7	4.3	1.2	3.1	9.4	1.2	8.2	2.0	1.8	.2	11.40	
Natural Gas		33.7	21.4	17.2	4.2	5.4	1.3	4.2	4.9	.6	4.3	1.8	1.4	.5	9.62	
LPG		5.4	3.8	3.2	.7	.2	Q	.1	Q	NC	Q	1.3	1.0	.3	24.90	
Other/None2	Q	Q	Q	Q	NC	Q	Q	NC	Q	Q	Q	NC	92.76	
Air Conditioning																
No		30.3	20.2	15.5	4.7	4.0	.7	3.3	4.1	.2	3.9	2.0	1.6	.5	11.41	
Yes ²		63.7	44.2	38.2	6.0	6.0	1.8	4.2	10.4	1.6	8.7	3.2	2.7	.5	9.25	
Electric		63.3	44.0	38.0	6.0	5.9	1.8	4.1	10.2	1.6	8.6	3.2	2.7	.5	9.28	
Number of Rooms Usually Air-Conditioned																
All		41.6	28.8	25.1	3.6	3.2	.8	2.4	7.6	1.1	6.5	2.0	1.9	.1	11.92	
Some		22.0	15.4	13.0	2.4	2.8	1.0	1.8	2.7	.5	2.2	1.1	.8	.4	13.09	
None		30.4	20.2	15.5	4.7	4.0	.7	3.3	4.1	.2	3.9	2.0	1.6	.5	11.39	

See footnotes at end of table.

**Table 23. Fuel Use by Type and Ownership of Housing Unit,
Million U.S. Households, 1990 (Continued)**

Housing Unit Characteristics		Type and Ownership of Housing Unit												RSE Row Factors	
		Single-Family			Multifamily						Mobile Home				
					Two to Four Units			Five or More Units							
		Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:		0.334	0.381	0.407	0.836	1.065	1.769	1.070	1.026	2.373	0.991	1.390	1.559	2.195	
Natural Gas Available in Neighborhood															
No	26.3	19.1	15.8	3.3	1.8	Q	1.1	2.6	Q	2.2	2.9	2.4	0.4	16.38	
Yes	67.7	45.2	37.9	7.4	8.2	1.9	6.4	11.8	1.4	10.4	2.4	1.8	.5	7.74	
Uses Natural Gas	57.7	39.5	33.2	6.3	7.4	1.7	5.6	8.8	1.0	7.8	2.0	1.5	.5	8.66	
Does not Use Natural Gas	10.0	5.7	4.7	1.0	.9	Q	.7	3.0	.4	2.6	.4	.3	Q	20.78	
Wood Burned in Past 12 Months															
No	71.1	43.5	34.5	8.9	9.2	1.9	7.2	13.9	1.6	12.3	4.6	3.6	.9	7.14	
Yes	22.9	20.9	19.2	1.7	.8	Q	.2	.6	.2	Q	.6	.6	Q	19.71	
One-Third Cord or Less	10.8	9.6	8.8	.8	Q	Q	Q	.5	.2	Q	Q	Q	NC	20.98	
More than One-Third Cord	12.1	11.3	10.4	.9	.3	Q	Q	Q	NC	Q	.5	.5	Q	18.63	

¹ Excludes 20.1 million households that use LPG only for outdoor grills.

² An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 24. Fuel Use by Type and Ownership of Housing Unit,
Percent of U.S. Households, 1990**

Housing Unit Characteristics		Type and Ownership of Housing Unit												RSE Row Factors	
		Single-Family			Multifamily				Mobile Home						
					Two to Four Units		Five or More Units								
		Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
		RSE Column Factors:	0.368	0.403	0.421	0.816	1.065	2.079	0.965	0.988	2.600	0.974	1.253	1.380	2.117
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Fuels Used for Any Use (more than one often used)															
Electricity		100.0	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	NE
Natural Gas		61.4	61.4	61.8	59.5	73.7	69.4	75.2	61.3	56.9	61.9	38.4	36.2	48.6	7.75
Wood		26.5	35.3	38.8	17.6	8.2	22.6	3.3	4.9	Q	Q	12.8	15.5	Q	17.83
Fuel Oil and/or Kerosene		17.3	18.2	19.0	14.1	13.9	16.1	13.1	13.7	24.6	12.1	23.6	22.8	27.2	15.26
Fuel Oil		12.5	12.8	14.1	6.3	12.8	13.9	12.4	12.7	24.6	11.0	6.9	7.4	Q	18.60
Kerosene		5.7	6.4	6.1	7.9	Q	Q	Q	Q	NC	Q	18.1	17.1	22.5	19.46
LPG ¹		8.8	9.6	9.6	9.4	2.8	Q	2.0	Q	NC	Q	32.4	31.8	35.3	20.86
Coal		.8	1.1	1.3	Q	Q	NC	Q	NC	NC	NC	NC	NC	NC	79.29
Solar Collectors		1.0	1.2	1.4	Q	Q	NC	Q	NC	Q	Q	Q	Q	NC	45.82
Main Heating Fuel and Equipment															
Natural Gas		55.0	57.0	57.5	54.9	64.2	58.5	66.1	46.0	26.0	48.8	37.9	35.9	46.6	9.10
Central Warm-Air Furnace		37.1	42.6	44.0	35.7	30.3	25.8	31.8	17.8	12.1	18.6	36.0	35.2	39.9	11.45
For One Housing Unit		35.4	42.5	43.9	35.7	24.1	20.8	25.2	11.2	10.4	11.4	36.0	35.2	39.9	12.61
For Two or More Units		1.7	Q	Q	Q	6.2	Q	6.6	6.5	Q	7.2	NC	NC	NC	23.51
Steam or Hot-Water System		8.8	5.2	5.7	3.1	22.3	28.7	20.2	18.4	Q	19.3	NC	NC	NC	19.40
For One Housing Unit		4.8	5.1	5.6	2.5	10.3	14.1	9.1	1.2	NC	1.4	NC	NC	NC	26.27
For Two or More Units		4.0	Q	Q	Q	12.0	14.6	11.1	17.2	Q	17.9	NC	NC	NC	22.62
Floor, Wall, or Pipeless Furnace		5.4	5.2	4.3	10.0	6.3	NC	8.4	7.2	Q	8.0	Q	Q	Q	21.23
Room Heater/Other		3.7	3.9	3.5	6.1	5.3	Q	5.8	2.6	Q	2.9	Q	Q	Q	29.71
Electricity		22.9	19.0	17.6	26.1	20.4	Q	19.9	42.7	48.6	41.9	21.7	23.8	Q	15.20
Built-In Electric Units		7.1	5.1	4.7	7.1	7.4	Q	9.3	17.8	16.2	18.0	Q	Q	Q	23.23
Central Warm-Air Furnace		7.9	5.7	4.9	9.7	4.8	Q	5.7	17.8	Q	16.7	14.3	16.7	Q	28.47
For One Housing Unit		7.7	5.7	4.9	9.7	4.8	Q	5.7	16.5	Q	15.2	14.3	16.7	Q	28.89
Heat Pump		6.9	7.2	7.4	6.2	7.8	Q	4.6	6.3	Q	6.3	Q	Q	NC	39.76
Other		1.0	1.0	.6	3.1	Q	Q	Q	Q	Q	Q	Q	Q	Q	50.95
Fuel Oil		11.1	11.5	12.8	5.3	12.1	13.5	11.7	10.4	24.6	8.3	5.4	Q	Q	20.72
Steam or Hot-Water System		6.1	5.2	5.8	2.0	9.4	10.8	9.0	9.8	22.8	8.0	NC	NC	NC	22.64
For One Housing Unit		3.8	5.2	5.8	1.9	2.9	Q	2.4	NC	NC	NC	NC	NC	NC	26.54
For Two or More Units		2.2	Q	NC	Q	6.5	6.4	6.5	9.8	22.8	8.0	NC	NC	NC	25.34
Central Warm-Air Furnace		4.6	5.8	6.4	2.8	2.7	Q	2.7	Q	Q	5.4	Q	Q	Q	31.64
Other		.4	.5	.6	Q	NC	NC	NC	NC	NC	NC	NC	NC	NC	68.58
Wood		4.1	5.5	5.6	5.0	Q	Q	Q	Q	NC	Q	4.4	Q	Q	33.54
Heating Stove		3.1	4.1	4.2	3.8	Q	Q	Q	Q	NC	Q	Q	Q	Q	37.82
Other		1.0	1.4	1.5	Q	Q	Q	Q	Q	NC	Q	Q	Q	NC	51.79
LPG		4.7	4.9	5.0	4.3	Q	Q	Q	NC	NC	NC	22.3	22.7	20.5	25.03
Central Warm-Air Furnace		2.8	2.5	2.8	Q	Q	Q	Q	NC	NC	NC	18.1	18.2	17.7	26.91
Room Heater		1.2	1.6	1.5	2.3	NC	NC	NC	NC	NC	NC	Q	Q	Q	60.08
Other		.6	.8	.7	Q	NC	NC	NC	NC	NC	NC	Q	Q	NC	81.61
Kerosene		1.2	.8	.6	2.2	Q	Q	Q	Q	NC	Q	8.2	6.7	Q	41.65
Other		.3	.5	.6	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	89.21
None		.7	.7	.4	2.1	Q	Q	Q	Q	NC	NC	NC	NC	NC	63.77

See footnotes at end of table.

**Table 24. Fuel Use by Type and Ownership of Housing Unit,
Percent of U.S. Households, 1990 (Continued)**

Housing Unit Characteristics		Type and Ownership of Housing Unit												RSE Row Factors	
		Single-Family			Multifamily						Mobile Home				
					Two to Four Units			Five or More Units							
		Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:		0.368	0.403	0.421	0.816	1.065	2.079	0.965	0.988	2.600	0.974	1.253	1.380	2.117	
Secondary Heating Fuel (more than one may apply)															
No	57.0	47.2	43.4	66.4	79.0	67.5	82.9	83.9	81.3	84.3	62.0	60.3	69.9	4.60	
Yes	43.0	52.8	56.6	33.6	21.0	32.5	17.1	16.1	18.7	15.7	38.0	39.7	30.1	10.53	
Wood	22.1	29.4	32.8	12.4	7.5	Q	2.8	4.6	Q	Q	8.6	10.5	NC	19.60	
Electricity	17.7	20.5	21.5	15.6	11.3	13.0	10.7	9.4	9.8	9.3	17.4	18.4	Q	14.18	
Natural Gas	2.7	3.1	3.3	2.4	2.1	Q	2.6	1.7	Q	1.9	Q	NC	Q	32.56	
Fuel Oil8	.9	1.0	Q	Q	NC	Q	Q	NC	Q	Q	Q	NC	59.13	
Kerosene	4.5	5.4	5.4	5.7	Q	Q	Q	Q	NC	Q	11.1	11.1	Q	21.31	
LPG	1.0	1.2	1.3	Q	Q	Q	NC	NC	NC	NC	3.0	Q	Q	44.79	
Other7	1.0	1.1	Q	Q	NC	Q	NC	NC	NC	NC	NC	NC	64.78	
Secondary Heating Equipment (more than one may apply)															
No	57.0	47.2	43.4	66.4	79.0	67.5	82.9	83.9	81.3	84.3	62.0	60.3	69.9	4.60	
Yes	43.0	52.8	56.6	33.6	21.0	32.5	17.1	16.1	18.7	15.7	38.0	39.7	30.1	10.53	
Fireplace	18.3	24.1	27.1	9.2	Q	Q	4.7	Q	3.6	6.1	7.5	NC	19.84		
Portable Electric Heater	13.6	15.7	16.4	12.5	9.1	8.9	9.2	6.4	9.5	6.0	16.6	17.4	Q	15.49	
Portable Kerosene Heater	4.5	5.3	5.3	5.4	Q	Q	Q	Q	NC	Q	11.7	10.9	Q	22.03	
Oil or Gas Room Heater	1.5	2.0	2.2	Q	Q	Q	Q	Q	NC	Q	Q	Q	Q	33.99	
Wood or Coal Heating Stove	5.5	7.7	8.4	4.1	Q	Q	Q	Q	NC	NC	NC	3.2	4.0	NC	24.17
Cooking Stove	1.2	1.1	.8	2.3	1.8	Q	2.3	1.0	Q	1.1	Q	Q	Q	42.41	
Built-In Electric Units	4.3	5.4	5.8	3.4	2.0	Q	Q	2.5	Q	2.7	NC	NC	NC	37.12	
Central Warm-Air Furnace	1.1	1.3	1.5	Q	Q	NC	Q	Q	NC	Q	Q	Q	Q	48.18	
Forced Air	1.0	1.2	1.4	Q	Q	NC	Q	Q	NC	Q	Q	Q	Q	49.96	
Heat Pump5	.6	.7	Q	Q	NC	Q	Q	NC	Q	NC	NC	NC	60.76	
Other	1.1	1.5	1.7	Q	Q	NC	Q	Q	NC	Q	NC	NC	NC	33.42	
Main Water-Heating Fuel															
Natural Gas	53.2	54.1	54.5	51.7	65.2	62.0	66.3	50.2	35.4	52.3	27.7	25.6	37.1	8.59	
Electricity	37.3	36.4	35.0	43.3	27.7	29.2	27.2	38.1	40.0	37.9	64.6	66.5	56.4	10.41	
Fuel Oil	5.4	4.6	5.2	1.2	5.7	Q	5.9	11.0	24.6	9.1	NC	NC	NC	19.59	
LPG	3.4	4.2	4.3	3.5	Q	Q	Q	NC	NC	NC	7.5	7.7	Q	33.23	
Solar Collectors5	.5	.6	Q	Q	Q	NC	Q	NC	Q	NC	NC	NC	54.91	
Other/None2	.3	.3	Q	Q	Q	NC	Q	NC	Q	Q	Q	NC	86.43	
Main Cooking Fuel															
Electricity	58.3	60.6	62.0	53.7	43.0	46.4	41.9	65.2	64.5	65.3	39.3	43.0	22.6	7.47	
Natural Gas	35.8	33.3	32.0	39.8	54.4	50.6	55.7	34.3	35.5	34.1	35.3	32.5	47.6	9.45	
LPG	5.7	6.0	5.9	6.3	2.1	Q	1.8	Q	NC	Q	24.8	23.7	29.7	23.94	
Other/None2	Q	Q	Q	Q	NC	Q	Q	NC	Q	Q	Q	NC	84.03	
Air Conditioning															
No	32.2	31.3	28.9	43.7	40.3	28.3	44.3	28.2	10.3	30.8	39.2	36.9	49.4	10.08	
Yes ²	67.7	68.7	71.1	56.3	59.7	71.7	55.7	71.8	89.7	69.2	60.8	63.1	50.6	4.39	
Electric	67.4	68.4	70.8	56.2	59.2	71.7	55.0	70.9	89.7	68.2	60.8	63.1	50.6	5.05	
Number of Rooms Usually Air-Conditioned															
All	44.2	44.7	46.8	34.1	31.6	30.9	31.8	52.9	62.1	51.6	39.1	44.7	13.9	8.76	
Some	23.4	23.9	24.3	22.2	28.1	40.8	23.8	18.7	27.6	17.4	21.7	18.3	36.7	11.51	
None	32.3	31.4	28.9	43.7	40.3	28.3	44.3	28.4	10.3	31.0	39.2	36.9	49.4	10.08	

See footnotes at end of table.

Table 24. Fuel Use by Type and Ownership of Housing Unit, Percent of U.S. Households, 1990 (Continued)

Housing Unit Characteristics		Type and Ownership of Housing Unit												RSE Row Factors	
					Multifamily										
					Single-Family			Two to Four Units			Five or More Units				
		Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:		0.368	0.403	0.421	0.816	1.065	2.079	0.965	0.988	2.600	0.974	1.253	1.380	2.117	
Natural Gas Available in Neighborhood															
No		28.0	29.7	29.4	31.1	17.7	25.8	14.9	17.8	Q	17.4	54.7	56.7	45.7	14.05
Yes		72.0	70.3	70.6	68.9	82.3	74.2	85.1	82.2	79.5	82.6	45.3	43.3	54.3	5.84
Uses Natural Gas		61.4	61.4	61.8	59.5	73.7	69.4	75.2	61.3	56.9	61.9	38.4	36.2	48.6	7.75
Does not Use Natural Gas		10.6	8.9	8.8	9.4	8.6	Q	9.9	20.9	22.6	20.6	6.8	7.1	Q	19.09
Wood Burned in Past 12 Months															
No		75.7	67.5	64.3	83.8	91.9	77.4	96.8	96.1	88.4	97.2	88.1	85.6	99.2	2.75
Yes		24.3	32.5	35.7	16.2	8.1	22.6	3.2	3.9	Q	2.8	11.9	14.4	Q	19.82
One-Third Cord or Less		11.4	14.9	16.3	7.4	Q	Q	Q	3.4	Q	Q	Q	Q	NC	19.51
More than One-Third Cord		12.9	17.6	19.4	8.8	2.7	Q	Q	Q	NC	Q	8.8	10.7	Q	17.06

¹ Excludes 20.1 million households that use LPG only for outdoor grills.² An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

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

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 25. Average Floorspace by Fuel Use,
U.S. Households, 1990

Housing Unit Characteristics	Total Households (millions)	Average Square Feet per Housing Unit		Average Heated Square Feet per Household Member			Average Heated Square Feet per Housing Unit			RSE Row Factors	
		Total	Heated	All Households	Single-Family	Multi-family	Mobile Home	Single-Family	Multi-family		
	RSE Column Factors:	1,182	0.692	0.668	0.723	0.781	1.433	2,360	0.643	1.179	1.264
Total	94.0	1,800	1,569	602	663	454	342	1,865	928	921	2.25
Fuels Used for Any Use (more than one often used)											
Electricity	94.0	1,801	1,570	602	663	454	342	1,865	928	921	2.25
Natural Gas	57.7	1,842	1,625	622	688	448	392	1,926	977	949	2.66
Wood	24.9	2,504	2,123	715	726	709	340	2,212	1,276	1,038	4.63
Fuel Oil and/or Kerosene	16.3	2,040	1,735	621	681	514	277	2,010	1,102	845	4.14
Fuel Oil	11.7	2,169	1,829	677	740	500	332	2,151	1,097	798	5.57
Kerosene	5.3	1,753	1,519	496	549	706	253	1,694	1,217	846	0.15
LPG ¹	8.2	1,684	1,409	496	547	508	303	1,578	1,129	851	6.34
Coal	.7	2,644	2,249	819	823	Q	NC	2,310	Q	NC	23.52
Solar Collectors	.9	2,311	1,795	591	600	Q	Q	1,953	Q	Q	17.84
Main Heating Fuel and Equipment											
Natural Gas	51.7	1,866	1,647	628	691	442	390	1,928	961	950	2.90
Central Warm-Air Furnace	34.9	2,056	1,802	671	714	486	404	2,018	1,025	958	3.19
For One Housing Unit	33.3	2,110	1,845	679	713	511	404	2,018	1,087	958	3.34
For Two or More Units	1.6	958	919	452	Q	419	NC	Q	866	NC	7.06
Steam or Hot-Water System	8.3	1,809	1,621	687	892	489	NC	2,529	994	NC	7.01
For One Housing Unit	4.5	2,464	2,140	802	902	457	NC	2,550	1,019	NC	8.97
For Two or More Units	3.7	1,021	997	501	Q	501	NC	Q	986	NC	7.87
Floor, Wall, or											
Pipeless Furnace	5.1	1,121	1,044	398	461	280	Q	1,202	736	Q	6.85
Room Heater/Other	3.5	1,192	1,036	398	431	318	Q	1,121	802	Q	8.83
Electricity	21.5	1,503	1,327	556	624	449	343	1,706	808	983	3.94
Built-In Electric Units	6.7	1,302	1,150	532	601	438	Q	1,572	736	Q	5.54
Central Warm-Air Furnace	7.4	1,439	1,295	510	594	426	335	1,734	839	1,009	6.13
For One Housing Unit	7.2	1,462	1,314	511	594	425	335	1,734	858	1,009	6.10
Heat Pump	6.4	1,830	1,591	661	693	533	Q	1,865	874	Q	8.13
Other	.9	1,206	1,026	396	422	Q	Q	1,088	Q	Q	12.51
Fuel Oil	10.4	2,207	1,867	697	755	518	389	2,173	1,138	828	6.08
Steam or Hot-Water System	5.7	2,245	1,917	719	831	513	NC	2,456	1,158	NC	7.39
For One Housing Unit	3.6	2,899	2,394	813	831	586	NC	2,464	1,611	NC	7.44
For Two or More Units	2.1	1,114	1,092	501	Q	500	NC	Q	1,094	NC	9.24
Central Warm-Air Furnace	4.4	2,241	1,872	678	700	571	389	2,031	1,003	828	8.83
Other	.3	1,146	989	517	517	NC	NC	989	NC	NC	20.07
Wood	3.9	1,965	1,663	540	563	Q	228	1,736	Q	771	8.99
Heating Stove	2.9	1,801	1,498	494	517	Q	234	1,565	Q	762	10.47
Other	1.0	2,457	2,159	671	688	Q	Q	2,228	Q	Q	9.99
LPG	4.4	1,657	1,409	502	559	Q	324	1,578	Q	910	6.84
Central Warm-Air Furnace	2.6	1,829	1,588	486	567	Q	306	1,952	Q	928	7.58
Room Heater	1.2	1,309	1,110	516	520	NC	Q	1,151	NC	Q	19.90
Other	.6	1,574	1,205	578	607	NC	Q	1,263	NC	Q	18.11
Kerosene	1.1	1,041	970	355	367	Q	254	1,002	Q	802	11.69
Other	.3	2,259	1,920	813	813	NC	NC	1,920	NC	NC	23.69
None	.6	935	0	0	0	0	0	0	0	0	15.98
Secondary Heating Fuel (more than one may apply)											
No	53.6	1,509	1,338	542	614	435	357	1,670	900	928	2.42
Yes	40.4	2,188	1,876	673	704	544	320	2,039	1,057	910	3.18
Wood	20.8	2,610	2,213	749	757	730	410	2,307	1,287	1,175	4.73
Electricity	16.6	1,979	1,722	655	691	526	367	1,900	1,067	926	4.50
Natural Gas	2.5	1,859	1,613	628	683	393	Q	1,794	883	Q	9.06
Fuel Oil	.7	2,011	1,566	543	607	Q	Q	1,834	Q	Q	16.69
Kerosene	4.2	1,903	1,634	515	566	Q	244	1,785	Q	873	6.47
LPG	.9	1,918	1,541	649	767	Q	227	1,725	Q	698	16.05
Other	.6	2,811	2,421	793	797	Q	NC	2,498	Q	NC	16.71

See footnotes at end of table.

**Table 25. Average Floorspace by Fuel Use,
U.S. Households, 1990 (Continued)**

Housing Unit Characteristics	Total Households (millions)	Average Square Feet per Housing Unit		Average Heated Square Feet per Household Member				Average Heated Square Feet per Housing Unit			RSE Row Factors
		Total	Heated	All Households	Single-Family	Multi-family	Mobile Home	Single-Family	Multi-family	Mobile Home	
	RSE Column Factors:	1.182	0.692	0.668	0.723	0.781	1.433	2.360	0.643	1.179	1.264
Secondary Heating Equipment (more than one may apply)											
No	53.6	1,509	1,338	542	614	435	357	1,670	900	928	2.42
Yes	40.4	2,188	1,876	673	704	544	320	2,039	1,057	910	3.19
Fireplace	17.2	2,667	2,273	790	799	709	464	2,386	1,249	1,177	5.18
Portable Electric Heater	12.8	1,921	1,675	641	678	538	357	1,845	1,098	915	4.51
Portable Kerosene Heater	4.2	1,892	1,629	517	569	Q	248	1,790	Q	863	6.89
Oil or Gas Room Heater	1.4	1,938	1,622	558	567	Q	Q	1,678	Q	Q	8.94
Wood or Coal Heating Stove	5.2	2,482	2,087	678	686	Q	339	2,122	Q	1,042	7.27
Cooking Stove	1.2	1,404	1,164	473	691	318	Q	1,394	875	Q	15.29
Built-In Electric Units	4.1	2,187	1,920	690	707	530	NC	2,067	1,020	NC	10.80
Central Warm-Air Furnace	1.0	2,083	1,729	695	750	Q	Q	1,940	Q	Q	12.66
Forced Air	1.0	2,033	1,712	709	773	Q	Q	1,938	Q	Q	13.55
Heat Pump4	2,869	2,481	943	985	Q	NC	2,594	Q	NC	17.46
Other	1.0	2,624	2,096	806	815	Q	NC	2,173	Q	NC	11.41
Main Water-Heating Fuel											
Natural Gas	50.0	1,863	1,643	624	685	443	415	1,944	953	961	3.17
Electricity	35.1	1,656	1,431	565	626	464	318	1,710	852	915	3.21
Fuel Oil	5.1	2,163	1,836	711	839	480	NC	2,422	1,037	NC	6.03
LPG	3.2	1,828	1,527	514	535	Q	327	1,634	Q	822	8.24
Solar Collectors4	1,647	1,232	396	389	Q	NC	1,347	Q	NC	20.80
Other/None2	2,352	1,915	698	689	Q	Q	2,006	Q	Q	34.25
Main Cooking Fuel											
Electricity	54.8	1,899	1,640	644	706	459	337	1,946	865	982	2.71
Natural Gas	33.7	1,690	1,510	563	618	454	382	1,798	1,019	933	3.22
LPG	5.4	1,530	1,261	444	497	331	298	1,431	884	821	6.74
Other/None2	706	533	365	Q	Q	Q	Q	Q	Q	39.21
Air Conditioning											
No	30.3	1,663	1,412	522	581	393	330	1,679	875	905	3.64
Yes ²	63.7	1,866	1,644	642	702	488	350	1,949	955	932	2.49
Electric	63.3	1,868	1,646	642	702	489	350	1,949	958	932	2.51
Number of Rooms Usually Air-Conditioned											
All	41.6	1,851	1,633	639	695	484	357	1,965	879	953	2.99
Some	22.0	1,894	1,663	647	714	496	336	1,918	1,107	893	3.83
None	30.4	1,664	1,413	523	581	393	330	1,682	874	905	3.62
Natural Gas Available in Neighborhood											
No	26.3	1,806	1,528	563	616	471	309	1,764	898	907	3.60
Yes	67.7	1,798	1,585	618	683	451	390	1,908	935	938	2.67
Uses Natural Gas	57.7	1,842	1,625	622	688	448	392	1,926	977	949	2.86
Does not Use Natural Gas	10.0	1,546	1,352	590	652	465	380	1,783	759	876	6.01
Wood Burned in Past 12 Months											
No	71.1	1,570	1,386	556	625	440	342	1,693	905	905	2.10
Yes	22.9	2,518	2,137	722	734	723	341	2,222	1,329	1,044	4.84
One-Third Cord or Less	10.8	2,597	2,199	763	771	687	Q	2,312	1,283	Q	5.62
More than One-Third Cord	12.1	2,448	2,082	688	702	843	286	2,147	1,467	934	6.27

¹ Excludes 20.1 million households that use LPG only for outdoor grills.

² An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 26. Total Floorspace by Fuel Use,
U.S. Households, 1990**

Housing Unit Characteristics	Total Households		Total Square Footage				RSE Row Factors	
	(millions)	(percent)	Total		Heated			
			(billions)	(percent)	(billions)	(percent)		
RSE Column Factors:	0.936	0.936	1.067	1.004	1.064	1.002		
Total	94.0	100.0	169.2	100.0	147.5	100.0	1.67	
Fuels Used for Any Use (more than one often used)								
Electricity	94.0	100.0	169.2	100.0	147.5	100.0	1.67	
Natural Gas	57.7	61.4	106.3	62.8	93.8	63.6	3.13	
Wood	24.9	26.5	62.3	36.8	52.8	35.8	4.06	
Fuel Oil and/or Kerosene	16.3	17.3	33.2	19.6	28.3	19.2	5.72	
Fuel Oil	11.7	12.5	25.4	15.0	21.4	14.5	6.94	
Kerosene	5.3	5.7	9.3	5.5	8.1	5.5	3.83	
LPG ¹	8.2	8.8	13.9	8.2	11.6	7.9	10.17	
Coal7	.8	1.9	1.1	1.6	1.1	28.38	
Solar Collectors9	1.0	2.1	1.2	1.6	1.1	20.31	
Main Heating Fuel and Equipment								
Natural Gas	51.7	55.0	96.6	57.1	85.2	57.8	3.51	
Central Warm-Air Furnace	34.9	37.1	71.8	42.4	62.9	42.6	4.20	
For One Housing Unit	33.3	35.4	70.2	41.5	61.4	41.6	4.30	
For Two or More Units	1.6	1.7	1.6	.9	1.5	1.0	14.82	
Steam or Hot-Water System	8.3	8.8	14.9	8.8	13.4	9.1	7.99	
For One Housing Unit	4.5	4.8	11.1	6.6	9.6	6.5	11.12	
For Two or More Units	3.7	4.0	3.8	2.3	3.7	2.5	9.32	
Floor, Wall, or Pipeless Furnace	5.1	5.4	5.7	3.4	5.3	3.6	7.77	
Room Heater/Other	3.5	3.7	4.2	2.5	3.6	2.4	11.52	
Electricity	21.5	22.9	32.4	19.1	28.6	19.4	6.35	
Built-In Electric Units	6.7	7.1	8.7	5.2	7.7	5.2	9.39	
Central Warm-Air Furnace	7.4	7.9	10.7	6.3	9.6	6.5	13.35	
For One Housing Unit	7.2	7.7	10.6	6.3	9.5	6.5	13.55	
Heat Pump	6.4	6.9	11.8	7.0	10.3	7.0	14.10	
Other9	1.0	1.1	.7	1.0	.7	19.65	
Fuel Oil	10.4	11.1	23.0	13.6	19.4	13.2	6.99	
Steam or Hot-Water System	5.7	6.1	12.8	7.6	10.9	7.4	8.56	
For One Housing Unit	3.6	3.8	10.5	6.2	8.6	5.9	10.63	
For Two or More Units	2.1	2.2	2.3	1.4	2.3	1.5	19.74	
Central Warm-Air Furnace	4.4	4.6	9.8	5.8	8.2	5.5	11.28	
Other3	.4	.4	.2	.3	.2	27.54	
Wood	3.9	4.1	7.6	4.5	6.5	4.4	12.90	
Heating Stove	2.9	3.1	5.3	3.1	4.4	3.0	14.94	
Other	1.0	1.0	2.4	1.4	2.1	1.4	21.30	
LPG	4.4	4.7	7.3	4.3	6.2	4.2	14.38	
Central Warm-Air Furnace	2.6	2.8	4.8	2.8	4.2	2.8	15.21	
Room Heater	1.2	1.2	1.5	.9	1.3	.9	29.87	
Other6	.6	1.0	.6	.7	.5	28.63	
Kerosene	1.1	1.2	1.1	.7	1.1	.7	19.20	
Other3	.3	.7	.4	.6	.4	34.90	
None6	.7	.6	.4	--	--	24.53	
Secondary Heating Fuel (more than one may apply)								
No	53.6	57.0	80.9	47.8	71.8	48.7	2.37	
Yes	40.4	43.0	88.3	52.2	75.7	51.3	2.79	
Wood	20.8	22.1	54.3	32.1	46.0	31.2	4.50	
Electricity	16.6	17.7	32.8	19.4	28.6	19.4	4.75	
Natural Gas	2.5	2.7	4.7	2.8	4.1	2.7	11.26	
Fuel Oil7	.8	1.5	.9	1.2	.8	24.74	
Kerosene	4.2	4.5	8.1	4.8	6.9	4.7	9.49	
LPG9	1.0	1.8	1.1	1.4	1.0	20.02	
Other6	.7	1.8	1.1	1.6	1.1	26.09	

See footnotes at end of table.

**Table 26. Total Floorspace by Fuel Use,
U.S. Households, 1990 (Continued)**

Housing Unit Characteristics	Total Households		Total Square Footage				RSE Row Factors	
	(millions)	(percent)	Total		Heated			
			(billions)	(percent)	(billions)	(percent)		
RSE Column Factors:	0.936	0.936	1.067	1.004	1.064	1.002		
Secondary Heating Equipment (more than one may apply)								
No	53.6	57.0	80.9	47.8	71.8	48.7	2.37	
Yes	40.4	43.0	88.3	52.2	75.7	51.3	2.79	
Fireplace	17.2	18.3	45.9	27.1	39.1	26.5	4.93	
Portable Electric Heater	12.8	13.6	24.6	14.6	21.5	14.6	5.04	
Portable Kerosene Heater	4.2	4.5	7.9	4.7	6.8	4.6	9.68	
Oil or Gas Room Heater	1.4	1.5	2.8	1.6	2.3	1.6	13.34	
Wood or Coal Heating Stove	5.2	5.5	12.9	7.6	10.8	7.3	8.26	
Cooking Stove	1.2	1.2	1.6	1.0	1.4	.9	15.68	
Built-In Electric Units	4.1	4.3	8.9	5.2	7.8	5.3	14.36	
Central Warm-Air Furnace	1.0	1.1	2.1	1.3	1.8	1.2	19.76	
Forced Air	1.0	1.0	1.9	1.1	1.6	1.1	20.14	
Heat Pump4	.5	1.2	.7	1.1	.7	24.02	
Other	1.0	1.1	2.6	1.5	2.1	1.4	15.07	
Main Water-Heating Fuel								
Natural Gas	50.0	53.2	93.1	55.0	82.2	55.7	3.51	
Electricity	35.1	37.3	58.1	34.3	50.2	34.0	4.39	
Fuel Oil	5.1	5.4	11.0	6.5	9.4	6.3	8.79	
LPG	3.2	3.4	5.8	3.4	4.9	3.3	14.73	
Solar Collectors4	.5	.7	.4	.5	.4	23.47	
Other/None2	.2	.5	.3	.4	.3	37.33	
Main Cooking Fuel								
Electricity	54.8	58.3	104.0	61.4	89.8	60.9	2.29	
Natural Gas	33.7	35.8	56.9	33.6	50.9	34.5	3.77	
LPG	5.4	5.7	8.2	4.8	6.7	4.6	11.30	
Other/None2	.2	.2	.1	.1	.1	38.73	
Air Conditioning								
No	30.3	32.2	50.4	29.8	42.8	29.0	3.82	
Yes ²	63.7	67.7	118.8	70.2	104.7	71.0	1.86	
Electric	63.3	67.4	118.3	69.9	104.2	70.6	1.87	
Number of Rooms Usually Air-Conditioned								
All	41.6	44.2	77.0	45.5	67.9	46.1	2.57	
Some	22.0	23.4	41.7	24.7	36.6	24.8	3.68	
None	30.4	32.3	50.5	29.9	42.9	29.1	3.81	
Natural Gas Available in Neighborhood								
No	26.3	28.0	47.5	28.1	40.2	27.3	5.59	
Yes	67.7	72.0	121.7	71.9	107.3	72.7	2.50	
Uses Natural Gas	57.7	61.4	106.3	62.8	93.8	63.6	3.13	
Does not Use Natural Gas	10.0	10.6	15.4	9.1	13.5	9.1	7.32	
Wood Burned in Past 12 Months								
No	71.1	75.7	111.6	65.9	98.6	66.8	1.69	
Yes	22.9	24.3	57.6	34.1	48.9	33.2	4.18	
One-Third Cord or Less	10.8	11.4	27.9	16.5	23.6	16.0	6.34	
More than One-Third Cord	12.1	12.9	29.7	17.6	25.3	17.1	4.98	

¹ Excludes 20.1 million households that use LPG only for outdoor grills.

² An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

-- = Data not applicable.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 27. Fuel Use by Main Space-Heating Fuel,
Million U.S. Households, 1990**

Housing Unit Characteristics	Total	Main Heating Fuel							RSE Row Factors
		Natural Gas	Electricity	Fuel Oil	Kerosene	Wood	Liquefied Petroleum Gas	Other/ None	
	RSE Column Factors:	0.373	0.454	0.941	0.837	2.156	1.268	1.485	1.848
Total	94.0	51.7	21.5	10.4	1.1	3.9	4.4	0.9	8.38
Fuels Used for Any Use (more than one often used)									
Electricity	94.0	51.7	21.5	10.4	1.1	3.9	4.4	.9	8.34
Natural Gas	57.7	51.7	2.3	3.0	Q	.5	NC	Q	10.87
Wood	24.9	10.8	5.6	3.2	Q	3.9	1.2	.2	13.65
Fuel Oil and/or Kerosene	16.3	1.9	1.3	10.4	1.1	1.1	.4	Q	14.55
Fuel Oil	11.7	Q	Q	10.4	Q	.7	NC	Q	13.74
Kerosene	5.3	1.5	1.3	.7	1.1	.4	.4	Q	17.41
LPG ¹	8.2	Q	.8	1.2	.3	1.2	4.4	.2	16.86
Coal	.7	Q	Q	Q	NC	Q	Q	.2	44.32
Solar Collectors	.9	.4	.2	Q	NC	Q	NC	.1	30.00
Main Heating Equipment									
Central Warm-Air Furnace	50.4	34.9	7.4	4.4	.4	.6	2.6	Q	11.98
Forced Air	49.4	34.2	7.4	4.1	.4	.6	2.6	Q	12.18
For One Housing Unit	47.4	32.6	7.2	4.0	.4	.6	2.6	Q	12.40
For Two or More Units	2.0	1.6	Q	.2	NC	NC	Q	NC	42.46
Gravity	1.0	.7	Q	.2	NC	Q	Q	NC	38.59
Steam or Hot-Water System	14.2	8.3	Q	5.7	NC	Q	Q	Q	11.94
For One Housing Unit	8.3	4.5	Q	3.6	NC	Q	Q	Q	15.18
For Two or More Units	5.8	3.7	NC	2.1	NC	NC	NC	NC	22.48
Built-In Electric Units	6.7	--	6.7	--	--	--	--	--	16.95
Heat Pump	6.4	--	6.4	--	--	--	--	--	24.18
Floor, Wall, or									
Pipeless Furnace	5.9	5.1	Q	.2	NC	NC	.5	NC	22.00
Oil or Gas Room Heater	4.8	3.3	--	Q	.2	--	1.2	--	20.84
Portable Electric Heater	.7	--	.7	--	--	--	--	--	29.09
Portable Kerosene Heater	.5	--	--	--	.5	--	--	--	22.90
Wood or Coal Heating Stove	3.1	--	--	--	--	2.9	--	--	20.26
Fireplace	.3	NC	NC	--	--	.3	NC	NC	38.03
Cooking Stove	.3	.2	Q	NC	NC	Q	NC	NC	76.11
Other/None	.7	NC	Q	NC	NC	NC	Q	.7	27.21
Secondary Heating Fuel (more than one may apply)									
No	53.6	30.9	13.2	5.4	.4	.9	2.2	.7	9.40
Yes	40.4	20.8	8.4	5.0	.7	3.0	2.2	.2	10.87
Wood	20.8	10.8	5.6	3.1	Q	Q	1.1	Q	13.87
Electricity	16.6	10.1	1.1	2.0	.4	1.8	1.0	Q	13.43
Natural Gas	2.5	1.6	.5	Q	Q	.3	NC	Q	26.41
Fuel Oil	.7	Q	Q	Q	Q	.4	NC	Q	38.94
Kerosene	4.2	1.5	1.2	.6	Q	.4	.4	Q	20.00
LPG	.9	Q	.2	Q	Q	.3	Q	Q	34.09
Other	.6	.2	Q	Q	NC	Q	Q	NC	72.58
Secondary Heating Equipment (more than one may apply)									
No	53.6	30.9	13.2	5.4	.4	.9	2.2	.7	9.40
Yes	40.4	20.8	8.4	5.0	.7	3.0	2.2	.2	10.87
Fireplace	17.2	9.5	4.8	2.0	Q	Q	.7	Q	15.51
Portable Electric Heater	12.8	7.9	1.3	1.7	.2	.8	.9	Q	15.35
Portable Kerosene Heater	4.2	1.4	1.2	.6	.2	.3	.4	Q	20.27
Oil or Gas Room Heater	1.4	.8	.3	Q	Q	Q	Q	Q	34.18
Wood or Coal Heating Stove	5.2	1.8	1.4	1.4	Q	Q	.5	Q	20.75
Cooking Stove	1.2	.7	Q	Q	Q	Q	Q	NC	39.47
Built-In Electric Units	4.1	2.1	.5	.3	Q	.8	Q	Q	31.16
Central Warm-Air Furnace	1.0	Q	.2	NC	NC	.8	NC	NC	33.40
Forced Air	1.0	Q	.1	NC	NC	.8	NC	NC	32.62
Heat Pump	.4	Q	Q	Q	Q	.2	NC	Q	40.52
Other	1.0	.4	Q	Q	NC	.3	Q	Q	30.48

See footnotes at end of table.

**Table 27. Fuel Use by Main Space-Heating Fuel,
Million U.S. Households, 1990 (Continued)**

Housing Unit Characteristics	Total	Main Heating Fuel							RSE Row Factors
		Natural Gas	Electricity	Fuel Oil	Kerosene	Wood	Liquefied Petroleum Gas	Other/ None	
RSE Column Factors:	0.373	0.454	0.941	0.837	2.156	1.268	1.485	1.848	
Main Water-Heating Fuel									
Natural Gas	50.0	46.1	2.0	1.2	Q	0.5	NC	Q	11.41
Electricity	35.1	5.2	19.1	4.1	1.0	2.8	2.4	0.5	11.42
Fuel Oil	5.1	Q	Q	4.8	NC	Q	NC	Q	14.31
LPG	3.2	Q	Q	.3	Q	.4	2.0	.1	21.11
Solar Collectors4	.2	.2	NC	NC	Q	NC	Q	53.38
Other/None2	NC	NC	Q	Q	Q	NC	Q	80.71
Main Cooking Fuel									
Electricity	54.8	21.7	20.5	6.6	.8	2.7	1.8	.7	9.23
Natural Gas	33.7	30.0	.7	2.7	NC	.3	NC	Q	15.01
LPG	5.4	Q	.4	1.1	.3	.8	2.5	.2	18.39
Other/None2	Q	Q	Q	NC	Q	Q	NC	82.96
Air Conditioning									
No	30.3	16.8	3.9	4.2	.6	2.3	1.6	.8	11.73
Yes ²	63.7	34.9	17.6	6.2	.5	1.6	2.8	Q	8.68
Electric	63.3	34.5	17.6	6.2	.5	1.6	2.8	Q	8.73
Number of Rooms Usually Air-Conditioned									
All	41.6	22.0	14.3	2.4	.2	.9	1.7	Q	11.46
Some	22.0	12.9	3.3	3.7	.3	.7	1.1	Q	12.45
None	30.4	16.9	3.9	4.2	.6	2.3	1.6	.8	11.73
Natural Gas Available in Neighborhood									
No	26.3	--	12.9	4.9	.9	3.0	4.0	.7	10.96
Yes	67.7	51.7	8.7	5.5	Q	.9	.4	.3	10.37
Uses Natural Gas	57.7	51.7	2.3	3.0	Q	.5	NC	Q	10.87
Does not Use Natural Gas	10.0	--	6.4	2.5	Q	.4	.4	Q	15.42
Wood Burned in Past 12 Months									
No	71.1	41.8	16.5	7.6	1.0	Q	3.4	.8	7.47
Yes	22.9	9.9	5.0	2.8	Q	3.9	1.0	Q	12.89
One-Third Cord or Less	10.8	6.2	2.7	1.2	Q	Q	.4	Q	18.40
More than One-Third Cord	12.1	3.7	2.3	1.6	Q	3.8	.7	Q	14.96

¹ Excludes 20.1 million households that use LPG only for outdoor grills.

² An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

-- = 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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 28. Fuel Use by Main Space-Heating Fuel,
Percent of U.S. Households, 1990**

Housing Unit Characteristics	Total	Main Heating Fuel							RSE: Row Factors	
		Natural Gas	Electricity	Fuel Oil	Kerosene	Wood	Liquefied Petroleum Gas	Other/ None		
		RSE Column Factors:	0.449	0.495	0.915	0.808	2.077	1.179	1.296	1.919
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Fuels Used for Any Use (more than one often used)										
Electricity	100.0	100.0	100.0	100.0	100.0	99.1	100.0	100.0	100.0	NE
Natural Gas	61.4	100.0	10.7	29.0	C	12.8	NC	Q	11.97	
Wood	26.5	20.8	25.9	30.6	Q	100.0	26.3	21.8	11.98	
Fuel Oil and/or Kerosene	17.3	3.6	6.3	100.0	100.0	28.0	8.2	Q	16.95	
Fuel Oil	12.5	Q	Q	100.0	Q	17.8	NC	Q	15.74	
Kerosene	5.7	2.9	5.9	6.3	100.0	10.8	8.2	Q	18.77	
LPG ¹	8.8	Q	3.9	11.6	26.3	30.3	100.0	25.1	16.60	
Coal	.8	Q	Q	Q	NC	Q	Q	26.1	38.38	
Solar Collectors	1.0	.8	1.2	Q	NC	Q	NC	9.7	32.20	
Main Heating Equipment										
Central Warm-Air Furnace	53.6	67.5	34.5	41.9	37.1	16.0	59.8	Q	8.79	
Forced Air	52.6	66.2	34.5	39.7	37.1	14.8	59.6	Q	9.01	
For One Housing Unit	50.5	63.0	33.6	38.1	37.1	14.8	58.9	Q	9.14	
For Two or More Units	2.1	3.2	Q	Q	NC	NC	Q	NC	31.22	
Gravity	1.0	1.3	Q	2.3	NC	Q	Q	NC	35.39	
Steam or Hot-Water System	15.1	16.0	Q	54.7	NC	Q	Q	Q	9.39	
For One Housing Unit	8.9	8.7	Q	34.7	NC	Q	Q	Q	13.44	
For Two or More Units	6.2	7.2	NC	20.0	NC	NC	NC	NC	20.11	
Built-In Electric Units	7.1	--	31.1	--	--	--	--	--	14.31	
Heat Pump	6.9	--	29.9	--	--	--	--	--	21.11	
Floor, Wall, or Pipeless Furnace	6.3	9.8	Q	2.3	NC	NC	11.0	NC	20.60	
Oil or Gas Room Heater	5.1	6.3	--	Q	21.3	--	26.3	--	18.55	
Portable Electric Heater	.7	--	3.2	--	--	--	--	--	27.34	
Portable Kerosene Heater	.5	--	--	--	41.6	--	--	--	21.34	
Wood or Coal Heating Stove	3.3	--	--	--	--	75.0	--	21.6	14.29	
Fireplace	.3	NC	NC	--	--	7.1	NC	NC	37.51	
Cooking Stove	.4	.4	Q	NC	NC	Q	NC	NC	65.92	
Other/None	.7	NC	Q	NC	NC	NC	Q	70.4	19.76	
Secondary Heating Fuel (more than one may apply)										
No	57.0	59.7	61.1	52.0	36.2	22.5	49.3	74.8	6.33	
Yes	43.0	40.3	38.9	48.0	63.8	77.5	50.7	25.2	6.71	
Wood	22.1	20.8	25.8	29.8	Q	Q	25.7	Q	11.12	
Electricity	17.7	19.6	5.3	19.5	38.3	45.8	22.8	Q	10.78	
Natural Gas	2.7	3.0	2.5	Q	Q	7.8	NC	Q	25.36	
Fuel Oil	.8	Q	Q	Q	Q	11.3	NC	Q	35.74	
Kerosene	4.5	2.8	5.8	6.0	Q	10.4	8.2	Q	19.29	
LPG	1.0	Q	1.1	Q	Q	8.3	Q	Q	32.54	
Other	.7	.4	Q	Q	NC	Q	Q	NC	63.11	
Secondary Heating Equipment (more than one may apply)										
No	57.0	59.7	61.1	52.0	36.2	22.5	49.3	74.8	6.33	
Yes	43.0	40.3	38.9	48.0	63.8	77.5	50.7	25.2	6.71	
Fireplace	18.3	18.4	22.2	18.8	Q	Q	15.9	Q	13.29	
Portable Electric Heater	13.6	15.3	6.0	16.2	21.6	19.7	20.0	Q	13.16	
Portable Kerosene Heater	4.5	2.7	5.6	6.0	18.4	8.7	8.2	Q	19.09	
Oil or Gas Room Heater	1.5	1.6	1.3	Q	Q	Q	Q	Q	30.71	
Wood or Coal Heating Stove	5.5	3.4	6.6	13.8	Q	Q	10.6	Q	18.60	
Cooking Stove	1.2	1.4	Q	Q	Q	Q	Q	NC	34.14	
Built-In Electric Units	4.3	4.0	2.4	3.2	Q	21.7	Q	Q	27.76	
Central Warm-Air Furnace	1.1	Q	.8	NC	NC	21.0	NC	NC	31.56	
Forced Air	1.0	Q	.6	NC	NC	19.7	NC	NC	30.72	
Heat Pump	.5	Q	Q	Q	Q	5.5	NC	Q	38.40	
Other	1.1	.8	Q	Q	NC	6.9	Q	Q	28.47	

See footnotes at end of table.

**Table 28. Fuel Use by Main Space-Heating Fuel,
Percent of U.S. Households, 1990 (Continued)**

Housing Unit Characteristics		Main Heating Fuel							RSE Row Factors
		Total	Natural Gas	Electricity	Fuel Oil	Kerosene	Wood	Liquefied Petroleum Gas	
	RSE Column Factors:	0.449	0.495	0.915	0.808	2.077	1.179	1.296	1.919
Main Water-Heating Fuel									
Natural Gas	53.2	89.2	9.5	11.6	Q	11.7	NC	Q	12.83
Electricity	37.3	10.0	88.6	39.4	89.6	72.4	54.2	53.8	5.80
Fuel Oil	5.4	Q	Q	46.1	NC	Q	NC	Q	11.49
LPG	3.4	Q	Q	2.7	Q	11.3	45.8	13.4	18.45
Solar Collectors5	.3	.7	NC	NC	Q	NC	Q	49.76
Other/None2	NC	NC	Q	Q	Q	NC	Q	67.12
Main Cooking Fuel									
Electricity	58.3	41.9	95.0	63.5	73.7	69.4	41.8	70.6	4.82
Natural Gas	35.8	58.0	3.0	25.8	NC	6.7	NC	Q	13.21
LPG	5.7	Q	1.8	10.4	26.3	21.7	58.0	20.9	16.06
Other/None2	Q	Q	Q	NC	Q	Q	NC	68.99
Air Conditioning									
No	32.2	32.5	18.2	40.7	58.4	58.5	36.7	83.2	8.04
Yes ²	67.7	67.5	81.8	59.3	41.6	41.5	63.3	Q	5.56
Electric	67.4	66.8	81.8	59.3	41.6	41.5	63.3	Q	5.61
Number of Rooms Usually Air-Conditioned									
All	44.2	42.4	66.6	23.4	18.5	21.9	38.7	Q	8.82
Some	23.4	24.9	15.2	35.8	23.0	19.2	24.5	Q	10.98
None	32.3	32.6	18.2	40.7	58.4	58.9	36.7	83.2	8.04
Natural Gas Available In Neighborhood									
No	28.0	--	59.7	47.0	85.6	77.0	90.3	70.7	4.98
Yes	72.0	100.0	40.3	53.0	Q	23.0	9.7	29.3	9.99
Uses Natural Gas	61.4	100.0	10.7	29.0	Q	12.8	NC	Q	11.97
Does not Use Natural Gas	10.6	--	29.6	24.0	Q	10.3	9.7	Q	15.05
Wood Burned in Past 12 Months									
No	75.7	80.9	76.7	73.1	90.2	Q	76.6	82.3	3.38
Yes	24.3	19.1	23.3	26.9	Q	99.8	23.4	Q	10.79
One-Third Cord or Less	11.4	12.0	12.7	11.7	Q	Q	8.4	Q	16.41
More than One-Third Cord	12.9	7.1	10.5	15.1	Q	97.4	15.0	Q	8.85

¹ Excludes 20.1 million households that use LPG only for outdoor grills.

² An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

-- = 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.

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 29. Fuel Use by Climate Zone and Census Region,
Million U.S. Households, 1990**

Housing Unit Characteristics		Climate Zone					Census Region and Climate Zone								RSE Row Factors	
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest		South		West			
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD			
		Total														
RSE Column Factors:		0.420	1.502	0.961	1.115	1.013	1.077	0.964	1.317	0.788	1.030	1.180	1.359	0.821		
Total		94.0	10.1	26.7	20.9	19.3	17.0	12.3	6.9	23.1	17.6	14.7	7.1	12.3	8.71	
Fuels Used for Any Use (more than one often used)																
Electricity		94.0	10.1	26.6	20.9	19.3	17.0	12.3	6.9	23.1	17.6	14.7	7.1	12.3	8.71	
Natural Gas		57.7	5.1	18.5	12.7	12.5	8.9	6.3	5.6	16.9	7.6	7.7	3.3	10.4	8.36	
Wood		24.9	3.3	6.6	6.5	5.2	3.4	3.3	1.1	5.7	5.5	3.0	3.1	3.2	11.45	
Fuel Oil and/or Kerosene		16.3	2.7	5.8	5.5	1.9	.3	5.7	3.1	2.8	3.7	.3	.5	Q	14.01	
Fuel Oil		11.7	2.3	4.3	4.4	.5	Q	5.1	2.9	1.6	1.7	Q	Q	Q	13.91	
Kerosene		5.3	.5	1.8	1.2	1.6	.2	1.0	.2	1.4	2.3	Q	.1	Q	20.71	
LPG ¹		8.2	1.5	1.8	1.6	1.8	1.5	1.2	Q	2.4	2.3	1.2	.7	.4	21.81	
Coal		.7	Q	.3	Q	Q	Q	.3	NC	Q	Q	Q	Q	Q	38.61	
Solar Collectors		.9	Q	.2	Q	.4	.2	Q	Q	Q	Q	Q	Q	Q	30.91	
Main Heating Fuel and Equipment																
Natural Gas		51.7	5.0	17.0	10.5	11.2	8.1	5.0	3.7	16.5	7.2	6.9	3.1	9.3	9.14	
Central Warm-Air Furnace		34.9	3.5	12.5	6.8	6.8	5.2	2.8	1.3	13.1	5.3	4.3	2.4	5.7	10.91	
For One Housing Unit		33.3	3.4	11.7	6.4	6.7	5.1	2.7	1.2	12.4	5.0	4.2	2.3	5.6	11.21	
For Two or More Units		1.6	.2	.8	.4	Q	Q	Q	Q	.8	.3	Q	.1	Q	20.67	
Steam or Hot-Water System		8.3	1.0	3.7	3.2	.3	Q	2.1	2.4	2.5	.6	Q	.3	.2	17.81	
For One Housing Unit		4.5	.4	2.2	1.7	Q	Q	1.5	1.2	1.1	.3	Q	.2	Q	19.61	
For Two or More Units		3.7	.5	1.5	1.5	Q	Q	.6	1.2	1.4	.2	Q	Q	Q	19.91	
Floor, Wall, or Pipeless Furnace		5.1	.2	.4	.3	3.0	1.1	Q	NC	.4	.6	1.0	.2	2.8	22.21	
Room Heater/Other		3.5	.2	.3	.2	1.1	1.6	.1	NC	.4	.6	1.6	Q	.6	28.71	
Electricity		21.5	1.4	3.7	4.2	5.1	7.1	1.5	Q	2.6	5.8	6.5	2.4	2.2	17.12	
Built-In Electric Units		6.7	.9	2.5	1.6	1.4	.3	1.1	Q	1.5	1.4	.3	1.6	.6	23.88	
Central Warm-Air Furnace		7.4	Q	.7	.8	1.3	4.2	Q	Q	.8	1.3	3.9	.5	.7	23.42	
For One Housing Unit		7.2	Q	.7	.7	1.3	4.1	Q	Q	.8	1.2	3.8	.5	.7	28.58	
Heat Pump		6.4	Q	.5	1.6	2.2	2.2	.2	Q	.3	3.0	1.8	Q	.7	30.39	
Other		.9	Q	Q	Q	.2	.5	Q	Q	Q	Q	.4	Q	Q	33.51	
Fuel Oil		10.4	1.8	4.2	3.9	.5	Q	4.7	2.7	1.2	1.5	Q	Q	NC	15.35	
Steam or Hot-Water System		5.7	.7	2.5	2.5	NC	NC	3.1	2.3	Q	Q	NC	Q	NC	15.51	
For One Housing Unit		3.6	.5	2.0	1.1	NC	NC	2.4	.9	Q	Q	NC	Q	NC	17.41	
For Two or More Units		2.1	.2	.5	1.4	NC	NC	.6	1.4	Q	Q	NC	NC	NC	28.41	
Central Warm-Air Furnace		4.4	1.1	1.6	1.3	.4	Q	1.6	.4	1.0	1.0	Q	Q	NC	29.01	
Other		.3	Q	Q	Q	Q	Q	Q	Q	Q	.2	Q	Q	NC	43.31	
Wood		3.9	1.0	.9	1.2	.6	Q	.5	Q	1.0	1.0	Q	1.0	.2	26.71	
Heating Stove		2.9	.6	.7	1.0	.5	Q	Q	Q	.5	.8	Q	.9	Q	25.26	
Other		1.0	Q	.2	.3	Q	Q	Q	NC	.5	.2	Q	Q	Q	36.41	
LPG		4.4	.8	.7	.8	.12	.9	.2	NC	1.6	1.4	.8	.3	Q	28.51	
Central Warm-Air Furnace		2.6	.6	.5	.5	.5	.5	Q	NC	1.2	.7	.4	Q	Q	30.71	
Room Heater		1.2	Q	Q	Q	.6	Q	Q	NC	.2	.6	Q	Q	Q	44.38	
Other		.6	Q	Q	Q	Q	Q	Q	NC	.2	Q	Q	Q	Q	62.91	
Kerosene		1.1	Q	Q	Q	.5	Q	.3	NC	Q	.6	Q	Q	Q	31.31	
Other		.3	Q	Q	Q	Q	Q	NC	Q	Q	Q	NC	NC	Q	84.31	
None		.6	NC	NC	NC	Q	Q	NC	NC	NC	Q	Q	NC	Q	.5	34.51

See footnotes at end of table.

**Table 29. Fuel Use by Climate Zone and Census Region,
Million U.S. Households, 1990 (Continued)**

Housing Unit Characteristics	Total	Climate Zone				Census Region and Climate Zone								RSE Row Factors	
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest	South		West			
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD		
RSE Column Factors:	0.420	1.502	0.961	1.115	1.013	1.077	0.964	1.317	0.788	1.030	1.180	1.359	0.821		
Secondary Heating Fuel (more than one may apply)															
No	53.6	5.8	15.8	11.3	10.1	10.5	6.9	5.0	14.0	8.2	8.8	3.4	7.2	7.05	
Yes	40.4	4.3	10.8	9.6	9.1	6.5	5.4	1.9	9.1	9.4	5.9	3.7	5.1	8.43	
Wood	20.8	2.3	5.7	5.2	4.5	3.1	2.8	1.1	4.6	4.4	2.8	2.1	3.0	11.84	
Electricity	16.6	1.5	4.4	4.0	3.7	3.0	2.3	.7	3.4	3.7	2.7	1.6	2.2	11.97	
Natural Gas	2.5	.2	.6	.4	.5	.7	.2	Q	.5	.3	.7	.2	.5	24.81	
Fuel Oil7	Q	.2	Q	Q	Q	.3	Q	Q	Q	Q	Q	NC	44.21	
Kerosene	4.2	.3	1.6	1.0	1.2	Q	.7	.2	1.3	1.7	Q	Q	Q	19.47	
LPG9	.3	Q	.2	.2	Q	.1	NC	.3	.3	Q	Q	Q	38.45	
Other6	Q	.3	Q	Q	Q	.2	NC	Q	Q	Q	Q	Q	38.43	
Secondary Heating Equipment (more than one may apply)															
No	53.6	5.8	15.8	11.3	10.1	10.5	6.9	5.0	14.0	8.2	8.8	3.4	7.2	7.05	
Yes	40.4	4.3	10.8	9.6	9.1	6.5	5.4	1.9	9.1	9.4	5.9	3.7	5.1	8.43	
Fireplace	17.2	1.6	4.3	4.2	4.1	3.0	2.0	.8	3.8	3.5	2.7	1.5	2.9	12.83	
Portable Electric Heater	12.8	1.0	3.4	3.2	2.9	2.3	1.6	.5	2.8	2.9	2.1	1.0	1.8	12.81	
Portable Kerosene Heater	4.2	Q	1.5	1.0	1.2	Q	.7	.2	1.3	1.8	Q	Q	Q	20.00	
Oil or Gas Room Heater	1.4	.2	.2	.3	.3	.4	Q	Q	.3	.4	.4	Q	Q	27.85	
Wood or Coal Heating Stove	5.2	.9	1.8	1.4	.8	Q	1.1	.3	1.1	1.2	Q	.9	.3	18.48	
Cooking Stove	1.2	.3	Q	Q	Q	.4	.2	Q	.3	Q	.4	Q	.2	28.78	
Built-In Electric Units	4.1	.5	.9	.9	.9	.9	.6	Q	.5	.8	Q	.7	.6	27.26	
Central Warm-Air Furnace	1.0	Q	.1	.3	.2	Q	Q	Q	.3	.2	Q	.2	Q	35.36	
Forced Air	1.0	Q	.1	.3	.2	Q	Q	Q	.3	.2	Q	.2	Q	36.42	
Heat Pump4	Q	Q	Q	Q	Q	Q	Q	Q	.2	Q	Q	Q	44.53	
Other	1.0	.2	.4	Q	Q	Q	.2	Q	.2	Q	Q	Q	Q	30.04	
Main Water-Heating Fuel															
Natural Gas	50.0	4.2	16.6	10.3	11.0	8.0	5.5	4.0	14.8	6.0	6.8	2.9	10.0	8.88	
Electricity	35.1	4.6	7.2	7.6	7.5	8.3	3.7	.6	7.0	10.7	7.4	3.9	1.7	12.96	
Fuel Oil	5.1	.6	2.1	2.4	NC	Q	2.6	2.3	Q	Q	NC	NC	Q	12.83	
LPG	3.2	.6	.7	.7	.7	.6	.3	NC	1.2	.7	.4	.3	.2	29.38	
Solar Collectors4	Q	Q	Q	Q	.2	Q	Q	NC	NC	Q	Q	.3	38.49	
Other/None2	Q	Q	Q	NC	Q	Q	NC	Q	NC	NC	NC	Q	71.68	
Main Cooking Fuel															
Electricity	54.8	7.1	14.6	11.0	11.2	10.9	7.3	1.9	12.6	12.4	9.6	5.7	5.2	8.79	
Natural Gas	33.7	1.9	10.9	8.9	7.0	5.0	4.0	4.9	9.0	3.9	4.2	1.0	6.7	9.76	
LPG	5.4	1.0	1.1	1.1	1.0	1.1	1.0	Q	1.4	1.3	.9	.4	.3	24.46	
Other/None2	Q	Q	Q	Q	NC	Q	Q	NC	NC	Q	Q	Q	73.67	
Air Conditioning															
No	30.3	4.9	10.6	6.0	6.3	2.5	6.3	2.2	6.1	2.8	1.4	5.3	6.2	10.66	
Yes ²	63.7	5.3	16.1	14.9	12.9	14.6	6.1	4.7	17.0	14.8	13.3	1.7	6.1	8.42	
Electric	63.3	5.3	16.0	14.7	12.8	14.5	6.0	4.7	16.9	14.7	13.3	1.7	6.0	8.48	
Number of Rooms Usually Air-Conditioned															
All	41.6	3.1	8.3	9.2	9.6	11.4	2.2	2.0	10.5	11.3	10.4	1.0	4.1	10.88	
Some	22.0	2.1	7.7	5.7	3.4	3.1	3.8	2.7	6.4	3.5	2.9	.8	2.0	11.20	
None	30.4	4.9	10.7	6.0	6.4	2.5	6.3	2.2	6.1	2.8	1.4	5.3	6.2	10.66	

See footnotes at end of table.

Table 29. Fuel Use by Climate Zone and Census Region, Million U.S. Households, 1990 (Continued)

Housing Unit Characteristics	Total	Climate Zone					Census Region and Climate Zone							
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest		South		West	
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.420	1.502	0.961	1.115	1.013	1.077	0.964	1.317	0.788	1.030	1.180	1.359	0.821	RSE Row Fcs Total
Natural Gas Available in Neighborhood														
No	26.3	4.2	5.3	6.3	4.7	5.8	4.5	Q	4.4	7.9	4.9	2.6	1.4	14.12
Yes	67.7	5.9	21.4	14.6	14.6	11.2	7.8	6.2	18.7	9.7	9.8	4.5	10.9	7.10
Uses Natural Gas	57.7	5.1	18.5	12.7	12.5	8.9	6.3	5.6	16.9	7.6	7.7	3.3	10.4	6.36
Does not Use Natural Gas ...	10.0	.8	2.9	1.9	2.1	2.3	1.5	.7	1.9	2.1	2.1	1.2	.5	17.17
Wood Burned in Past 12 Months														
No	71.1	7.0	20.5	15.0	14.5	14.1	9.3	6.0	17.7	12.4	12.1	4.2	9.4	6.48
Yes	22.9	3.1	6.2	5.9	4.8	2.9	3.0	.9	5.4	5.2	2.5	2.9	2.9	11.54
One-Third Cord or Less	10.8	1.2	2.9	2.6	2.6	1.5	1.4	.5	2.4	2.0	1.4	1.0	1.9	15.50
More than One-Third Cord ...	12.1	2.0	3.3	3.3	2.2	1.4	1.6	.4	3.0	3.2	1.2	1.9	1.0	14.31

¹ Excludes 20.1 million households that use LPG only for outdoor grills.² An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 30. Fuel Use by Climate Zone and Census Region, Percent of U.S. Households, 1990

Housing Unit Characteristics	RSE Column Factors:	Total	Climate Zone				Census Regions and Climate Zones								RSE Row Factors		
			Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest		South		West			
			More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD			
			Total	More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD	More than 2,000 CDD and Fewer than 4,000 HDD	5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD		
			0.476	1.364	0.890	0.982	0.936	1.030	1.004	1.253	0.908	1.059	1.127	1.476	0.908		
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00	
Fuels Used for Any Use (more than one often used)																	
Electricity		100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	100.0	NE	
Natural Gas		61.4	50.6	69.2	60.5	65.1	52.6	51.2	81.0	73.1	43.2	52.1	46.3	84.7	6.60		
Wood		26.5	32.4	24.6	31.2	26.8	19.8	26.9	16.0	24.6	31.0	20.4	44.1	26.1	9.32		
Fuel Oil and/or Kerosene		17.3	26.9	21.7	26.2	10.1	2.0	46.5	45.3	12.2	20.9	2.1	7.3	Q	13.18		
Fuel Oil		12.5	23.1	16.2	21.2	2.6	Q	41.1	42.5	6.8	9.4	Q	Q	Q	13.07		
Kerosene		5.7	5.0	6.6	5.7	8.4	1.4	7.9	3.3	6.0	13.0	Q	1.8	Q	19.65		
LPG ¹		8.8	14.6	6.9	7.6	9.4	9.0	9.6	Q	10.4	12.8	8.4	9.9	3.6	20.97		
Coal		.8	Q	1.0	Q	Q	Q	2.1	NC	Q	Q	Q	Q	Q	36.92		
Solar Collectors		1.0	Q	.8	Q	1.9	1.1	Q	Q	Q	Q	Q	Q	3.8	31.66		
Main Heating Fuel and Equipment																	
Natural Gas		55.0	49.0	63.6	50.2	58.4	47.5	40.8	53.8	71.5	40.8	47.2	44.1	75.2	7.60		
Central Warm-Air Furnace		37.1	35.0	47.0	32.3	35.5	30.7	22.7	18.5	56.9	30.2	29.2	34.1	46.1	9.67		
For One Housing Unit		35.4	33.4	44.0	30.4	34.9	29.9	21.5	17.9	53.6	28.4	28.3	32.1	45.2	9.99		
For Two or More Units		1.7	1.7	3.1	1.9	Q	Q	Q	Q	3.3	1.8	Q	2.0	Q	21.41		
Steam or Hot-Water System		8.8	9.5	14.0	15.4	1.3	Q	16.9	35.3	11.0	3.3	Q	4.6	1.6	17.35		
For One Housing Unit		4.8	4.4	8.2	8.1	Q	Q	11.9	18.1	4.8	2.0	Q	3.1	Q	19.17		
For Two or More Units		4.0	5.1	5.8	7.3	Q	Q	5.0	17.2	6.2	1.4	Q	Q	Q	19.91		
Floor, Wall, or																	
Pipeless Furnace		5.4	2.2	1.4	1.5	15.7	6.8	Q	NC	1.9	3.6	6.6	3.4	22.6	21.61		
Room Heater/Other		3.7	2.2	1.2	1.0	5.9	9.5	1.1	NC	1.7	3.6	10.8	Q	4.9	28.59		
Electricity		22.9	13.9	13.7	20.2	26.5	42.0	12.2	7.2	11.4	33.2	44.0	33.9	17.8	16.08		
Built-In Electric Units		7.1	8.8	9.3	7.5	7.4	1.9	9.2	Q	6.5	8.0	2.0	23.0	4.8	22.05		
Central Warm-Air Furnace		7.9	Q	2.5	4.0	6.8	24.6	Q	Q	3.5	7.5	26.7	7.3	5.9	25.45		
For One Housing Unit		7.7	Q	2.5	3.5	6.8	24.0	Q	Q	3.5	7.0	26.1	7.3	5.9	25.65		
Heat Pump		6.9	Q	1.8	7.6	11.3	12.7	1.9	Q	1.4	16.8	12.4	Q	6.0	29.49		
Other		1.0	Q	Q	Q	.9	2.8	Q	Q	Q	Q	2.8	Q	Q	33.43		
Fuel Oil		11.1	17.7	15.6	18.9	2.4	Q	38.5	38.6	5.2	8.3	Q	Q	NC	14.41		
Steam or Hot-Water System		6.1	7.0	9.2	12.0	NC	NC	25.0	32.7	Q	Q	NC	Q	NC	14.62		
For One Housing Unit		3.8	5.3	7.5	5.2	NC	NC	19.8	13.0	Q	Q	NC	Q	NC	16.70		
For Two or More Units		2.2	1.7	1.8	6.9	NC	NC	5.2	19.8	Q	Q	NC	NC	NC	28.24		
Central Warm-Air Furnace		4.6	10.6	6.0	6.2	1.9	Q	13.3	5.6	4.5	5.7	Q	Q	NC	20.01		
Other		.4	Q	Q	Q	Q	Q	Q	Q	1.2	Q	Q	NC	41.52			
Wood		4.1	9.6	3.3	5.9	3.1	Q	3.7	Q	4.4	5.7	Q	14.0	1.5	25.05		
Heating Stove		3.1	6.4	2.6	4.7	2.4	Q	Q	Q	2.3	4.6	Q	12.8	Q	23.85		
Other		1.0	3.3	.7	1.2	Q	Q	Q	NC	2.1	1.1	Q	Q	Q	35.50		
LPG		4.7	7.5	2.7	3.6	6.4	5.4	1.4	NC	6.9	7.8	5.6	3.7	Q	28.47		
Central Warm-Air Furnace		2.8	5.5	2.0	2.4	2.8	2.9	Q	NC	5.3	3.7	3.0	Q	Q	30.87		
Room Heater		1.2	Q	Q	Q	3.0	Q	Q	NC	.7	3.3	Q	Q	Q	41.30		
Other		.6	Q	Q	Q	Q	Q	Q	NC	.9	Q	Q	Q	Q	55.12		
Kerosene		1.2	Q	Q	Q	2.4	Q	2.5	NC	Q	3.3	Q	Q	Q	30.14		
Other		.3	Q	Q	Q	Q	NC	Q	NC	Q	Q	NC	NC	NC	74.51		
None		.7	NC	NC	NC	Q	3.0	NC	NC	NC	Q	Q	NC	4.0	32.42		

See footnotes at end of table.

**Table 30. Fuel Use by Climate Zone and Census Region,
Percent of U.S. Households, 1990 (Continued)**

Housing Unit Characteristics	Total	Climate Zone					Census Regions and Climate Zones								RSE Row Factors	
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest		South		West			
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	RSE Row Factors		
		RSE Column Factors:	0.476	1.364	0.890	0.982	0.936	1.030	1.004	1.253	0.908	1.059	1.127	1.476	0.908	
Secondary Heating Fuel (more than one may apply)																
No	57.0	57.6	59.3	54.0	52.6	61.9	56.0	72.9	60.6	46.8	60.0	48.0	58.8	4.23		
Yes	43.0	42.4	40.7	46.0	47.4	38.1	44.0	27.1	39.4	53.2	40.0	52.0	41.2	5.73		
Wood	22.1	22.3	21.3	24.9	23.5	18.2	22.8	15.6	20.1	24.9	18.9	30.0	24.4	10.21		
Electricity	17.7	14.5	16.3	19.2	19.2	17.9	18.4	10.5	14.6	21.0	18.7	22.1	18.2	10.07		
Natural Gas	2.7	2.2	2.2	2.0	2.7	4.4	1.7	Q	2.4	1.5	4.6	2.3	3.8	24.02		
Fuel Oil8	3.0	.6	Q	Q	Q	2.4	Q	Q	Q	Q	Q	Q	40.03		
Kerosene	4.5	2.6	5.9	5.0	6.1	Q	5.3	3.3	5.5	9.8	Q	Q	Q	18.28		
LPG	1.0	3.0	Q	.9	1.1	Q	1.0	NC	1.4	1.5	Q	Q	Q	36.80		
Other7	Q	1.1	Q	Q	Q	1.6	NC	Q	Q	Q	Q	Q	38.59		
Secondary Heating Equipment (more than one may apply)																
No	57.0	57.6	59.3	54.0	52.6	61.9	56.0	72.9	60.6	46.8	60.0	48.0	58.8	4.23		
Yes	43.0	42.4	40.7	46.0	47.4	38.1	44.0	27.1	39.4	53.2	40.0	52.0	41.2	5.73		
Fireplace	18.3	15.6	16.2	20.1	21.1	17.9	16.4	12.2	16.3	19.9	18.4	20.6	23.8	11.5		
Portable Electric Heater	13.6	9.5	12.7	15.5	15.0	13.7	13.1	7.9	12.3	16.4	14.3	14.0	15.0	1.33		
Portable Kerosene Heater	4.5	2.7	5.8	4.9	6.3	Q	5.3	3.0	5.4	10.0	Q	Q	Q	20.20		
Oil or Gas Room Heater	1.5	1.8	.9	1.4	1.6	2.4	Q	Q	1.3	2.2	2.8	Q	Q	27.49		
Wood or Coal Heating Stove	5.5	8.7	6.9	6.9	4.4	Q	9.1	4.0	5.0	6.8	Q	13.0	2.8	16.56		
Cooking Stove	1.2	3.3	Q	Q	Q	2.4	1.4	Q	1.4	Q	2.4	Q	1.4	27.90		
Built-In Electric Units	4.3	4.8	3.4	4.5	4.4	5.1	4.9	Q	2.3	4.3	Q	9.6	4.5	24.80		
Central Warm-Air Furnace	1.1	2.6	.5	1.5	1.2	Q	Q	Q	1.1	1.4	Q	2.9	Q	34.04		
Forced Air	1.0	2.5	.4	1.4	1.0	Q	Q	Q	1.1	1.2	Q	2.3	Q	35.25		
Heat Pump5	Q	Q	Q	Q	Q	Q	Q	Q	1.2	Q	Q	Q	40.58		
Other	1.1	1.9	1.3	Q	Q	Q	1.9	Q	.9	Q	Q	Q	Q	28.40		
Main Water-Heating Fuel																
Natural Gas	53.2	41.6	62.1	49.0	57.0	47.0	45.0	57.8	64.0	34.1	46.1	40.7	81.6	7.38		
Electricity	37.3	45.3	27.0	36.1	38.7	48.6	29.7	9.1	30.3	61.0	50.5	54.5	14.1	10.50		
Fuel Oil	5.4	6.0	7.8	11.5	NC	Q	21.4	32.8	Q	Q	NC	NC	Q	12.51		
LPG	3.4	6.2	2.5	3.1	3.5	3.3	2.6	NC	5.2	4.0	3.0	4.0	1.9	20.86		
Solar Collectors5	Q	Q	Q	Q	.9	Q	Q	NC	NC	Q	Q	2.1	37.49		
Other/None2	Q	Q	Q	NC	Q	Q	NC	Q	Q	NC	NC	Q	83.28		
Main Cooking Fuel																
Electricity	58.3	70.2	54.6	52.4	58.1	64.2	58.9	28.2	54.7	70.5	65.1	80.4	42.6	5.22		
Natural Gas	35.8	19.2	40.8	42.4	36.4	29.2	32.3	71.2	33.9	22.0	28.8	14.0	54.4	3.47		
LPG	5.7	10.0	4.3	5.1	5.3	6.5	8.3	Q	6.1	7.5	6.1	5.1	2.7	23.75		
Other/None2	Q	Q	Q	NC	Q	Q	Q	NC	NC	Q	Q	Q	65.05		
Air Conditioning																
No	32.2	48.0	39.8	28.9	32.9	14.4	50.9	31.9	26.5	15.8	9.4	75.3	50.7	9.20		
Yes ²	67.7	52.0	60.2	71.1	67.1	85.6	49.1	68.1	73.5	84.2	90.6	24.7	49.3	4.58		
Electric	67.4	51.9	59.9	70.4	66.7	85.5	49.0	68.1	73.3	83.5	90.5	23.7	48.7	4.66		
Number of Rooms Usually Air-Conditioned																
All	44.2	30.8	31.1	44.0	49.6	67.2	17.9	29.3	45.7	64.2	71.0	14.0	33.2	7.28		
Some	23.4	21.2	29.0	27.1	17.4	18.4	31.1	38.8	27.7	20.0	19.6	10.7	16.1	9.96		
None	32.3	48.0	39.9	28.9	33.0	14.4	51.1	31.9	26.6	15.9	9.4	75.3	50.7	9.20		

See footnotes at end of table.

**Table 30. Fuel Use by Climate Zone and Census Region,
Percent of U.S. Households, 1990 (Continued)**

Housing Unit Characteristics	Total	Climate Zone				Census Regions and Climate Zones								RSE Row Factors		
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest		South		West			
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD or More	4,000 HDD or More	Fewer than 2,000 CDD or More	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD			
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD or More	4,000 HDD or More	Fewer than 2,000 CDD or More	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD			
RSE Column Factors:	0.476	1.364	0.890	0.982	0.936	1.030	1.004	1.253	0.908	1.059	1.127	1.476	0.908			
Natural Gas Available in Neighborhood																
No	28.0	41.3	20.0	30.3	24.2	34.1	36.8	9.4	18.9	44.8	33.5	36.1	11.3	13.37		
Yes	72.0	58.7	80.0	69.7	75.8	65.9	63.2	90.6	81.1	55.2	66.5	63.9	88.7	4.88		
Uses Natural Gas	61.4	50.6	69.2	60.5	65.1	52.6	51.2	81.0	73.1	43.2	52.1	46.3	84.7	6.60		
Does not Use Natural Gas ...	10.6	8.0	10.9	9.2	10.7	13.3	11.9	9.6	8.0	12.0	14.4	17.6	3.9	16.11		
Wood Burned in Past 12 Months																
No	75.7	69.0	76.9	71.7	75.1	83.1	75.4	86.9	76.6	70.4	82.7	59.4	76.4	3.02		
Yes	24.3	31.0	23.1	28.3	24.9	16.9	24.6	13.1	23.4	29.6	17.3	40.6	23.6	9.53		
One-Third Cord or Less	11.4	11.4	10.8	12.3	13.6	9.0	11.5	8.0	10.5	11.5	9.5	14.3	15.6	14.86		
More than One-Third Cord ...	12.9	19.6	12.3	15.9	11.3	8.0	13.1	5.2	12.9	18.1	7.9	26.3	8.0	11.98		

¹ Excludes 20.1 million households that use LPG only for outdoor grills.

² An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

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

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 31. Fuel Use by Year of Construction,
Million U.S. Households, 1990**

Housing Unit Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
		RSE Column Factors:	0.393	2.110	1.954	1.352	0.787	0.909	0.819	1.136
Total	94.0	2.8	5.1	8.0	21.4	14.8	13.4	7.0	21.5	6.19
Fuels Used for Any Use (more than one often used)										
Electricity	94.0	2.8	5.1	8.0	21.4	14.8	13.4	7.0	21.5	6.20
Natural Gas	57.7	1.4	1.6	3.3	10.8	10.1	9.4	5.1	16.0	8.19
Wood	24.9	.9	1.9	2.9	6.8	4.1	3.0	1.2	4.1	11.27
Fuel Oil and/or Kerosene	16.3	.3	.2	.6	3.1	2.3	2.9	1.4	5.5	12.96
Fuel Oil	11.7	Q	Q	.2	1.7	1.8	2.4	1.0	4.4	15.95
Kerosene	5.3	Q	Q	.5	1.5	.7	.6	.4	1.3	21.50
LPG ²	8.2	.6	.4	.9	1.8	1.0	.9	.7	1.8	18.77
Coal	.7	NC	Q	Q	Q	Q	Q	Q	.2	52.80
Solar Collectors	.9	Q	Q	.2	.3	Q	Q	Q	Q	34.08
Main Heating Fuel and Equipment										
Natural Gas	51.7	1.3	1.5	2.9	9.5	9.5	8.6	4.7	13.8	8.95
Central Warm-Air Furnace	34.9	1.2	1.4	2.7	7.8	6.3	5.8	2.8	6.7	10.45
For One Housing Unit	33.3	1.2	1.4	2.6	7.2	6.0	5.8	2.7	6.3	10.59
For Two or More Units	1.6	NC	NC	Q	.6	.4	Q	Q	.5	36.86
Steam or Hot-Water System	8.3	Q	NC	Q	.9	1.6	1.0	.7	3.8	18.38
For One Housing Unit	4.5	Q	NC	Q	.3	.9	.6	.4	2.1	26.07
For Two or More Units	3.7	Q	NC	Q	.6	.7	.4	.2	1.7	28.81
Floor, Wall, or Pipeless Furnace	5.1	Q	Q	Q	.5	1.2	1.1	.7	1.6	21.40
Room Heater/Other	3.5	NC	NC	Q	.3	.4	.7	.5	1.6	28.22
Electricity	21.5	.7	3.0	3.9	8.2	2.6	1.3	.6	1.2	13.84
Built-In Electric Units	6.7	.2	.3	1.1	2.6	1.2	.6	.2	.6	21.48
Central Warm-Air Furnace	7.4	Q	1.0	1.1	3.9	.8	.3	Q	Q	23.54
For One Housing Unit	7.2	Q	1.0	1.0	3.8	.8	.3	Q	Q	23.84
Heat Pump	6.4	.3	1.7	1.7	1.5	.5	.2	.2	.2	26.12
Other	.9	Q	Q	Q	Q	Q	Q	Q	.3	48.37
Fuel Oil	10.4	Q	Q	Q	1.5	1.5	2.1	.9	4.1	15.52
Steam or Hot-Water System	5.7	Q	Q	Q	.8	.7	1.0	.5	2.4	19.10
For One Housing Unit	3.6	Q	Q	Q	.5	.5	.8	.2	1.4	23.26
For Two or More Units	2.1	NC	NC	Q	.3	Q	Q	.3	1.1	38.07
Central Warm-Air Furnace	4.4	Q	NC	Q	.7	.7	1.0	.4	1.5	23.30
Other	.3	NC	NC	NC	NC	Q	Q	Q	Q	66.03
Wood	3.9	Q	.2	.3	.8	.5	.5	.3	1.1	25.69
Heating Stove	2.9	Q	.2	.2	.6	.4	.4	Q	.9	28.96
Other	1.0	Q	NC	Q	.2	Q	Q	Q	.3	42.48
LPG	4.4	.4	.2	.6	1.0	.5	.5	.3	.8	25.70
Central Warm-Air Furnace	2.6	.3	.2	.5	.8	.2	Q	Q	.3	25.84
Room Heater	1.2	Q	NC	Q	Q	Q	.3	Q	.3	51.51
Other	.6	Q	Q	Q	Q	Q	Q	Q	Q	72.08
Kerosene	1.1	Q	Q	Q	.4	Q	Q	Q	.3	47.72
Other	.3	NC	Q	Q	Q	Q	Q	Q	Q	90.22
None	.6	Q	Q	Q	Q	Q	Q	Q	.1	48.17
Secondary Heating Fuel (more than one may apply)										
No	53.6	1.6	3.1	4.4	11.3	8.4	7.4	4.3	13.2	7.37
Yes	40.4	1.2	2.0	3.7	10.1	6.5	6.0	2.7	8.3	8.37
Wood	20.8	.8	1.7	2.6	5.9	3.5	2.5	.9	2.8	12.31
Electricity	16.6	.4	.3	.7	3.7	2.4	3.0	1.4	4.7	12.08
Natural Gas	2.5	NC	Q	Q	.6	.5	.4	.3	.5	28.24
Fuel Oil	.7	Q	NC	Q	Q	Q	Q	Q	.3	52.00
Kerosene	4.2	Q	Q	.4	1.2	.6	.5	.4	1.0	22.24
LPG	.9	NC	Q	Q	.2	.2	Q	Q	.3	44.78
Other	.6	NC	Q	Q	Q	Q	Q	Q	.2	55.19

See footnotes at end of table.

**Table 31. Fuel Use by Year of Construction,
Million U.S. Households, 1990 (Continued)**

Housing Unit Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
		RSE Column Factors:	0.393	2.110	1.954	1.352	0.787	0.909	0.819	1.136
Secondary Heating Equipment (more than one may apply)										
No	53.6	1.6	3.1	4.4	11.3	8.4	7.4	4.3	13.2	7.37
Yes	40.4	1.2	2.0	3.7	10.1	6.5	6.0	2.7	8.3	8.37
Fireplace	17.2	.7	1.5	2.1	5.2	3.1	2.1	.6	1.8	13.49
Portable Electric Heater	12.8	.3	.2	.5	2.6	1.8	2.3	1.2	3.8	13.57
Portable Kerosene Heater	4.2	Q	Q	.4	1.2	.6	.4	.4	1.0	22.73
Oil or Gas Room Heater	1.4	Q	NC	Q	Q	.3	.3	.2	.3	33.19
Wood or Coal Heating Stove	5.2	Q	.3	.6	1.2	.8	.6	.3	1.2	19.27
Cooking Stove	1.2	NC	Q	Q	.3	Q	.3	Q	.3	38.81
Built-In Electric Units	4.1	Q	Q	.3	1.3	.6	.6	.3	.8	26.84
Central Warm-Air Furnace	1.0	NC	Q	Q	.2	.3	Q	Q	.2	45.54
Forced Air	1.0	NC	Q	Q	.2	.3	Q	Q	.2	46.78
Heat Pump4	Q	Q	Q	Q	Q	Q	Q	Q	58.35
Other	1.0	Q	Q	Q	Q	Q	.3	Q	.4	32.66
Main Water-Heating Fuel										
Natural Gas	50.0	1.2	1.3	2.9	9.5	9.2	8.1	4.2	13.6	8.97
Electricity	35.1	1.3	3.5	4.5	10.3	4.6	3.4	2.2	5.2	10.02
Fuel Oil	5.1	Q	Q	Q	.9	.7	1.3	.3	1.8	18.86
LPG	3.2	.2	.2	.5	.5	.3	.4	.3	.8	27.48
Solar Collectors4	Q	Q	Q	.2	Q	Q	Q	Q	51.90
Other/None2	NC	NC	Q	Q	NC	Q	NC	.1	60.81
Main Cooking Fuel										
Electricity	54.8	1.8	3.9	6.0	15.1	8.8	6.9	3.2	8.9	7.86
Natural Gas	33.7	.7	.9	1.4	5.2	5.2	5.8	3.3	11.2	10.34
LPG	5.4	.3	.3	.5	1.1	.7	.6	.5	1.3	23.77
Other/None2	NC	NC	Q	NC	Q	Q	Q	Q	78.77
Air Conditioning										
No	30.3	.7	.7	1.7	5.1	3.8	4.7	2.9	10.7	9.93
Yes ³	63.7	2.0	4.4	6.3	16.3	11.0	8.7	4.2	10.8	7.46
Electric	63.3	2.0	4.3	6.3	16.2	10.9	8.7	4.2	10.7	7.49
Number of Rooms Usually Air-Conditioned										
All	41.6	1.8	3.7	5.2	12.7	7.2	5.2	2.0	3.7	9.25
Some	22.0	.2	.7	1.1	3.6	3.7	3.5	2.1	7.0	11.98
None	30.4	.7	.7	1.7	5.1	3.9	4.7	2.9	10.7	9.91
Natural Gas Available in Neighborhood										
No	26.3	1.3	3.1	3.5	7.3	3.2	2.5	1.4	4.1	11.31
Yes	67.7	1.5	2.0	4.5	14.1	11.6	10.9	5.6	17.3	7.28
Uses Natural Gas	57.7	1.4	1.6	3.3	10.8	10.1	9.4	5.1	16.0	8.19
Does not Use Natural Gas	10.0	Q	.4	1.2	3.3	1.5	1.5	.5	1.4	18.15
Wood Burned in Past 12 Months										
No	71.1	1.9	3.2	5.3	15.5	11.1	10.5	5.9	17.7	6.23
Yes	22.9	.8	1.8	2.8	5.9	3.7	2.8	1.2	3.8	11.68
One-Third Cord or Less	10.8	.4	1.1	1.4	2.9	1.8	1.3	.5	1.3	16.17
More than One-Third Cord	12.1	.4	.7	1.4	3.0	2.0	1.5	.7	2.4	13.85

¹ Does not include all new construction for 1990.

² Excludes 20.1 million households that use LPG only for outdoor grills.

³ An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 32. Fuel Use by Year of Construction,
Percent of U.S. Households, 1990**

Housing Unit Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
		RSE Column Factors:	0.445	2.027	1.852	1.326	0.812	0.865	0.829	1.147
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Fuels Used for Any Use (more than one often used)										
Electricity	100.0	100.0	100.0	99.6	100.0	100.0	100.0	100.0	100.0	NE
Natural Gas	61.4	49.7	31.1	41.4	50.5	68.4	70.4	72.7	74.4	5.84
Wood	26.5	31.9	37.6	36.0	31.6	27.8	22.7	17.3	18.9	9.49
Fuel Oil and/or Kerosene	17.3	10.7	4.1	7.7	14.5	15.5	21.3	20.5	25.6	12.51
Fuel Oil	12.5	Q	Q	2.3	7.9	11.9	18.3	14.9	20.4	15.29
Kerosene	5.7	Q	Q	5.6	7.1	4.9	4.4	5.7	6.2	20.60
LPG ²	8.8	20.2	8.8	10.7	8.5	7.0	7.1	10.6	8.5	19.02
Coal	.8	NC	Q	Q	Q	Q	Q	Q	Q	1.1
Solar Collectors	1.0	Q	Q	2.5	1.4	Q	Q	Q	Q	32.78
Main Heating Fuel and Equipment										
Natural Gas	55.0	46.2	28.6	36.6	44.4	64.1	64.0	67.1	64.2	6.68
Central Warm-Air Furnace	37.1	43.9	28.1	33.8	36.5	42.6	43.6	40.2	31.4	8.77
For One Housing Unit	35.4	43.9	28.1	32.9	33.8	40.3	43.0	39.1	29.2	8.96
For Two or More Units	1.7	NC	NC	Q	2.7	2.4	Q	Q	2.2	35.26
Steam or Hot-Water System	8.8	Q	NC	Q	4.2	11.1	7.5	9.4	17.9	17.38
For One Housing Unit	4.8	Q	NC	Q	1.5	6.3	4.5	6.0	10.0	24.86
For Two or More Units	4.0	Q	NC	Q	2.7	4.8	3.0	3.5	7.9	28.31
Floor, Wall, or Pipeless Furnace	5.4	Q	Q	Q	2.3	7.9	7.9	9.9	7.3	20.51
Room Heater/Other	3.7	NC	NC	Q	1.4	2.4	5.0	7.6	7.6	27.19
Electricity	22.9	27.1	59.2	48.4	38.1	17.7	10.1	8.6	5.4	11.96
Built-In Electric Units	7.1	7.1	5.4	13.2	12.1	8.1	4.3	3.3	2.7	21.80
Central Warm-Air Furnace	7.9	Q	19.6	13.2	18.2	5.2	2.2	Q	Q	22.27
For One Housing Unit	7.7	Q	19.6	12.3	17.6	5.2	2.2	Q	Q	22.52
Heat Pump	6.9	12.0	33.8	21.3	7.2	3.4	1.8	2.7	1.0	24.85
Other	1.0	Q	Q	Q	Q	Q	Q	Q	Q	45.33
Fuel Oil	11.1	Q	Q	Q	7.0	10.1	16.0	12.9	18.9	14.78
Steam or Hot-Water System	6.1	Q	Q	Q	3.9	4.9	7.7	6.9	11.4	18.82
For One Housing Unit	3.8	Q	Q	Q	2.5	3.5	6.1	3.1	6.4	22.76
For Two or More Units	2.2	NC	NC	Q	1.4	Q	Q	3.8	5.0	36.43
Central Warm-Air Furnace	4.6	Q	NC	Q	3.1	5.1	7.2	5.4	6.9	22.35
Other	.4	NC	NC	NC	Q	Q	Q	Q	Q	58.34
Wood	4.1	Q	4.1	3.7	3.7	3.6	4.0	4.0	5.3	25.63
Heating Stove	3.1	Q	4.1	2.5	2.9	2.5	3.1	Q	4.0	29.18
Other	1.0	Q	NC	Q	.8	Q	Q	Q	1.3	41.03
LPG	4.7	14.0	4.7	7.8	4.7	3.3	3.9	4.3	3.8	26.14
Central Warm-Air Furnace	2.8	12.6	4.4	6.6	3.7	1.1	Q	Q	1.6	26.29
Room Heater	1.2	Q	NC	Q	Q	Q	2.2	Q	1.5	49.69
Other	.6	Q	Q	Q	Q	Q	Q	Q	Q	63.69
Kerosene	.2	Q	Q	Q	1.7	Q	Q	Q	1.4	45.29
Other	.3	NC	Q	Q	Q	Q	Q	Q	Q	79.71
None	.7	Q	Q	Q	Q	Q	Q	Q	.6	45.77
Secondary Heating Fuel (more than one may apply)										
No	57.0	56.3	60.8	54.2	52.8	56.4	55.3	61.9	61.5	4.73
Yes	43.0	43.7	39.2	45.8	47.2	43.6	44.7	38.1	38.5	6.37
Wood	22.1	28.5	33.3	32.2	27.7	23.9	18.6	13.3	13.2	10.62
Electricity	17.7	12.8	6.2	9.3	17.2	16.2	22.3	20.5	21.7	11.04
Natural Gas	2.7	NC	Q	Q	2.7	3.2	3.0	4.1	2.4	27.25
Fuel Oil	.8	Q	NC	Q	Q	Q	Q	Q	1.2	49.26
Kerosene	4.5	Q	Q	5.0	5.5	3.9	3.7	5.2	4.5	21.60
LPG	1.0	NC	Q	Q	.8	1.5	Q	Q	1.2	43.91
Other	.7	NC	Q	Q	Q	Q	Q	Q	.9	52.49

See footnotes at end of table.

**Table 32. Fuel Use by Year of Construction,
Percent of U.S. Households, 1990 (Continued)**

Housing Unit Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.445	2.027	1.852	1.326	0.812	0.865	0.829	1.147	0.676	
Secondary Heating Equipment (more than one may apply)										
No	57.0	56.3	60.8	54.2	52.8	56.4	55.3	61.9	61.5	4.73
Yes	43.0	43.7	39.2	45.8	47.2	43.6	44.7	38.1	38.5	6.37
Fireplace	18.3	26.3	30.0	25.7	24.4	20.7	16.1	9.0	8.4	11.87
Portable Electric Heater	13.6	10.9	4.1	6.6	12.3	12.3	17.4	16.7	17.8	12.66
Portable Kerosene Heater	4.5	Q	Q	4.7	5.7	3.9	3.4	5.2	4.5	22.01
Oil or Gas Room Heater	1.5	Q	NC	Q	Q	2.0	2.4	3.0	1.6	32.31
Wood or Coal Heating Stove	5.5	Q	5.7	7.9	5.8	5.3	4.3	4.7	5.7	18.83
Cooking Stove	1.2	NC	Q	Q	1.6	Q	2.3	Q	1.6	37.40
Built-In Electric Units	4.3	Q	Q	3.9	6.2	4.2	4.8	3.6	3.5	25.89
Central Warm-Air Furnace	1.1	NC	Q	Q	1.0	1.8	Q	Q	1.0	44.61
Forced Air	1.0	NC	Q	Q	.9	1.8	Q	Q	.8	45.91
Heat Pump5	Q	Q	Q	Q	Q	Q	Q	Q	51.55
Other	1.1	Q	Q	Q	Q	Q	2.0	Q	1.7	31.21
Main Water-Heating Fuel										
Natural Gas	53.2	41.9	25.7	36.6	44.5	62.1	60.5	59.1	63.5	6.82
Electricity	37.3	46.9	68.9	56.3	48.0	31.3	25.8	31.4	24.1	7.94
Fuel Oil	5.4	Q	Q	Q	4.1	4.4	9.5	4.9	8.3	18.52
LPG	3.4	8.7	4.3	5.8	2.4	1.7	3.2	4.5	3.5	27.67
Solar Collectors5	Q	Q	Q	.8	Q	Q	Q	Q	47.51
Other/None2	NC	NC	Q	Q	NC	Q	NC	.4	57.14
Main Cooking Fuel										
Electricity	58.3	65.6	77.6	74.9	70.7	59.7	51.6	45.0	41.6	4.83
Natural Gas	35.8	23.8	17.3	18.1	24.3	35.1	43.1	47.2	52.2	8.73
LPG	5.7	10.6	5.1	6.6	5.1	4.9	4.8	7.5	6.0	24.08
Other/None2	NC	NC	Q	NC	Q	Q	Q	Q	69.60
Air Conditioning										
No	32.2	26.0	14.4	21.0	23.8	25.8	35.1	40.6	49.9	9.36
Yes ³	67.7	74.0	85.6	79.0	76.2	74.2	64.9	59.3	50.1	3.80
Electric	67.4	74.0	84.1	79.0	75.4	73.8	64.8	59.3	50.0	3.83
Number of Rooms Usually Air-Conditioned										
All	44.2	65.2	72.1	65.1	59.3	48.7	38.9	29.0	17.3	5.98
Some	23.4	8.8	13.5	13.9	16.8	25.2	26.0	30.4	32.8	10.62
None	32.3	26.0	14.4	21.0	23.9	26.1	35.1	40.6	49.9	9.34
Natural Gas Available in Neighborhood										
No	28.0	45.5	60.5	43.7	34.2	21.4	18.3	19.7	19.2	9.85
Yes	72.0	54.5	39.5	56.3	65.8	78.6	81.7	80.3	80.8	4.40
Uses Natural Gas	61.4	49.7	31.1	41.4	50.5	68.4	70.4	72.7	74.4	5.84
Does not Use Natural Gas	10.6	Q	8.5	14.9	15.2	10.1	11.2	7.6	6.4	17.11
Wood Burned in Past 12 Months										
No	75.7	69.7	63.7	65.5	72.3	74.8	78.8	83.3	82.5	3.35
Yes	24.3	30.3	36.3	34.5	27.7	25.2	21.2	16.7	17.5	9.83
One-Third Cord or Less	11.4	15.0	22.5	17.5	13.6	11.9	9.7	6.8	6.2	14.61
More than One-Third Cord	12.9	15.3	13.8	16.9	14.1	13.3	11.5	9.8	11.3	12.76

¹ Does not include all new construction for 1990.

² Excludes 20.1 million households that use LPG only for outdoor grills.

³ An estimated 0.4 million households use gas to air condition. See "Refrigeration Unit" in the Glossary.

NC = No cases in sample.

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

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 33. Appliances by Census Region and Urban Status, Million U.S. Households, 1990

Appliance Types and Characteristics	Total	Census Region				Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban		Central City	Suburban		
		Total	Northeast	Midwest	South	West	Total				
RSE Column Factors:	0.619	1.213	1.150	1.143	1.202	0.721	1.096	0.905	1.177		
Total	94.0	19.2	23.1	32.3	19.4	72.9	29.8	43.0	21.1	0.00	
Appliance Types											
Electric Appliances											
Refrigerator	93.8	19.1	23.1	32.2	19.4	72.7	29.7	43.0	21.0	NE	
Frost-Free	75.0	15.0	18.2	27.0	14.8	58.1	22.2	35.9	16.9	1.57	
Manual Defrost	24.8	5.5	7.1	6.6	5.6	19.3	8.7	10.5	5.5	5.17	
Freezer	32.4	5.0	9.1	12.3	5.9	21.2	7.0	14.2	11.2	4.43	
Frost-Free	10.8	1.3	2.6	4.8	2.0	7.2	2.6	4.7	3.5	7.07	
Manual Defrost	21.7	3.8	6.5	7.5	3.9	14.0	4.5	9.5	7.7	5.34	
Range Top or Burners	54.3	9.1	12.6	21.8	10.8	40.7	14.3	26.4	13.6	3.71	
Oven	55.3	9.3	12.7	22.1	11.2	41.6	14.6	27.0	13.7	3.58	
Microwave Oven	74.1	13.6	19.4	25.7	15.3	57.1	20.9	36.2	17.0	1.49	
Dishwasher	42.7	8.0	9.3	15.3	10.0	35.8	11.8	24.0	6.9	4.41	
Clothes Washer	71.7	14.4	17.7	25.6	14.0	53.7	18.8	34.9	18.0	2.24	
Clothes Dryer	49.5	9.1	11.7	19.8	8.8	35.2	11.4	23.8	14.3	3.61	
Television Set	92.9	19.1	23.0	31.9	19.0	72.1	29.4	42.7	20.8	NE	
Color	90.3	18.6	22.3	30.8	18.6	70.4	28.3	42.1	19.9	NE	
Black/White	28.7	5.9	8.2	10.4	4.2	22.2	9.1	13.1	6.5	4.39	
Personal Computer	14.3	3.0	3.2	4.8	3.7	12.7	4.4	8.3	2.1	7.05	
Air Conditioner	63.3	10.7	16.9	28.0	7.7	50.3	18.9	31.4	13.1	3.01	
Room	29.1	8.1	8.0	10.3	2.8	21.6	9.1	12.5	7.5	6.27	
Central	36.2	3.2	9.2	18.9	5.0	30.4	10.3	20.1	5.8	5.30	
For One Housing Unit	35.7	3.1	9.0	18.6	5.0	29.9	9.8	20.1	5.8	5.39	
For Two or More Units5	Q	Q	.3	Q	.5	.5	Q	Q	42.32	
Window or Ceiling Fan	47.9	9.0	12.0	20.3	6.6	35.6	12.8	22.8	12.3	3.45	
Whole-House Fan	9.4	2.1	2.1	4.0	1.2	7.1	1.5	5.6	2.4	11.78	
Portable Fan	55.5	11.6	15.6	16.8	11.4	41.9	16.5	25.4	13.6	2.29	
Exhaust Fan	52.5	9.5	12.4	19.7	10.9	41.7	14.2	27.6	10.8	3.28	
Furnace Fan	50.4	6.6	16.6	17.5	9.7	39.5	15.0	24.5	10.9	4.19	
Evaporative Cooler	3.8	Q	Q	Q	2.9	2.8	1.5	1.3	1.0	19.46	
Dehumidifier	11.3	3.5	5.3	2.0	.5	8.7	2.1	6.6	2.5	9.27	
Water Heater	34.9	4.2	7.0	18.1	5.6	22.8	8.2	14.7	12.1	6.81	
For One Housing Unit ¹	33.5	4.2	6.9	17.2	5.3	21.7	7.5	14.2	11.8	7.07	
For Two or More Units ²	1.4	Q	Q	.9	.3	1.1	.6	Q	.3	32.53	
Portable Space Heater	13.5	2.2	2.8	5.4	3.1	10.3	4.1	6.2	3.2	7.14	
Waterbed Heater	13.7	2.0	4.6	4.1	3.0	10.2	3.6	6.6	3.5	8.33	
Swimming-Pool Pump	5.0	1.5	.9	1.6	1.1	4.3	1.1	3.3	.7	12.06	
Hot-Tub or Spa Pump	3.3	.4	.4	1.1	1.4	3.0	.8	2.2	.3	19.46	
Hot-Tub or Spa Heater	1.7	.2	.3	.8	.5	1.5	.4	1.1	.2	22.86	
Well Pump	14.3	3.4	4.8	4.9	1.2	7.8	1.1	6.7	6.5	10.17	

See footnotes at end of table.

Table 33. Appliances by Census Region and Urban Status, Million U.S. Households, 1990 (Continued)

Appliance Types and Characteristics	RSE Column Factors:	Total	Census Region				Urban Status				RSE Row Factors		
			Northeast	Midwest	South	West	Total	Central City	Suburban	Rural			
			0.619	1.213	1.150	1.143	1.202	0.721	1.096	0.905	1.177		
Appliance Types													
Natural Gas Appliances													
Range Top or Burners	34.0	9.0	9.1	8.2	7.8	29.5	15.1	14.4	4.6	5.51			
Oven	33.0	8.8	9.0	7.9	7.3	28.5	14.7	13.8	4.5	5.64			
Outdoor Grill	2.4	.5	.8	.6	.5	2.2	.6	1.5	.2	21.95			
Clothes Dryer	14.5	3.0	4.9	2.8	3.8	13.2	4.8	8.4	1.3	9.94			
Water Heater	49.7	9.4	14.7	12.7	12.9	43.1	19.5	23.6	6.6	4.88			
For One Housing Unit ¹	41.5	6.9	12.1	11.6	10.8	35.3	14.6	20.7	6.2	6.16			
For Two or More Units ²	8.2	2.4	2.6	1.1	2.1	7.8	4.9	2.9	.4	12.68			
Swimming-Pool Heater8	Q	Q	Q	.4	.8	.2	.6	Q	28.76			
Hot-Tub or Spa Heater	1.4	Q	Q	.3	.9	1.3	.4	.9	Q	23.26			
Outdoor Light	1.0	.3	.3	.3	Q	.9	.2	.7	Q	26.59			
LPG Appliances													
Range Top or Burners	5.6	1.0	1.5	2.3	.8	2.7	.4	2.3	2.9	18.62			
Oven	5.4	1.0	1.5	2.2	.7	2.5	.4	2.2	2.8	18.98			
Outdoor Grill	22.5	6.3	6.3	6.4	3.5	17.6	4.3	13.3	4.9	5.81			
Clothes Dryer9	.2	.3	Q	Q	.5	Q	.4	.4	31.61			
Water Heater	3.1	.3	1.2	1.1	.5	1.5	Q	1.3	1.6	22.34			
Fuel Oil Appliances													
Water Heater	4.0	3.8	Q	Q	Q	3.7	1.7	2.0	.3	11.74			
For One Housing Unit ¹	2.0	1.9	Q	Q	Q	1.7	.3	1.4	.3	18.93			
For Two or More Units ²	2.0	1.9	Q	Q	NC	1.9	1.4	.6	Q	16.07			
Water Heated by Furnace ³	1.1	1.1	Q	NC	NC	1.0	Q	.9	Q	33.06			
Kerosene Appliances													
Portable Space Heater	4.6	.9	1.3	2.2	.2	2.8	.8	2.0	1.8	14.74			
Appliance Characteristics													
Lights													
Used 4 to 12 Hours per Day													
Total Number of Lights													
None	6.9	1.6	1.1	2.8	1.5	5.1	2.6	2.5	1.8	10.13			
1	21.0	4.1	4.7	7.9	4.3	15.8	7.2	8.6	5.2	5.42			
2	28.4	5.4	7.7	9.5	5.8	22.0	8.9	13.0	6.4	5.06			
3	16.7	3.4	4.7	5.6	3.0	13.0	5.0	8.0	3.7	5.48			
4	9.4	2.0	2.2	3.1	2.1	7.6	2.7	5.0	1.8	9.09			
5	4.3	1.0	1.0	1.5	.9	3.3	1.4	1.9	1.0	11.03			
6 or More	7.3	1.8	1.8	1.9	1.9	6.1	2.1	4.0	1.3	10.25			
Used 12 to 24 Hours per Day													
Total Number of Lights													
None	56.8	12.0	14.1	18.3	12.4	43.7	17.6	26.1	13.2	2.77			
1	20.1	3.8	4.8	7.7	3.8	15.5	6.4	9.0	4.6	5.43			
2	9.8	1.8	2.6	3.5	1.9	7.6	3.4	4.2	2.2	8.06			
3 or More	7.2	1.6	1.6	2.8	1.2	6.1	2.4	3.7	1.2	10.48			
Fluorescent Lamp Used													
Yes ⁴	8.8	1.6	1.9	3.7	1.6	6.8	2.5	4.3	2.0	9.63			
No	85.2	17.6	21.2	28.6	17.9	66.1	27.3	38.7	19.1	1.16			
Flood Light Used													
Yes ⁴	4.4	.5	1.0	1.9	.9	3.4	1.5	1.8	1.0	14.01			
No	89.6	18.7	22.0	30.4	18.5	69.5	28.3	41.2	20.1	NE			

See footnotes at end of table.

Table 33. Appliances by Census Region and Urban Status, Million U.S. Households, 1990 (Continued)

Appliance Types and Characteristics	Total	Census Region				Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			Rural		
						Total	Central City	Suburban	Rural		
RSE Column Factors:	0.619	1.213	1.150	1.143	1.202	0.721	1.096	0.905	1.177		
Appliance Characteristics											
Refrigerators											
Number of Refrigerators											
1	79.4	15.9	18.4	28.4	16.7	61.6	26.7	34.9	17.8	1.28	
2 or More	14.4	3.2	4.7	3.8	2.6	11.1	3.0	8.1	3.2	6.81	
Most-Used Refrigerator Defrost Method											
Frost-Free	74.6	14.9	18.1	26.9	14.8	57.8	22.2	35.7	16.8	1.63	
Manual	19.1	4.2	5.0	5.4	4.6	14.9	7.6	7.3	4.3	6.26	
Age											
Less than 2 Years	12.1	3.0	3.0	3.7	2.5	9.6	3.8	5.7	2.6	6.74	
2 to 4 Years	16.9	3.4	3.8	6.1	3.5	13.0	4.4	8.6	3.8	5.19	
5 to 9 Years	24.8	5.0	5.3	9.1	5.3	19.6	8.3	11.4	5.2	5.09	
10 to 19 Years	26.0	4.9	7.2	8.8	5.1	19.5	8.0	11.5	6.4	4.42	
20 Years or More	7.3	1.6	2.4	1.8	1.5	5.3	2.2	3.0	2.0	8.75	
Don't Know	6.7	1.2	1.4	2.6	1.4	5.6	2.9	2.7	1.0	10.25	
Type											
2-Doors (top and bottom)	63.0	12.9	16.1	22.1	11.9	47.9	19.0	29.0	15.1	2.25	
2-Doors (side-by-side)	15.7	3.3	3.2	5.6	3.6	12.8	4.4	8.4	2.9	6.85	
Regular (single door)	13.8	2.5	3.6	4.1	3.5	11.0	5.9	5.0	2.8	7.68	
Half-Size/Other	1.2	.3	.2	.4	.3	1.0	.4	.6	.2	22.18	
Freezers											
Type											
Chest	16.2	2.1	5.2	6.8	2.1	9.4	2.9	6.5	6.8	6.10	
Upright	16.2	2.9	4.0	5.6	3.8	11.9	4.2	7.7	4.4	5.85	
Age											
Less than 2 Years	2.2	.4	.5	.8	.4	1.5	.7	.9	.6	17.01	
2 to 4 Years	3.7	.5	1.1	1.6	.5	2.6	.9	1.7	1.1	15.23	
5 to 9 Years	6.6	1.0	1.6	2.5	1.4	4.3	1.6	2.7	2.3	8.47	
10 to 19 Years	12.9	2.0	3.8	4.9	2.3	8.2	2.5	5.7	4.7	7.20	
20 Years or More	6.2	1.0	2.0	2.1	1.1	3.8	1.0	2.8	2.4	10.02	
Don't Know8	Q	.2	.4	.2	.7	.3	.4	Q	27.89	
Number of Waterbed Heaters											
1	10.9	1.8	3.6	3.1	2.4	8.2	2.9	5.3	2.7	8.13	
2 or More	2.8	.2	1.0	1.0	.6	2.0	.7	1.3	.7	17.92	

See footnotes at end of table.

**Table 33. Appliances by Census Region and Urban Status,
Million U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics		Census Region					Urban Status				RSE Row Factors
		Total	Northeast	Midwest	South	West	Urban			RSE Row Factors	
							Total	Central City	Suburban	Rural	
RSE Column Factors:		0.619	1.213	1.150	1.143	1.202	0.721	1.096	0.905	1.177	
Appliance Characteristics											
Water Heater (for one housing unit)¹		80.5	13.4	20.3	29.9	16.9	60.5	22.7	37.8	20.0	1.88
Age											
Less than 2 Years		10.8	2.0	3.0	3.6	2.2	8.0	3.1	4.9	2.8	7.44
2 to 4 Years		15.8	3.0	4.1	5.9	2.9	12.0	4.3	7.7	3.7	7.82
5 to 9 Years		20.0	2.9	4.8	7.4	5.0	15.7	5.6	10.1	4.3	6.30
10 to 19 Years		19.3	2.8	5.2	7.6	3.7	13.8	5.0	8.7	5.6	6.40
20 Years or More		6.1	1.5	1.4	2.3	.9	4.3	1.3	3.0	1.8	9.89
Don't Know		8.5	1.2	1.8	3.2	2.3	6.8	3.4	3.4	1.7	11.75
Size											
Small		16.3	2.0	5.1	6.3	2.9	11.3	4.5	6.8	5.1	7.92
Medium		43.1	7.1	10.3	17.2	8.5	33.1	12.7	20.4	10.0	3.99
Large		16.8	2.9	3.9	5.3	4.6	12.7	4.3	8.4	4.1	7.85
Don't Know		4.3	1.4	1.0	1.1	.9	3.5	1.3	2.2	.9	12.10
Location											
Heated Area		55.7	9.1	17.8	20.8	8.0	40.6	15.7	24.9	15.2	3.30
Unheated Area		24.1	4.2	2.3	8.9	8.7	19.4	6.9	12.5	4.6	7.38
Don't Know7	Q	Q	Q	.3	.5	.2	.3	.2	28.76
Number of Television Sets											
Color											
1		43.2	8.2	11.1	14.7	9.2	32.1	14.5	17.6	11.1	2.95
2		30.6	6.5	7.5	10.5	6.0	23.9	9.0	15.0	6.6	3.26
3		12.3	2.6	3.0	4.3	2.4	10.5	3.5	7.0	1.8	7.14
4		3.1	.7	.7	.9	.8	2.7	.9	1.8	.3	17.34
5 or More		1.2	.5	Q	.4	Q	1.1	.4	.7	Q	19.17
Black/White											
1		24.3	4.9	6.8	8.9	3.7	18.6	7.7	10.9	5.7	4.57
2 or More		4.4	.9	1.5	1.5	.5	3.6	1.4	2.2	.8	12.10

¹ A count of main water heaters that are totally separate units from the household's space-heating system. For "Fuel Oil", combined units are shown as the separate category "Water Heated by Furnace."

² An unknown number may be heated by the furnace.

³ For one housing unit only.

⁴ Refers to lights used 12 to 24 hours per day.

NC = No cases in sample.

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

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

Notes: • To obtain 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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 34. Appliances by Census Region and Urban Status,
Percent of U.S. Households, 1990**

Appliance Types and Characteristics	Total	Census Region				Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			Rural		
						Total	Central City	Suburban	Rural		
RSE Column Factors:	0.619	1.213	1.150	1.144	1.202	0.721	1.096	0.905	1.177		
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00	
Appliance Types											
Electric Appliances											
Refrigerator	99.8	99.4	100.0	99.8	99.7	99.8	99.7	99.9	99.6	NE	
Frost-Free	79.8	78.0	78.9	83.6	76.5	79.8	74.4	83.4	80.1	1.57	
Manual Defrost	26.4	28.8	30.6	20.5	28.7	26.4	29.2	24.5	26.2	5.17	
Freezer	34.5	26.3	39.6	38.2	30.4	29.1	23.6	33.0	52.9	4.43	
Frost-Free	11.4	6.7	11.3	15.0	10.3	9.9	8.6	10.9	16.7	7.07	
Manual Defrost	23.0	19.5	28.3	23.2	20.1	19.2	15.0	22.1	36.3	5.34	
Range Top or Burners	57.8	47.5	54.5	67.4	55.8	55.9	48.0	61.4	64.3	3.71	
Oven	58.9	48.2	55.1	68.6	57.9	57.1	49.0	62.7	64.9	3.58	
Microwave Oven	78.8	71.0	83.9	79.6	79.1	78.3	70.1	84.0	80.3	1.49	
Dishwasher	45.4	41.9	40.2	47.5	51.6	49.1	39.6	55.8	32.5	4.41	
Clothes Washer	76.3	74.9	76.7	79.2	72.2	73.7	63.0	81.1	85.2	2.24	
Clothes Dryer	52.6	47.6	50.8	61.4	45.2	48.3	38.1	55.3	67.6	3.61	
Television Set	98.9	99.2	99.5	98.7	98.1	99.0	98.5	99.3	98.6	NE	
Color	98.1	96.8	96.8	95.4	95.6	96.6	94.7	97.9	94.4	NE	
Black/White	30.6	30.5	35.8	32.2	21.7	30.4	30.5	30.4	31.0	4.39	
Personal Computer	15.7	15.6	14.0	15.0	19.1	17.4	14.6	19.4	9.8	7.05	
Air Conditioner	67.4	55.9	73.3	86.7	39.5	69.0	63.3	72.9	61.8	3.01	
Room	31.0	41.9	34.5	31.8	14.6	29.6	30.5	29.0	35.5	6.27	
Central	38.6	16.4	39.7	58.5	25.9	41.7	34.5	46.7	27.7	5.30	
For One Housing Unit	38.0	16.3	39.1	57.5	25.6	41.0	32.9	46.6	27.6	5.39	
For Two or More Units6	Q	Q	1.0	Q	.7	1.6	Q	Q	42.32	
Window or Ceiling Fan	51.0	46.7	51.9	62.9	34.2	48.9	42.8	53.1	58.3	3.45	
Whole-House Fan	10.1	11.1	9.2	12.5	6.0	9.7	5.1	12.9	11.2	11.78	
Portable Fan	59.0	60.6	67.8	51.9	58.8	57.5	55.2	59.0	64.3	2.29	
Exhaust Fan	55.9	49.6	53.9	61.0	56.0	57.3	47.4	64.1	51.1	3.28	
Furnace Fan	53.6	34.2	72.1	54.1	50.1	54.2	50.4	56.9	51.5	4.19	
Evaporative Cooler	4.0	Q	Q	Q	15.0	3.8	5.0	3.1	4.5	19.46	
Dehumidifier	12.0	18.1	23.0	6.3	2.4	12.0	7.1	15.4	11.9	9.27	
Water Heater	37.1	22.0	30.3	56.0	28.8	31.3	27.3	34.1	57.1	6.81	
For One Housing Unit ¹	35.7	21.7	29.9	53.3	27.1	29.8	25.3	33.0	55.8	7.07	
For Two or More Units ²	1.4	Q	Q	2.7	1.7	1.5	2.1	Q	1.3	32.53	
Portable Space Heater	14.4	11.5	12.3	16.6	16.0	14.2	13.8	14.5	15.0	7.14	
Waterbed Heater	14.5	10.4	20.1	12.6	15.3	14.0	12.1	15.3	16.4	8.33	
Swimming-Pool Pump	5.4	7.6	3.8	5.1	5.4	6.0	3.6	7.6	3.3	12.06	
Hot-Tub or Spa Pump	3.5	1.9	1.9	3.3	7.2	4.1	2.5	5.2	1.3	19.46	
Hot-Tub or Spa Heater	1.8	1.1	1.2	2.3	2.5	2.1	1.2	2.7	1.0	22.86	
Well Pump	15.3	17.5	20.9	15.3	6.2	10.7	3.7	15.6	30.8	10.17	

See footnotes at end of table.

**Table 34. Appliances by Census Region and Urban Status,
Percent of U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	Census Region					Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			Rural			
						Total	Central City	Suburban	Rural			
RSE Column Factors:	0.619	1.213	1.150	1.144	1.202	0.721	1.096	0.905	1.177			
Appliance Types												
Natural Gas Appliances												
Range Top or Burners	36.2	46.9	39.4	25.3	40.0	40.4	50.6	33.4	21.6	5.51		
Oven	35.1	45.9	38.9	24.6	37.6	39.2	49.4	32.1	21.2	5.64		
Outdoor Grill	2.6	2.8	3.3	1.9	2.7	3.0	2.1	3.6	1.1	21.95		
Clothes Dryer	15.4	15.7	21.3	8.5	19.6	18.2	16.0	19.6	6.0	9.94		
Water Heater	52.9	48.7	63.8	39.3	66.6	59.1	65.2	54.8	31.4	4.88		
For One Housing Unit ¹	44.1	36.1	52.6	35.9	55.8	48.4	48.8	48.1	29.5	6.16		
For Two or More Units ²	8.7	12.6	11.3	3.4	10.8	10.7	16.4	6.7	1.9	12.68		
Swimming-Pool Heater9	Q	Q	Q	2.1	1.1	.7	1.3	Q	28.76		
Hot-Tub or Spa Heater	1.4	Q	Q	.9	4.5	1.8	1.3	2.2	Q	23.26		
Outdoor Light	1.0	1.5	1.5	1.0	Q	1.2	.6	1.6	Q	26.59		
LPG Appliances												
Range Top or Burners	5.9	5.3	6.3	7.2	4.0	3.7	1.3	5.3	13.6	18.62		
Oven	5.7	5.2	6.3	6.9	3.6	3.5	1.3	5.0	13.4	18.98		
Outdoor Grill	24.0	32.8	27.2	19.9	18.1	24.2	14.5	30.9	23.1	5.81		
Clothes Dryer9	1.1	1.4	Q	Q	.6	Q	1.0	1.8	31.61		
Water Heater	3.3	1.6	5.2	3.3	2.7	2.0	Q	3.1	7.7	22.34		
Fuel Oil Appliances												
Water Heater	4.3	19.9	Q	Q	Q	5.1	5.7	4.6	1.6	11.74		
For One Housing Unit ¹	2.1	10.0	Q	Q	Q	2.4	1.1	3.2	1.3	18.93		
For Two or More Units ²	2.1	9.9	Q	Q	NC	2.7	4.6	1.4	Q	16.07		
Water Heated by Furnace ³	1.1	5.6	Q	NC	NC	1.4	Q	2.1	Q	33.06		
Kerosene Appliances												
Portable Space Heater	4.9	4.7	5.5	6.9	1.2	3.9	2.8	4.6	8.6	14.74		
Appliance Characteristics												
Lights												
Used 4 to 12 Hours per Day												
Total Number of Lights												
None	7.4	8.2	4.6	8.7	7.8	7.0	8.7	5.9	8.7	10.13		
1	22.3	21.5	20.2	24.3	22.2	21.7	24.2	19.9	24.4	5.42		
2	30.2	28.2	33.5	29.4	29.7	30.1	29.8	30.3	30.5	5.06		
3	17.7	17.6	20.4	17.4	15.3	17.8	16.7	18.6	17.5	5.48		
4	10.0	10.2	9.5	9.7	10.8	10.5	8.9	11.6	8.4	9.09		
5	4.6	5.0	4.2	4.7	4.5	4.6	4.7	4.5	4.6	11.03		
6 or More	7.8	9.3	7.8	5.9	9.6	8.3	7.0	9.2	6.0	10.25		
Used 12 to 24 Hours per Day												
Total Number of Lights												
None	60.5	62.2	61.3	56.7	64.1	60.0	58.9	60.7	62.3	2.77		
1	21.4	19.9	20.6	23.9	19.5	21.2	21.5	21.0	21.8	5.43		
2	10.5	9.5	11.1	10.8	10.0	10.5	11.5	9.8	10.4	8.06		
3 or More	7.7	8.3	7.0	8.6	6.4	8.3	8.1	8.5	5.5	10.48		
Fluorescent Lamp Used												
Yes ⁴	9.4	8.5	8.3	11.5	8.0	9.3	8.4	10.0	9.5	9.63		
No	90.6	91.5	91.7	88.5	92.0	90.7	91.6	90.0	90.5	1.16		
Flood Light Used												
Yes ⁴	4.6	2.8	4.5	5.9	4.5	4.6	5.1	4.3	4.6	14.00		
No	95.4	97.2	95.5	94.1	95.5	95.4	94.9	95.7	95.4	NE		

See footnotes at end of table.

**Table 34. Appliances by Census Region and Urban Status,
Percent of U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	Census Region					Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			Rural			
						Total	Central City	Suburban				
RSE Column Factors:	0.619	1.213	1.150	1.144	1.202	0.721	1.096	0.905	1.177			
Appliance Characteristics												
Refrigerators												
Number of Refrigerators												
1	84.5	82.6	79.6	88.0	86.3	84.5	89.6	81.1	84.3	1.28		
2 or More	15.3	16.8	20.4	11.8	13.4	15.3	10.1	18.8	15.3	6.81		
Most-Used Refrigerator Defrost Method												
Frost-Free	79.4	77.6	78.4	83.1	76.2	79.4	74.2	83.0	79.5	1.63		
Manual	20.4	21.8	21.6	16.7	23.6	20.4	25.4	17.0	20.1	6.26		
Age												
Less than 2 Years	12.9	15.4	12.9	11.4	12.9	13.1	12.8	13.3	12.2	6.74		
2 to 4 Years	18.0	17.8	16.5	19.0	18.1	17.9	14.8	20.0	18.1	5.19		
5 to 9 Years	26.4	26.1	23.0	28.3	27.6	27.0	27.8	26.4	24.4	5.09		
10 to 19 Years	27.6	25.4	31.0	27.4	26.3	26.8	26.9	26.8	30.5	4.42		
20 Years or More	7.8	8.3	10.2	5.7	7.8	7.3	7.5	7.1	9.5	8.75		
Don't Know	7.1	6.4	6.2	8.1	7.0	7.7	9.9	6.2	4.9	10.25		
Type												
2-Doors (top and bottom)	67.1	67.3	69.7	68.4	61.4	65.8	63.6	67.3	71.4	2.25		
2-Doors (side-by-side)	16.7	17.1	13.9	17.4	18.6	17.6	14.8	19.5	13.8	6.85		
Regular (single door)	14.7	13.1	15.8	12.7	18.2	15.1	19.9	11.7	13.2	7.68		
Half-Size/Other	1.3	1.8	.7	1.4	1.6	1.4	1.4	1.4	1.2	22.18		
Freezers												
Type												
Chest	17.2	11.1	22.4	21.0	10.8	12.8	9.6	15.1	32.3	6.10		
Upright	17.3	15.2	17.2	17.2	19.5	16.3	13.9	17.9	20.7	5.85		
Age												
Less than 2 Years	2.3	2.3	2.3	2.5	2.0	2.1	2.2	2.0	3.0	17.01		
2 to 4 Years	3.9	2.8	4.6	5.0	2.4	3.6	3.0	4.0	5.0	15.23		
5 to 9 Years	7.0	5.3	7.1	7.8	7.4	5.9	5.5	6.2	10.8	8.47		
10 to 19 Years	13.7	10.2	16.3	15.3	11.6	11.3	8.4	13.3	22.2	7.20		
20 Years or More	6.6	5.3	8.7	6.4	5.8	5.2	3.3	6.6	11.3	10.02		
Don't Know9	Q	.7	1.1	1.1	1.0	1.1	.9	Q	27.89		
Number of Waterbed Heaters												
1	11.6	9.5	15.7	9.5	12.4	11.2	9.7	12.3	12.9	8.13		
2 or More	2.9	1.0	4.3	3.2	2.9	2.8	2.4	3.0	3.5	17.92		

See footnotes at end of table.

**Table 34. Appliances by Census Region and Urban Status,
Percent of U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	Census Region				Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban					
						Total	Central City	Suburban	Rural		
RSE Column Factors:	0.619	1.213	1.150	1.144	1.202	0.721	1.096	0.905	1.177		
Appliance Characteristics											
Water Heater (for one housing unit)¹	85.7	69.7	87.9	92.6	87.3	83.1	76.2	87.8	94.7	1.88	
Age											
Less than 2 Years	11.5	10.4	13.2	11.2	11.3	11.0	10.4	11.4	13.4	7.44	
2 to 4 Years	16.8	15.5	17.6	18.1	14.7	16.5	14.5	17.9	17.6	7.82	
5 to 9 Years	21.3	15.3	20.6	22.8	25.5	21.5	18.6	23.5	20.6	6.30	
10 to 19 Years	20.6	14.6	22.6	23.4	19.2	18.9	16.8	20.3	26.4	6.40	
20 Years or More	6.5	7.6	6.3	7.1	4.9	5.9	4.5	6.9	8.8	9.89	
Don't Know	9.0	6.3	7.6	10.0	11.8	9.3	11.3	7.9	8.0	11.75	
Size											
Small	17.4	10.5	22.2	19.4	15.1	15.5	15.2	15.7	23.9	7.92	
Medium	45.8	36.7	44.7	53.4	43.6	45.4	42.5	47.4	47.3	3.99	
Large	17.9	15.3	16.8	16.5	23.9	17.4	14.3	19.6	19.4	7.85	
Don't Know	4.6	7.1	4.2	3.3	4.8	4.7	4.3	5.1	4.2	12.10	
Location											
Heated Area	59.3	47.4	77.4	64.4	41.1	55.7	52.5	58.0	71.7	3.30	
Unheated Area	25.6	21.6	10.1	27.6	44.7	26.7	23.1	29.2	22.0	7.38	
Don't Know8	Q	Q	Q	1.5	.7	.7	.7	1.0	28.76	
Number of Television Sets											
Color											
1	46.0	42.8	48.1	45.5	47.3	44.1	48.6	40.9	52.5	2.95	
2	32.5	34.0	32.3	32.6	31.1	32.8	30.0	34.8	31.3	3.26	
3	13.1	13.6	12.9	13.3	12.4	14.4	11.6	16.2	8.6	7.14	
4	3.3	3.8	2.9	2.7	3.9	3.8	3.1	4.2	1.5	17.34	
5 or More	1.3	2.7	Q	1.2	Q	1.6	1.3	1.7	Q	19.17	
Black/White											
1	25.9	25.6	29.4	27.6	19.1	25.5	25.8	25.4	27.0	4.58	
2 or More	4.7	4.9	6.3	4.6	2.6	4.9	4.7	5.0	4.0	12.10	

¹ A count of main water heaters that are totally separate units from the household's space-heating system. For "Fuel Oil", combined units are shown as the separate category "Water Heated by Furnace."

² An unknown number may be heated by the furnace.

³ For one housing unit only.

⁴ Refers to lights used 12 to 24 hours per day.

NC = No cases in sample.

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

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 35. Appliances by Type and Ownership of Housing Unit,
Million U.S. Households, 1990**

Appliance Types and Characteristics		Type and Ownership of Housing Unit													RSE Row Factors	
					Multifamily											
					Single-Family			Two to Four Units			Five or More Units			Mobile Home		
		Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors:		0.283	0.330	0.350	0.831	1.082	2.005	1.138	1.081	2.488	1.133	1.358	1.538	2.351		
Total		94.0	64.4	53.7	10.7	10.0	2.5	7.5	14.4	1.8	12.6	5.2	4.3	1.0	7.27	
Appliance Types																
Electric Appliances																
Refrigerator		93.8	64.3	53.6	10.6	9.9	2.5	7.4	14.4	1.8	12.6	5.2	4.3	1.0	7.26	
Frost-Free		75.0	56.9	48.6	8.3	7.2	2.2	5.0	7.6	1.5	6.1	3.2	2.7	.5	8.26	
Manual Defrost		24.8	13.1	10.5	2.6	2.8	.4	2.4	6.8	.3	6.5	2.0	1.6	.4	10.19	
Freezer		32.4	28.6	26.1	2.5	1.3	.7	.7	1.0	.2	.8	1.5	1.4	Q	12.34	
Frost-Free		10.8	9.6	8.7	.9	.5	.3	.2	.2	Q	.2	.5	.4	Q	10.28	
Manual Defrost		21.7	19.0	17.4	1.6	.9	.4	.4	.7	Q	.6	1.1	1.0	Q	13.94	
Range Top or Burners		54.3	38.8	33.1	5.7	4.2	1.2	3.0	9.3	1.2	8.2	2.0	1.8	.2	11.33	
Oven		55.3	39.8	34.0	5.8	4.3	1.2	3.1	9.3	1.2	8.1	2.0	1.7	.3	*1.34	
Microwave Oven		74.1	55.0	47.0	8.1	6.5	1.9	4.6	8.6	1.3	7.3	4.0	3.4	.5	8.53	
Dishwasher		42.7	32.5	29.5	3.0	2.6	1.2	1.4	6.5	1.5	5.0	1.0	1.0	Q	12.90	
Clothes Washer		71.7	59.6	51.2	8.5	5.1	2.2	2.8	2.7	.7	2.0	4.2	3.7	.6	8.75	
Clothes Dryer		49.5	41.4	35.4	6.1	2.9	1.3	1.6	1.8	.6	1.2	3.3	3.0	.4	11.12	
Television Set		92.9	63.9	53.4	10.5	9.9	2.5	7.3	14.0	1.8	12.3	5.2	4.2	.9	7.35	
Color		90.3	62.6	52.5	10.1	9.4	2.4	7.0	13.3	1.7	11.7	4.9	4.1	.8	7.46	
Black/White		28.7	20.7	17.5	3.2	3.0	1.0	2.0	3.5	.3	3.1	1.5	1.3	.3	10.21	
Personal Computer		14.8	12.1	10.9	1.2	.8	.4	.4	1.6	.4	1.2	.3	.3	Q	16.02	
Air Conditioner		63.3	44.0	38.0	6.0	5.9	1.8	4.1	10.2	1.6	8.6	3.2	2.7	.5	9.26	
Room		29.1	19.6	16.3	3.2	3.5	1.1	2.4	4.3	.8	3.5	1.7	1.3	.4	*1.12	
Central		36.2	26.3	23.3	3.0	2.5	.7	1.7	5.9	.8	5.1	1.6	1.5	Q	14.94	
For One Housing Unit		35.7	26.3	23.3	3.0	2.4	.7	1.7	5.4	Q	4.7	1.6	1.5	Q	*4.86	
For Two or More Units		.5	NC	NC	NC	Q	Q	Q	.5	Q	.4	NC	NC	NC	50.82	
Window or Ceiling Fan		47.9	38.0	33.5	4.5	3.8	1.4	2.4	3.7	.5	3.2	2.4	2.2	.3	10.16	
Whole-House Fan		9.4	8.9	8.2	.7	.4	Q	.3	Q	Q	Q	Q	Q	Q	25.31	
Portable Fan		55.5	39.1	32.3	6.8	5.9	1.5	4.4	7.4	.9	6.5	3.1	2.5	.6	7.79	
Exhaust Fan		52.5	37.9	33.4	4.4	3.7	1.2	2.5	7.9	1.1	6.8	3.1	2.6	.5	10.00	
Furnace Fan		50.4	37.0	31.8	5.2	3.8	.8	3.0	5.2	.7	4.4	4.4	3.6	.8	10.71	
Evaporative Cooler		3.8	2.9	2.3	.6	Q	Q	Q	Q	NC	Q	Q	.7	.5	.1	26.32
Dehumidifier		11.3	10.5	9.8	.7	.4	.3	Q	.3	Q	Q	Q	Q	Q	19.76	
Water Heater		34.9	23.3	18.7	4.6	2.7	.7	2.0	5.5	Q	4.8	3.4	2.8	.5	14.04	
For One Housing Unit ¹		33.5	23.2	18.6	4.6	2.4	Q	1.8	4.5	Q	3.8	3.4	2.8	.5	14.14	
For Two or More Units ²		1.4	Q	Q	NC	.3	Q	.2	1.0	NC	1.0	NC	NC	NC	35.66	
Portable Space Heater		13.5	10.7	9.1	1.6	.9	.2	.7	.9	.2	.8	.9	.8	Q	16.05	
Waterbed Heater		13.7	10.5	8.4	2.1	1.1	.2	.8	1.3	Q	1.3	.8	.8	Q	15.65	
Swimming-Pool Pump		5.0	4.9	4.7	Q	NC	NC	NC	NC	NC	NC	Q	Q	Q	20.99	
Hot-Tub or Spa Pump		3.3	3.2	3.1	Q	NC	NC	NC	NC	NC	NC	Q	Q	NC	34.76	
Hot-Tub or Spa Heater		1.7	1.7	1.6	Q	NC	NC	NC	NC	NC	NC	Q	Q	NC	44.10	
Well Pump		14.3	12.9	11.7	1.1	.2	Q	Q	Q	NC	Q	1.2	1.0	Q	17.89	

See footnotes at end of table.

**Table 35. Appliances by Type and Ownership of Housing Unit,
Million U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics		Type and Ownership of Housing Unit												RSE Row Factors	
		Single-Family			Multifamily						Mobile Home				
					Two to Four Units			Five or More Units							
		Total	Total	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors:		0.283	0.330	0.350	0.831	1.082	2.005	1.138	1.081	2.488	1.133	1.358	1.538	2.351	
Appliance Types															
Natural Gas Appliances															
Range Top or Burners	34.0	21.7	17.5	4.3	5.5	1.3	4.2	5.0	0.6	4.3	1.8	1.4	0.5	9.58	
Oven	33.0	21.0	16.7	4.3	5.4	1.3	4.1	4.9	.6	4.3	1.8	1.4	.4	9.94	
Outdoor Grill	2.4	2.3	2.3	Q	Q	Q	NC	Q	Q	Q	Q	Q	Q	42.95	
Clothes Dryer	14.5	12.7	11.6	1.2	1.0	.6	.4	.4	.2	.2	.4	.3	Q	20.66	
Water Heater	49.7	34.6	29.1	5.5	6.4	1.5	4.9	7.2	.6	6.6	1.4	1.1	.4	9.88	
For One Housing Unit ¹	41.5	34.3	28.9	5.4	4.0	.9	3.0	1.8	.2	1.6	1.4	1.1	.4	12.50	
For Two or More Units ²	8.2	.3	Q	Q	2.4	.6	1.8	5.4	.5	5.0	NC	NC	NC	19.72	
Swimming-Pool Heater8	.8	.8	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	65.55	
Hot-Tub or Spa Heater	1.4	1.4	1.3	Q	NC	NC	NC	NC	NC	NC	NC	NC	NC	47.76	
Outdoor Light	1.0	.9	.9	Q	NC	NC	NC	NC	NC	NC	Q	Q	NC	55.17	
LPG Appliances															
Range Top or Burners	5.6	4.0	3.3	.8	.2	Q	.1	Q	NC	Q	1.3	1.0	.3	25.88	
Oven	5.4	3.9	3.2	.7	.2	Q	.1	Q	NC	Q	1.3	1.0	.3	26.36	
Outdoor Grill	22.5	19.7	17.7	2.0	1.1	.5	.6	.7	Q	.5	1.1	1.0	Q	13.97	
Clothes Dryer9	.7	.6	Q	Q	Q	NC	Q	NC	Q	Q	Q	NC	73.30	
Water Heater	3.1	2.6	2.2	.4	Q	Q	Q	NC	NC	NC	.4	.3	Q	36.61	
Fuel Oil Appliances															
Water Heater	4.0	1.9	1.8	Q	.5	Q	.4	1.6	.4	1.1	NC	NC	NC	17.80	
For One Housing Unit ¹	2.0	1.9	1.8	Q	.1	Q	Q	NC	NC	NC	NC	NC	NC	37.83	
For Two or More Units ²	2.0	Q	NC	Q	.4	Q	.3	1.6	.4	1.1	NC	NC	NC	14.92	
Water Heated by Furnace ³	1.1	1.1	1.0	Q	Q	NC	Q	NC	NC	NC	NC	NC	NC	82.88	
Kerosene Appliances															
Portable Space Heater	4.6	3.7	3.0	.7	Q	Q	Q	Q	NC	Q	.6	.5	Q	23.72	
Appliance Characteristics															
Lights															
Used 4 to 12 Hours per Day															
Total Number of Lights															
None	6.9	3.8	2.9	.9	.9	.2	.7	1.8	Q	1.5	.5	.3	.2	19.03	
1	21.0	11.5	9.1	2.4	3.1	.6	2.5	4.7	.4	4.3	1.6	1.3	.2	10.99	
2	28.4	18.9	15.1	3.8	3.0	.7	2.4	4.8	.7	4.1	1.6	1.3	.3	10.65	
3	16.7	12.3	10.7	1.6	1.8	.6	1.2	1.5	Q	1.4	1.0	.8	.1	13.51	
4	9.4	7.8	6.8	1.0	.5	Q	.3	.8	Q	.6	.3	.3	Q	20.06	
5	4.3	3.5	3.1	.5	.3	Q	.1	.4	Q	.3	Q	Q	Q	25.28	
6 or More	7.3	6.5	6.0	.5	.3	Q	.2	.4	Q	.3	Q	Q	Q	24.90	
Used 12 to 24 Hours per Day															
Total Number of Lights															
None	56.8	37.2	31.0	6.1	6.5	1.6	5.0	9.9	1.3	8.5	3.3	2.7	.5	8.40	
1	20.1	13.8	11.3	2.4	2.2	.6	1.6	2.7	Q	2.6	1.3	1.2	.2	12.06	
2	9.8	7.5	6.1	1.4	.9	.2	.7	1.1	.2	.8	.4	.3	.1	16.07	
3 or More	7.2	6.0	5.2	.7	.4	Q	.3	.7	Q	.6	.2	Q	Q	22.57	
Fluorescent Lamp Used															
Yes ⁴	8.8	7.1	6.3	.8	.6	.1	.4	.9	Q	.8	.3	.3	Q	21.58	
No	85.2	57.3	47.4	9.9	9.4	2.4	7.1	13.5	1.8	11.8	4.9	4.0	.9	7.40	
Flood Light Used															
Yes ⁴	4.4	3.7	3.4	.4	.2	Q	Q	.2	Q	.2	Q	Q	Q	31.36	
No	89.6	60.6	50.3	10.3	9.8	2.4	7.4	14.2	1.8	12.4	5.0	4.1	.9	7.36	

See footnotes at end of table.

Table 35. Appliances by Type and Ownership of Housing Unit, Million U.S. Households, 1990 (Continued)

Appliance Types and Characteristics		Type and Ownership of Housing Unit												RSE Row Factors	
		Single-Family			Multifamily						Mobile Home				
					Two to Four Units			Five or More Units							
		Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:		0.283	0.330	0.350	0.831	1.082	2.005	1.138	1.081	2.488	1.133	1.358	1.538	2.351	
Appliance Characteristics															
Refrigerators															
Number of Refrigerators		79.4	50.7	41.1	9.6	9.4	2.2	7.2	14.2	1.8	12.5	5.0	4.1	1.0	7.51
1		14.4	13.5	12.5	1.0	.5	.3	.2	Q	Q	Q	Q	Q	NC	16.76
2 or More															
Most-Used Refrigerator Defrost Method		74.6	56.6	48.3	8.3	7.2	2.2	5.0	7.6	1.5	6.1	3.2	2.7	.5	8.33
Frost-Free		19.1	7.7	5.3	2.4	2.7	.3	2.4	6.8	.3	6.4	2.0	1.6	.4	10.99
Age															
Less than 2 Years		12.1	8.6	7.0	1.6	1.2	.3	.9	1.7	.2	1.5	.7	.6	Q	13.94
2 to 4 Years		16.9	12.2	10.3	1.9	1.9	.5	1.4	1.8	.2	1.6	1.0	.9	Q	12.33
5 to 9 Years		24.8	17.1	14.0	3.1	2.9	.9	2.0	3.3	.3	3.0	1.5	1.2	.2	12.04
10 to 19 Years		26.0	19.3	16.8	2.4	2.0	.5	1.5	3.3	.9	2.4	1.4	1.0	.4	11.00
20 Years or More		7.3	5.4	4.8	.6	.8	.3	.5	.8	Q	.8	.3	.3	Q	16.23
Don't Know		6.7	1.7	.8	.9	1.1	Q	1.1	3.4	Q	3.3	.4	.2	.2	18.77
Type															
2-Doors (top and bottom)		63.0	41.9	34.7	7.2	7.6	1.9	5.6	9.6	1.3	8.3	3.9	3.2	.7	8.07
2-Doors (side-by-side)		15.7	14.5	13.1	1.3	.6	.4	.2	.5	Q	.2	.2	NC	NC	18.77
Regular (single door)		13.8	7.1	5.1	1.9	1.7	.2	1.5	4.1	Q	3.9	1.0	.8	.2	13.51
Half-Size/Other		1.2	.8	.6	.2	Q	Q	Q	.3	Q	Q	Q	Q	Q	43.66
Freezers															
Type															
Chest		16.2	14.0	12.6	1.4	.7	.3	.4	.5	Q	.4	.9	.8	Q	15.95
Upright		16.2	14.6	13.4	1.1	.6	.3	.3	.5	Q	.4	.6	.6	Q	16.49
Age															
Less than 2 Years		2.2	1.7	1.5	.2	Q	Q	Q	.2	Q	Q	Q	Q	NC	36.47
2 to 4 Years		3.7	3.1	2.8	.3	.2	Q	.2	Q	Q	Q	.2	Q	Q	31.94
5 to 9 Years		6.6	5.6	5.0	.6	.3	.2	.1	.3	Q	.2	.3	.3	Q	19.90
10 to 19 Years		12.9	11.6	10.6	1.0	.4	.3	Q	.2	Q	Q	.7	.7	Q	16.40
20 Years or More		6.2	5.9	5.6	.3	.2	.2	Q	Q	NC	Q	Q	Q	NC	22.54
Don't Know8	.7	.6	Q	Q	Q	Q	Q	NC	Q	Q	Q	Q	61.47
Number of Waterbed Heaters															
1		10.9	8.0	6.1	1.8	1.0	.2	.8	1.1	Q	1.1	.8	.7	Q	15.76
2 or More		2.8	2.5	2.2	.3	Q	Q	Q	Q	NC	Q	Q	Q	Q	37.05

See footnotes at end of table.

**Table 35. Appliances by Type and Ownership of Housing Unit,
Million U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics		Type and Ownership of Housing Unit												RSE Row Factors	
		Single-Family			Multifamily						Mobile Home				
					Two to Four Units			Five or More Units							
		Total	Total	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors:		0.263	0.330	0.350	0.831	1.082	2.005	1.138	1.081	2.488	1.133	1.358	1.538	2.351	
Appliance Characteristics															
Water Heater (for one housing unit) ¹	..	80.5	62.4	51.9	10.5	6.6	1.7	4.9	6.4	0.9	5.5	5.2	4.2	1.0	8.66
Age															
Less than 2 Years	..	10.8	8.5	7.3	1.2	.8	Q	.6	.6	Q	.4	1.0	.8	.2	17.18
2 to 4 Years	..	15.8	12.5	10.4	2.1	1.1	.4	.7	.9	Q	.8	1.4	1.1	.2	16.46
5 to 9 Years	..	20.0	16.0	13.7	2.3	1.5	.6	.9	1.6	Q	1.4	1.0	.9	Q	14.97
10 to 19 Years	..	19.3	15.2	13.3	2.0	1.2	.3	1.0	1.6	Q	1.1	1.3	1.0	.2	15.72
20 Years or More	..	6.1	5.4	4.7	.7	.3	Q	.2	Q	Q	.3	Q	Q	Q	22.91
Don't Know	..	8.5	4.8	2.6	2.2	1.7	Q	1.6	1.6	Q	1.6	.4	.2	Q	19.83
Size															
Small	..	16.3	10.5	8.1	2.4	1.2	.2	1.0	1.8	Q	1.7	2.8	2.3	.5	14.53
Medium	..	43.1	34.4	28.7	5.7	3.8	1.0	2.8	3.2	Q	2.6	1.7	1.4	.3	11.68
Large	..	16.8	14.8	13.0	1.8	.8	.4	.5	.7	Q	.5	.5	.4	Q	18.87
Don't Know	..	4.3	2.7	2.1	.6	.8	Q	.6	.7	Q	.6	.2	.2	Q	21.32
Location															
Heated Area	..	55.7	42.1	35.7	6.3	4.6	1.2	3.4	5.2	Q	4.6	3.9	3.2	.7	9.80
Unheated Area	..	24.1	20.0	16.0	4.0	1.8	.5	1.3	1.0	.3	.8	1.2	1.0	.2	15.09
Don't Know	..	.7	.3	Q	Q	.2	NC	.2	Q	NC	Q	Q	Q	Q	52.54
Number of Television Sets															
Color															
1	..	43.2	24.9	19.8	5.1	5.7	1.0	4.6	9.4	1.1	8.3	3.3	2.6	.7	8.27
2	..	30.6	23.2	19.4	3.8	2.9	.9	2.0	3.3	.5	2.8	1.2	1.1	.1	10.74
3	..	12.3	10.6	9.7	1.0	.7	.4	.3	.6	Q	.5	.4	.3	Q	17.63
4	..	3.1	2.8	2.6	Q	.2	Q	Q	Q	Q	NC	NC	NC	NC	35.97
5 or More	..	1.2	1.1	1.1	Q	Q	NC	Q	NC	NC	Q	Q	NC	NC	41.25
Black/White															
1	..	24.3	17.1	14.3	2.7	2.6	.9	1.7	3.2	.3	2.9	1.4	1.2	.3	10.73
2 or More	..	4.4	3.7	3.2	.5	.3	Q	.2	.3	NC	.3	Q	Q	Q	25.69

¹ A count of main water heaters that are totally separate units from the household's space-heating system. For "Fuel Oil", combined units are shown as the separate category "Water Heated by Furnace."

² An unknown number may be heated by the furnace.

³ For one housing unit only.

⁴ Refers to lights used 12 to 24 hours per day.

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 36. Appliances by Type and Ownership of Housing Unit, Percent of U.S. Households, 1990

Appliance Types and Characteristics		Type and Ownership of Housing Unit												RSE Row Factors	
		Single-Family			Multifamily						Mobile Home				
					Two to Four Units		Five or More Units								
		Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:		0.330	0.367	0.376	0.838	1.054	1.961	1.140	1.112	2.628	1.154	1.171	1.288	2.192	
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	3.00
Appliance Types															
Electric Appliances															
Refrigerator		99.8	99.8	99.9	99.7	99.0	100.0	98.7	99.8	130.0	99.8	100.0	100.0	100.0	NE
Frost-Free		79.8	88.4	90.5	77.8	72.4	88.8	66.9	53.0	32.8	48.7	62.2	63.8	55.1	3.56
Manual Defrost		26.4	20.4	19.5	24.8	28.4	16.2	32.6	47.3	18.7	51.4	38.3	37.1	44.0	8.27
Freezer		34.5	44.4	48.5	23.4	13.5	27.3	8.8	6.9	10.1	6.4	29.0	32.7	Q	10.93
Frost-Free		11.4	14.9	16.2	8.4	4.8	10.3	3.0	1.7	Q	1.7	8.7	9.7	Q	18.50
Manual Defrost		23.0	29.5	32.4	16.0	8.6	16.9	5.8	5.2	Q	4.7	20.2	23.0	Q	12.96
Range Top or Burners		57.8	60.3	61.6	53.5	41.9	46.4	40.4	64.8	64.5	64.9	37.9	41.4	22.6	7.48
Oven		58.9	61.8	63.3	54.2	42.7	47.7	41.0	64.4	66.5	64.1	38.7	41.0	28.5	7.29
Microwave Oven		78.8	85.5	87.5	75.7	65.1	74.6	61.8	59.4	70.8	57.7	75.8	80.2	56.2	4.04
Dishwasher		45.4	50.6	55.0	28.3	25.8	46.7	18.8	45.0	31.1	39.8	20.1	23.7	Q	9.14
Clothes Washer		76.3	92.7	95.3	79.3	50.7	89.2	37.8	18.9	39.7	15.9	81.5	85.8	62.5	5.32
Clothes Dryer		52.6	64.4	65.9	56.7	29.2	52.1	21.5	12.4	30.6	9.8	63.5	69.5	36.7	8.13
Television Set		98.9	99.3	99.4	98.4	98.7	100.0	98.2	97.3	96.7	97.4	99.0	99.0	98.8	93
Color		96.1	97.3	97.8	95.1	94.4	96.0	93.9	92.6	93.0	92.5	93.5	95.3	85.6	1.42
Black/White		30.6	32.2	32.6	30.3	29.6	40.1	26.1	24.2	19.1	24.9	29.6	29.6	29.5	8.38
Personal Computer		15.7	18.8	20.3	11.1	8.2	15.8	5.7	11.0	22.1	9.4	5.7	6.1	Q	14.66
Air Conditioner		67.4	68.4	70.8	56.2	59.3	71.7	55.1	70.9	89.7	68.2	60.8	63.1	50.6	5.05
Room		31.0	30.4	30.4	30.3	35.2	44.9	32.0	30.0	44.7	27.9	32.5	29.9	44.2	10.57
Central		38.6	40.9	43.5	27.7	24.7	28.6	23.4	41.1	45.0	40.5	29.8	35.1	Q	11.72
For One Housing Unit		38.0	40.9	43.5	27.7	24.1	27.2	23.0	37.8	43.3	37.0	29.8	35.1	Q	12.12
For Two or More Units6	NC	NC	NC	Q	Q	Q	3.3	3.5	NC	NC	NC	NC	47.40
Window or Ceiling Fan		51.0	59.1	62.4	42.2	38.0	55.3	32.2	25.7	26.1	25.6	46.4	50.9	26.5	6.72
Whole-House Fan		10.	13.8	15.3	6.2	4.0	Q	3.5	Q	Q	Q	Q	Q	Q	23.18
Portable Fan		59.0	60.7	60.2	63.3	58.6	59.6	58.3	51.3	48.4	51.7	59.8	58.7	64.5	4.73
Exhaust Fan		55.9	58.9	62.3	41.7	36.5	46.5	33.2	54.6	59.2	53.9	59.5	62.1	48.1	6.09
Furnace Fan		53.6	57.5	59.3	48.6	38.4	31.7	40.6	35.8	39.0	35.3	84.3	85.1	80.4	7.22
Evaporative Cooler		4.0	4.5	4.2	5.6	Q	Q	Q	Q	NC	Q	12.8	12.7	13.6	26.56
Dehumidifier		12.0	16.3	18.2	6.8	3.9	10.8	Q	2.2	Q	Q	Q	Q	Q	18.85
Water Heater		37.1	36.2	34.8	42.9	27.5	29.2	26.9	38.1	40.0	37.9	64.6	66.5	56.4	10.49
For One Housing Unit ¹		35.7	36.1	34.7	42.9	24.2	25.8	23.7	31.5	40.0	30.2	64.6	66.5	56.4	11.35
For Two or More Units ²		1.4	Q	Q	NC	3.3	Q	3.2	6.7	NC	7.6	NC	NC	NC	33.76
Portable Space Heater		14.4	16.6	16.9	15.1	9.3	8.9	9.5	6.6	9.5	6.1	18.0	18.7	Q	15.09
Waterbed Heater		14.5	16.3	15.6	19.7	10.6	8.5	11.2	9.0	Q	10.1	16.3	17.7	Q	18.86
Swimming-Pool Pump		5.4	7.6	8.8	Q	NC	NC	NC	NC	NC	NC	Q	Q	Q	18.29
Hot-Tub or Spa Pump		3.5	5.0	5.8	Q	NC	NC	NC	NC	NC	NC	Q	Q	NC	29.87
Hot-Tub or Spa Heater		1.8	2.6	3.0	Q	NC	NC	NC	NC	NC	NC	Q	Q	NC	38.42
Well Pump		15.3	20.0	21.8	10.8	2.1	Q	Q	Q	NC	Q	22.2	24.2	Q	17.23

See footnotes at end of table.

**Table 36. Appliances by Type and Ownership of Housing Unit,
Percent of U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics			Type and Ownership of Housing Unit												RSE Row Factors	
			Single-Family			Multifamily						Mobile Home				
						Two to Four Units		Five or More Units								
			Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:			0.330	0.367	0.376	0.838	1.054	1.961	1.140	1.112	2.628	1.154	1.171	1.288	2.192	
Appliance Types																
Natural Gas Appliances																
Range Top or Burners	36.2	33.7	32.5	39.9	54.8	50.6	56.3	34.6	35.5	34.4	35.3	32.5	47.6	9.40		
Oven	35.1	32.6	31.1	40.1	53.8	50.6	54.9	33.8	33.5	33.8	34.1	32.1	43.3	9.70		
Outdoor Grill	2.6	3.6	4.3	Q	Q	Q	NC	Q	Q	Q	Q	Q	Q	38.61		
Clothes Dryer	15.4	19.8	21.5	11.1	10.1	25.1	5.0	2.8	Q	1.6	6.7	7.3	Q	20.25		
Water Heater	52.9	53.8	54.2	51.7	64.1	61.2	65.1	50.1	35.4	52.2	27.7	25.6	37.1	8.65		
For One Housing Unit ¹	44.1	53.3	53.7	50.9	39.6	36.5	40.7	12.5	10.1	12.8	27.7	25.6	37.1	11.64		
For Two or More Units ²	8.7	.5	Q	Q	24.5	24.7	24.4	37.6	25.3	39.4	NC	NC	NC	18.28		
Swimming-Pool Heater9	1.3	1.5	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	58.26		
Hot-Tub or Spa Heater	1.4	2.1	2.4	Q	NC	NC	NC	NC	NC	NC	NC	NC	NC	41.70		
Outdoor Light	1.0	1.5	1.7	Q	NC	NC	NC	NC	NC	NC	Q	Q	NC	49.00		
LPG Appliances																
Range Top or Burners	5.9	6.2	6.1	7.1	2.1	Q	1.8	Q	NC	Q	24.8	23.7	29.7	24.52		
Oven	5.7	6.0	5.9	6.5	2.1	Q	1.8	Q	NC	Q	24.3	23.7	26.9	25.20		
Outdoor Grill	24.0	30.6	32.9	18.8	10.6	18.8	7.8	4.9	Q	4.3	20.5	22.4	Q	12.42		
Clothes Dryer9	1.2	1.1	Q	Q	Q	NC	Q	NC	Q	Q	Q	NC	65.46		
Water Heater	3.3	4.0	4.1	3.5	Q	Q	Q	NC	NC	NC	7.2	7.4	Q	36.60		
Fuel Oil Appliances																
Water Heater	4.3	2.9	3.3	Q	5.5	Q	5.7	11.0	24.6	9.1	NC	NC	NC	18.14		
For One Housing Unit ¹	2.1	2.9	3.3	Q	1.5	Q	Q	NC	NC	NC	NC	NC	NC	34.67		
For Two or More Units ²	2.1	Q	NC	Q	4.0	Q	4.4	11.0	24.6	9.1	NC	NC	NC	16.23		
Water Heated by Furnace ³	1.1	1.7	1.9	Q	Q	NC	Q	NC	NC	NC	NC	NC	NC	74.51		
Kerosene Appliances																
Portable Space Heater	4.9	5.8	5.6	6.8	Q	Q	Q	Q	NC	Q	12.4	11.2	17.9	22.58		
Appliance Characteristics																
Lights																
Used 4 to 12 Hours per Day																
Total Number of Lights																
None	7.4	5.8	5.4	8.0	8.9	6.6	9.7	12.2	Q	12.3	10.1	8.0	19.6	17.20		
1	22.3	17.9	17.0	22.7	31.2	25.2	33.3	32.8	21.1	34.5	29.9	31.1	24.8	8.44		
2	30.2	29.3	28.1	35.4	30.4	25.8	31.9	33.5	40.3	32.5	31.6	31.3	32.7	8.10		
3	17.7	19.1	19.9	15.1	18.5	24.5	16.4	10.6	Q	10.8	19.0	19.8	15.3	11.77		
4	10.0	12.1	12.7	9.3	5.1	Q	4.5	5.3	Q	4.9	6.3	7.2	Q	19.21		
5	4.6	5.5	5.7	4.3	2.6	Q	1.9	3.1	Q	2.6	Q	Q	Q	23.26		
6 or More	7.8	10.1	11.2	5.0	3.3	Q	2.3	2.6	Q	2.4	Q	Q	Q	23.25		
Used 12 to 24 Hours per Day																
Total Number of Lights																
None	60.5	57.7	57.8	57.4	65.4	62.7	66.4	68.6	74.2	67.7	62.5	63.7	57.2	4.34		
1	21.4	21.4	21.1	22.9	22.1	24.7	21.2	19.0	Q	20.8	25.8	27.5	18.3	9.70		
2	10.5	11.6	11.4	12.9	8.9	9.0	8.9	7.3	13.2	6.5	7.8	6.2	14.9	14.47		
3 or More	7.7	9.2	9.7	6.8	3.5	Q	3.5	5.1	Q	5.0	3.9	Q	Q	21.57		
Fluorescent Lamp Used																
Yes ⁴	9.4	11.0	11.7	7.1	5.6	5.3	5.6	6.1	Q	6.4	6.2	6.9	Q	20.62		
No	90.6	89.0	88.3	92.9	94.4	94.7	94.4	93.9	96.6	93.6	93.8	93.1	96.7	1.37		
Flood Light Used																
Yes ⁴	4.6	5.8	6.3	3.5	1.8	Q	Q	1.4	Q	Q	4.5	Q	Q	29.88		
No	95.4	94.2	93.7	96.5	98.2	95.0	99.3	98.6	98.0	98.7	95.5	95.4	96.2	1.23		

See footnotes at end of table.

**Table 36. Appliances by Type and Ownership of Housing Unit,
Percent of U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Type and Ownership of Housing Unit													RSE Row Factors	
					Multifamily						Mobile Home				
					Single-Family			Two to Four Units			Five or More Units				
	Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors:	0.330	0.367	0.376	0.838	1.054	1.961	1.140	1.112	2.628	1.154	1.171	1.288	2.192		
Appliance Characteristics															
Refrigerators															
Number of Refrigerators															
1	84.5	78.8	76.5	90.4	93.9	86.5	96.4	98.8	96.4	99.2	96.5	95.8	100.0	1.62	
2 or More	15.3	21.0	23.4	9.3	5.1	13.5	2.2	Q	Q	Q	Q	Q	NC	15.25	
Most-Used Refrigerator Defrost Method															
Frost-Free	79.4	87.9	90.0	77.4	72.0	87.6	66.7	53.0	82.8	48.7	61.7	63.2	55.1	3.62	
Manual	20.4	11.9	9.9	22.3	27.1	12.4	32.0	46.8	17.2	51.1	38.3	36.8	44.9	9.08	
Age															
Less than 2 Years	12.9	13.3	13.0	15.0	11.8	11.4	11.9	12.0	12.5	11.9	13.0	15.2	Q	12.77	
2 to 4 Years	18.0	19.0	19.2	18.0	19.0	19.8	18.7	12.5	13.4	12.4	18.3	20.4	Q	10.65	
5 to 9 Years	23.4	26.6	26.1	29.4	28.8	36.9	26.1	23.1	18.0	23.8	28.4	29.3	24.3	9.78	
10 to 19 Years	27.6	29.9	31.4	22.7	20.2	20.5	20.1	23.0	49.0	19.3	26.4	23.3	40.0	8.91	
20 Years or More	7.8	8.4	8.9	5.9	7.9	10.0	7.2	5.7	Q	6.4	5.6	6.2	Q	16.31	
Don't Know	7.1	2.6	1.4	8.7	11.3	Q	14.6	23.6	Q	26.1	8.3	5.5	20.8	17.26	
Type															
2-Doors (top and bottom)	67.1	65.2	64.7	67.6	75.7	77.4	75.1	66.4	71.7	65.7	75.7	75.3	77.6	3.58	
2-Doors (side-by-side)	16.7	22.5	24.5	12.3	5.7	14.8	2.6	3.3	15.4	Q	3.9	4.8	NC	17.58	
Regular (single door)	14.7	11.0	9.6	18.1	16.6	6.7	19.9	28.1	Q	31.0	19.3	18.9	21.3	11.98	
Half-Size/Other	1.3	1.3	1.2	1.6	Q	Q	Q	1.9	Q	Q	Q	Q	Q	40.76	
Freezers															
Type															
Chest	17.2	21.7	23.5	12.7	7.4	13.8	5.3	3.7	Q	3.5	17.5	19.4	Q	15.14	
Upright	17.3	22.6	25.0	10.8	6.0	13.4	3.5	3.2	Q	2.9	11.5	13.3	Q	15.80	
Age															
Less than 2 Years	2.3	2.6	2.7	2.1	Q	Q	Q	1.6	Q	Q	Q	Q	NC	32.61	
2 to 4 Years	3.9	4.8	5.2	2.4	2.1	Q	2.1	Q	Q	Q	4.6	Q	Q	30.03	
5 to 9 Years	7.0	8.7	9.3	5.6	3.4	7.4	2.0	2.3	Q	1.9	6.5	7.1	Q	19.09	
10 to 19 Years	13.7	18.1	19.8	9.5	3.7	10.4	Q	1.2	Q	Q	14.0	16.1	Q	16.61	
20 Years or More	6.6	9.1	10.4	3.0	2.4	6.2	Q	Q	NC	Q	Q	Q	NC	21.81	
Don't Know9	1.0	1.1	Q	Q	Q	Q	NC	Q	Q	Q	Q	Q	55.08	
Number of Waterbed Heaters															
1	11.6	12.4	11.4	17.3	10.3	8.0	11.0	7.9	Q	8.8	14.6	15.8	Q	14.20	
2 or More	2.9	3.9	4.2	2.4	Q	Q	Q	NC	Q	Q	Q	Q	Q	33.55	

See footnotes at end of table.

Table 36. Appliances by Type and Ownership of Housing Unit, Percent of U.S. Households, 1990 (Continued)

Appliance Types and Characteristics		Type and Ownership of Housing Unit													RSE Row Factors	
		Single-Family			Multifamily						Mobile Home					
					Two to Four Units		Five or More Units									
	Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total		
RSE Column Factors:	0.330	0.367	0.376	0.838	1.054	1.961	1.140	1.112	2.628	1.154	1.171	1.288	2.192			
Appliance Characteristics																
Water Heater (for one housing unit)¹	85.7	96.9	96.6	98.4	66.0	66.5	65.9	44.3	50.1	43.5	99.7	99.7	100.0		6.20	
Age																
Less than 2 Years	11.5	13.2	13.7	11.0	7.9	Q	7.6	4.1	Q	3.3	18.5	18.3	19.4		16.23	
2 to 4 Years	16.8	19.3	19.3	19.6	10.8	15.6	9.2	6.0	Q	6.7	25.9	26.7	22.7		14.38	
5 to 9 Years	21.3	24.8	25.4	21.8	14.9	22.3	12.4	10.9	Q	11.4	18.7	20.5	Q		12.68	
10 to 19 Years	20.6	23.7	24.8	18.3	12.2	10.5	12.7	11.1	26.1	9.0	24.3	24.0	25.3		14.28	
20 Years or More	6.5	8.4	8.7	6.9	3.2	Q	2.1	Q	Q	5.4	Q	Q	Q		21.60	
Don't Know	9.0	7.4	4.8	20.7	17.0	Q	21.8	11.4	Q	12.6	6.9	5.6	Q		18.10	
Size																
Small	17.4	16.3	15.1	22.6	12.1	7.5	13.6	12.7	Q	13.7	53.4	53.6	52.7		12.06	
Medium	45.8	53.4	53.4	53.3	38.1	40.2	37.4	22.4	34.1	20.7	32.1	33.2	27.2		8.88	
Large	17.9	23.0	24.2	16.7	8.3	14.2	6.3	4.7	Q	4.0	9.8	9.1	Q		17.86	
Don't Know	4.6	4.2	3.9	5.8	7.5	Q	8.5	4.6	Q	5.1	4.4	3.8	Q		20.50	
Location																
Heated Area	59.3	65.3	66.5	59.5	45.6	46.8	45.2	36.2	36.2	36.2	75.2	76.1	71.2		6.53	
Unheated Area	25.6	31.1	29.8	37.6	18.2	19.7	17.7	7.3	13.9	6.3	22.8	22.9	22.3		13.29	
Don't Know8	.4	Q	Q	2.3	NC	3.0	Q	NC	Q	Q	Q	Q		49.00	
Number of Television Sets																
Color																
1	46.0	38.6	36.8	47.9	56.8	41.6	62.0	65.2	59.1	66.0	62.6	61.3	68.2		4.64	
2	32.5	36.1	36.2	35.6	28.6	34.2	26.8	22.6	26.7	22.0	23.1	25.0	14.7		7.98	
3	13.1	16.5	18.0	9.1	6.6	15.6	3.5	4.3	Q	4.3	7.2	8.2	Q		16.32	
4	3.3	4.3	4.8	Q	2.1	Q	Q	Q	Q	Q	NC	NC	NC		31.94	
5 or More	1.3	1.8	2.0	Q	Q	NC	Q	NC	NC	NC	Q	Q	NC		36.11	
Black/White																
1	25.9	26.5	26.7	25.7	26.3	35.6	23.2	22.2	19.1	22.7	27.4	27.3	27.7		8.84	
2 or More	4.7	5.7	5.9	4.6	3.3	Q	2.9	1.9	NC	2.2	Q	2.7	Q		23.29	

¹ A count of main water heaters that are totally separate units from the household's space-heating system. For "Fuel Oil", combined units are shown as the separate category "Water Heated by Furnace."

² An unknown number may be heated by the furnace.

³ For one housing unit only.

⁴ Refers to lights used 12 to 24 hours per day.

NC = No cases in sample.

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

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 37. Appliances by Family Income,
Million U.S. Households, 1990**

Appliance Types and Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Fed- eral Assist- ance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Per- cent	125 Per- cent			
		RSE Column Factors:	0.422	1.988	1.338	1.129	0.924	0.923	0.901	0.943	1.264	1.068	0.807
Total	94.0	5.2	10.7	11.4	17.4	15.3	16.7	17.3	13.2	18.2	27.9	4.04	
Appliance Types													
Electric Appliances													
Refrigerator	93.8	5.1	10.6	11.4	17.4	15.2	16.7	17.3	13.0	18.0	27.7	4.07	
Frost-Free	75.0	3.2	7.2	7.9	13.2	12.5	14.8	16.2	8.3	12.0	19.3	4.63	
Manual Defrost	24.8	2.1	3.8	3.9	5.3	3.7	2.9	3.0	5.1	6.7	9.7	6.51	
Freezer	32.4	1.1	3.2	3.6	5.7	5.4	6.4	7.0	3.7	5.5	8.7	7.03	
Frost-Free	10.8	.3	.9	1.1	1.8	1.7	2.5	2.6	1.2	1.6	2.6	1.276	
Manual Defrost	2.7	.8	2.4	2.5	3.9	3.7	3.9	4.4	2.5	3.9	6.0	7.98	
Range Top or Burners	54.3	2.3	5.1	6.2	9.7	9.8	10.3	11.0	5.8	8.5	13.5	5.71	
Oven	55.3	2.4	5.1	6.1	9.7	9.8	10.5	11.7	5.9	8.7	13.6	5.81	
Microwave Oven	74.1	2.6	6.7	7.6	13.4	12.8	15.2	15.8	7.3	11.0	17.7	5.01	
Dishwasher	42.7	.8	1.5	3.0	5.9	7.5	10.3	13.7	2.0	3.1	5.4	8.17	
Clothes Washer	71.7	2.4	6.6	7.3	12.3	12.3	14.5	16.3	7.5	11.1	17.8	4.77	
Clothes Dryer	49.5	1.1	4.2	4.8	8.3	8.9	10.7	11.4	4.2	6.5	10.8	6.23	
Television Set	92.9	5.1	10.5	11.3	17.3	15.0	16.7	17.1	12.9	17.9	27.4	4.98	
Color	90.3	4.5	9.8	10.8	16.9	14.8	16.6	16.9	11.9	16.5	25.7	4.07	
Black/White	28.7	1.6	3.4	3.4	5.4	4.6	5.	5.2	4.6	6.2	9.2	7.44	
Personal Computer	14.8	.3	.5	.6	1.3	2.0	3.4	6.7	.6	1.0	1.6	9.46	
Air Conditioner	63.3	2.5	6.0	7.1	11.2	10.3	12.6	13.7	6.4	9.3	15.2	5.38	
Room	29.1	1.5	4.1	4.2	5.5	4.9	4.8	4.2	4.2	6.1	9.6	7.67	
Central	36.2	1.0	2.0	3.0	5.9	5.9	8.3	10.2	2.2	3.3	5.8	8.79	
For One Housing Unit	35.7	.9	1.9	2.9	5.8	5.8	8.2	10.2	2.1	3.2	5.6	8.83	
For Two or More Units	.5	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	78.47	
Window or Ceiling Fan	47.9	1.9	4.3	4.7	8.7	8.1	9.6	10.6	5.5	7.5	11.9	5.86	
Whole-House Fan	9.4	.3	.6	.7	1.4	1.5	1.9	3.2	.9	1.0	1.7	16.44	
Portable Fan	55.5	2.9	7.2	6.9	10.4	9.0	10.1	9.0	8.2	11.7	17.8	4.92	
Exhaust Fan	52.5	1.6	4.4	5.1	8.9	8.9	11.3	12.4	4.9	6.9	11.3	6.04	
Furnace Fan	50.4	1.7	4.2	5.4	9.6	8.5	10.4	10.7	4.8	7.1	11.9	6.23	
Evaporative Cooler	3.8	.3	.5	.4	.8	.9	.6	.2	.7	1.1	1.6	22.69	
Dehumidifier	11.3	Q	.5	.8	1.7	1.7	2.6	3.8	.4	.6	1.5	14.28	
Water Heater	34.9	2.0	3.9	4.7	7.2	6.1	6.0	5.1	5.0	7.1	10.7	7.45	
For One Housing Unit ²	33.5	1.7	3.6	4.5	6.9	5.8	5.9	5.1	4.6	6.6	10.1	7.77	
For Two or More Units ³	1.4	.2	.3	.2	Q	.3	Q	Q	.4	.5	.7	30.84	
Portable Space Heater	13.5	.7	1.6	1.6	2.8	2.0	1.9	2.9	1.9	2.5	3.9	10.58	
Waterbed Heater	13.7	.4	.6	1.3	2.6	2.8	3.5	2.7	1.0	1.6	2.4	12.64	
Swimming-Pool Pump	5.0	Q	Q	.2	.5	.8	1.3	2.1	Q	.2	.6	16.87	
Hot-Tub or Spa Pump	3.3	Q	NC	Q	.3	.2	.7	2.0	Q	Q	Q	23.65	
Hot-Tub or Spa Heater	1.7	NC	NC	Q	.2	Q	.5	.9	NC	NC	Q	27.75	
Well Pump	14.3	.5	1.6	1.6	2.5	2.9	2.6	2.6	1.7	2.5	4.1	12.26	

See footnotes at end of table.

**Table 37. Appliances by Family Income,
Million U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics		1990 Family Income									Below Poverty Line		Eligible for Fed- eral Assist- ance ¹	RSE Row Factors	
		Total	Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Per- cent	125 Per- cent				
	RSE Column Factors:	0.422	1.988	1.338	1.129	0.924	0.923	0.901	0.943	1.264	1.068	0.807			
Appliance Types															
Natural Gas Appliances															
Range Top or Burners	34.0	2.2	4.4	4.4	6.6	4.7	5.7	5.8	5.7	7.5	11.5	6.88			
Oven	33.0	2.2	4.3	4.4	6.6	4.7	5.7	5.2	5.6	7.4	11.3	6.90			
Outdoor Grill	2.4	Q	Q	Q	.2	.3	.5	1.1	Q	Q	Q	.2	31.18		
Clothes Dryer	14.5	.2	1.0	1.2	2.2	2.5	3.1	4.3	.7	1.3	2.8	13.01			
Water Heater	49.7	2.5	5.6	5.7	8.9	7.6	9.0	10.4	6.7	8.9	14.0	6.17			
For One Housing Unit ²	41.5	1.6	4.3	4.4	7.1	6.4	8.2	9.5	4.8	6.7	10.8	7.27			
For Two or More Units ³	8.2	.9	1.3	1.3	1.7	1.2	.8	.9	1.8	2.2	3.3	13.83			
Swimming-Pool Heater8	Q	Q	NC	Q	Q	Q	.6	Q	Q	Q	Q	35.75		
Hot-Tub or Spa Heater	1.4	Q	NC	Q	Q	Q	Q	.2	1.0	Q	Q	Q	29.42		
Outdoor Light	1.0	Q	Q	Q	Q	Q	Q	.2	.3	Q	Q	Q	34.67		
LPG Appliances															
Range Top or Burners	5.6	.7	1.1	.8	1.1	.8	.6	.5	1.6	2.1	2.8	18.29			
Oven	5.4	.6	1.1	.8	1.1	.8	.6	.4	1.5	2.0	2.7	18.37			
Outdoor Grill	22.5	.2	1.0	1.1	3.0	3.8	6.1	7.4	1.1	1.7	2.9	9.96			
Clothes Dryer9	Q	Q	Q	Q	.1	.2	.2	Q	Q	.3	43.26			
Water Heater	3.1	.3	.5	.4	.5	.5	.5	.4	.7	1.1	1.3	24.12			
Fuel Oil Appliances															
Water Heater	4.0	.3	.5	.4	.5	.7	.8	.9	.6	.8	1.3	17.40			
For One Housing Unit ²	2.0	Q	.2	.1	.2	.3	.5	.6	.1	.2	.5	24.46			
For Two or More Units ³	2.0	.3	.3	.2	.3	.4	.3	Q	.5	.6	.8	23.71			
Water Heated by Furnace ⁴	1.1	Q	Q	Q	Q	.2	.3	.4	Q	Q	Q	.2	41.12		
Kerosene Appliances															
Portable Space Heater	4.6	.2	.6	.5	.9	1.1	.8	.6	.7	1.0	1.6	18.07			
Appliance Characteristics															
Lights															
Used 4 to 12 Hours per Day															
Total Number of Lights															
None	6.9	.9	1.5	1.1	1.3	.9	.7	.5	2.2	2.7	3.5	13.50			
1	21.0	2.0	4.0	3.7	4.1	3.1	2.3	1.7	4.4	6.3	9.2	7.46			
2	28.4	1.4	3.3	3.7	5.9	4.9	5.7	3.5	3.8	5.2	8.3	7.58			
3	16.7	.4	1.2	1.8	3.4	3.2	3.1	3.6	1.5	2.1	3.8	9.58			
4	9.4	.3	.3	.7	1.4	1.7	2.2	2.9	.8	1.0	1.6	15.41			
5	4.3	Q	Q	.2	.8	.6	1.1	1.5	.2	.3	.6	19.99			
6 or More	7.3	.1	.2	.3	.6	1.0	1.5	3.6	.4	.5	.9	18.40			
Used 12 to 24 Hours per Day															
Total Number of Lights															
None	56.8	3.3	6.9	7.2	11.2	9.0	9.3	10.0	7.9	11.1	17.5	4.98			
1	20.1	1.2	2.7	2.6	3.5	3.2	3.9	2.9	3.6	4.8	6.7	8.44			
2	9.8	.5	.6	1.1	1.8	1.8	1.9	2.1	1.0	1.4	2.3	11.71			
3 or More	7.2	Q	.5	.6	.9	1.3	1.6	2.2	.6	.9	1.5	16.91			
Fluorescent Lamp Used															
Yes ⁵	8.8	.3	.7	.8	1.3	1.5	2.0	2.3	.9	1.3	1.8	14.36			
No	85.2	4.9	10.0	10.6	16.2	13.8	14.8	14.9	12.3	16.9	26.0	4.25			
Flood Light Used															
Yes ⁵	4.4	Q	.4	.3	.6	.9	.8	1.3	.4	.6	.9	19.98			
No	89.6	5.1	10.3	11.0	16.9	14.4	16.0	15.9	12.8	17.7	27.0	4.11			

See footnotes at end of table.

**Table 37. Appliances by Family Income,
Million U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Fed- er- al Assist- ance ¹	RSE Row Factors	
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Per- cent	125 Per- cent				
RSE Column Factors:	0.422	1.988	1.338	1.129	0.924	0.923	0.901	0.943	1.264	1.068	0.807			
Appliance Characteristics														
Refrigerators														
Number of Refrigerators														
1	79.4	4.9	9.7	10.2	15.3	13.0	14.0	12.2	12.2	16.7	25.2	4.40		
2 or More	14.4	.2	.9	1.1	2.1	2.2	2.7	5.1	.8	1.3	2.5	11.33		
Most-Used Refrigerator Defrost Method														
Frost-Free	74.6	3.1	7.2	7.9	13.2	12.4	14.8	16.1	8.2	11.9	19.1	4.71		
Manual	19.1	2.0	3.4	3.5	4.3	2.9	1.9	1.2	4.8	6.1	8.6	7.33		
Age														
Less than 2 Years	12.1	.6	1.2	1.4	1.9	2.2	2.3	2.5	1.7	2.4	3.6	10.26		
2 to 4 Years	16.9	.9	1.5	1.7	3.1	2.5	3.3	3.8	1.9	2.6	4.5	8.74		
5 to 9 Years	24.8	.9	2.3	3.0	4.8	4.2	4.3	5.2	3.0	4.2	6.5	7.93		
10 to 19 Years	26.0	1.0	3.2	3.0	4.8	4.5	5.0	4.4	3.0	4.4	7.2	7.63		
20 Years or More	7.3	.7	1.2	.9	1.4	1.0	1.2	.8	1.4	1.9	2.8	12.06		
Don't Know	6.7	.9	1.1	1.3	1.3	.8	.6	.5	2.1	2.5	3.2	15.32		
Type														
2-Doors (top and bottom)	63.0	3.3	7.4	7.3	12.4	9.9	12.0	10.7	8.6	12.4	18.6	4.62		
2-Doors (side-by-side)	15.7	.3	.8	1.5	1.9	2.8	3.1	5.3	1.0	1.4	2.8	11.52		
Regular (single door)	13.8	1.4	2.2	2.4	3.0	2.3	1.4	1.1	3.3	4.0	5.8	9.37		
Half-Size/Other	1.2	Q	Q	.2	Q	.2	.2	Q	Q	.3	.4	34.53		
Freezers														
Type														
Chest	16.2	.8	2.0	1.8	2.9	2.7	3.2	2.7	2.6	3.5	5.2	9.14		
Upright	16.2	.3	1.2	1.7	2.8	2.7	3.1	4.3	1.2	2.0	3.5	9.66		
Age														
Less than 2 Years	2.2	Q	Q	.3	.2	.3	.5	.6	Q	.4	.5	26.08		
2 to 4 Years	3.7	Q	.4	.5	.5	.5	.8	.8	.6	.7	1.2	20.52		
5 to 9 Years	6.6	.4	.6	.6	1.3	1.0	1.2	1.6	.9	1.2	1.7	14.42		
10 to 19 Years	12.9	.4	1.4	1.2	2.3	2.4	2.4	2.9	1.3	2.1	3.2	11.37		
20 Years or More	6.2	Q	.6	.8	1.2	1.0	1.3	1.1	.6	1.0	1.7	13.01		
Don't Know8	Q	Q	Q	Q	Q	Q	Q	.2	.2	.3	33.98		
Number of Waterbed Heaters														
1	10.9	.3	.5	1.1	2.1	2.3	2.5	2.0	.9	1.4	2.1	12.63		
2 or More	2.8	Q	Q	.2	.4	.4	1.0	.7	Q	.3	.4	26.28		

See footnotes at end of table.

**Table 37. Appliances by Family Income,
Million U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics		1990 Family Income								Below Poverty Line		Eli- gible for Fed- eral Assist- ance ¹	RSE Row Factors
		Total	Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Per- cent	125 Per- cent		
	RSE Column Factors:	0.422	1.988	1.338	1.129	0.924	0.923	0.901	0.943	1.264	1.068	0.807	
Appliance Characteristics													
Water Heater (for one housing unit) ² ..		80.5	3.7	8.6	9.6	14.8	13.1	15.1	15.7	10.3	14.7	22.7	4.39
Age													
Less than 2 Years		10.8	.5	.9	1.0	1.8	1.8	2.1	2.7	1.3	1.7	2.9	11.56
2 to 4 Years		15.8	.6	1.4	2.2	2.5	2.5	2.9	3.6	1.8	2.6	4.2	10.59
5 to 9 Years		20.0	.8	1.8	1.9	3.8	3.4	4.3	4.0	2.0	3.1	4.6	9.09
10 to 19 Years		19.3	.6	2.4	1.9	3.8	3.2	3.8	3.7	2.3	3.4	5.4	9.15
20 Years or More		6.1	.3	.9	.9	1.4	.8	.9	1.0	.7	1.2	2.1	14.40
Don't Know		8.5	.9	1.2	1.6	1.6	1.2	1.2	.7	2.1	2.7	3.6	12.54
Size													
Small		16.3	1.0	2.7	2.8	3.8	2.4	2.4	1.2	2.9	4.3	6.5	9.44
Medium		43.1	1.9	4.3	4.5	7.1	7.5	8.8	9.0	5.2	7.4	11.2	6.46
Large		16.8	.4	1.0	1.7	2.9	2.4	3.4	5.0	1.4	1.9	3.4	10.77
Don't Know		4.3	.3	.7	.6	1.0	.7	.6	.4	.9	1.1	1.6	15.77
Location													
Heated Area		55.7	2.8	6.5	7.0	10.5	8.9	10.1	9.8	7.6	10.7	16.6	5.62
Unheated Area		24.1	.9	1.9	2.4	4.2	4.0	4.9	5.8	2.6	3.8	5.8	9.01
Don't Know7	NC	Q	Q	.2	Q	Q	Q	Q	.2	.3	36.86
Number of Television Sets													
Color													
1		43.2	3.1	7.0	7.2	9.0	7.1	6.3	3.5	7.9	10.9	16.5	5.14
2		30.6	1.1	2.3	2.9	6.0	5.2	6.3	6.8	3.2	4.5	7.1	6.97
3		12.3	.3	.5	.5	1.6	2.1	3.0	4.4	.6	.9	1.8	13.02
4		3.1	Q	Q	.2	.3	.4	.8	1.4	Q	.2	.3	24.36
5 or More		1.2	NC	NC	Q	Q	Q	.2	.8	NC	NC	Q	26.00
Black/White													
1		24.3	1.5	3.0	3.1	4.4	3.8	4.4	4.1	4.0	5.5	8.1	7.83
2 or More		4.4	Q	.4	.4	.9	.9	.7	1.1	.5	.6	1.1	18.72

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

² A count of main water heaters that are totally separate units from the household's space-heating system. For "Fuel Oil", combined units are shown as the separate category "Water Heated by Furnace."

³ An unknown number may be heated by the furnace.

⁴ For one housing unit only.

⁵ Refers to lights used 12 to 24 hours per day.

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 38. Appliances by Family Income,
Percent of U.S. Households, 1990**

Appliance Types and Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Fed- er- al Assist- ance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Per- cent	125 Per- cent			
	RSE Column Factors:	0.475	1.978	1.293	1.145	0.935	0.940	0.899	0.885	1.220	1.039	0.811	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Appliance Types													
Electric Appliances													
Refrigerator	99.8	98.3	99.3	99.7	100.0	99.8	100.0	100.0	99.1	99.0	99.3	ME	
Frost-Free	79.8	60.4	67.8	69.7	75.7	81.7	88.8	93.7	62.8	65.9	69.2	2.84	
Manual Defrost	26.4	39.5	35.8	34.4	30.6	24.4	17.4	17.4	38.9	36.8	34.7	5.73	
Freezer	34.5	20.9	30.3	31.6	32.8	35.4	38.1	40.5	28.3	30.1	31.1	5.93	
Frost-Free	11.4	5.2	8.0	9.4	10.4	11.3	14.6	14.8	9.3	8.7	9.4	12.24	
Manual Defrost	23.0	15.7	22.3	22.1	22.4	24.1	23.4	25.7	19.0	21.3	21.7	6.98	
Range Top or Burners	57.8	43.6	47.4	54.1	55.6	64.1	61.7	63.7	44.0	46.8	48.3	4.28	
Oven	58.9	46.3	47.8	53.8	55.6	64.3	62.5	67.9	45.0	47.7	48.8	4.10	
Microwave Oven	78.8	49.7	62.3	67.0	76.7	83.7	90.9	91.5	55.8	60.2	63.6	2.47	
Dishwasher	45.4	15.2	13.9	26.0	34.0	49.4	61.4	79.3	15.5	16.9	19.5	6.54	
Clothes Washer	76.3	46.6	62.1	63.7	70.5	80.6	86.4	94.3	57.3	61.1	63.9	2.73	
Clothes Dryer	52.6	22.0	39.2	42.2	47.8	58.1	64.0	66.2	32.1	35.8	38.7	4.77	
Television Set	98.9	97.1	98.0	99.2	99.3	98.5	99.8	98.9	97.9	98.3	98.3	.58	
Color	96.1	86.4	91.4	94.6	96.9	97.1	99.3	98.0	90.2	90.8	92.2	1.12	
Black/White	30.6	31.0	31.5	30.2	30.8	30.4	30.5	30.0	34.6	33.8	32.9	6.78	
Personal Computer	15.7	5.0	4.5	5.5	7.7	12.9	20.0	39.1	4.9	5.4	5.7	12.65	
Air Conditioner	67.4	47.2	55.9	62.1	64.2	67.5	75.2	79.6	48.3	50.9	54.7	3.81	
Room	31.0	28.2	38.2	36.8	31.4	31.9	28.6	24.5	31.9	33.4	34.6	3.63	
Central	38.6	18.9	18.6	25.9	33.9	38.6	49.5	59.2	16.9	18.3	20.9	7.42	
For One Housing Unit	38.0	17.4	18.2	25.5	33.3	37.9	48.8	59.0	16.2	17.7	20.2	7.58	
For Two or More Units6	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	69.61	
Window or Ceiling Fan	51.0	37.2	40.0	41.7	49.9	52.9	57.4	61.3	41.9	41.3	42.7	4.20	
Whole-House Fan	10.1	4.8	5.6	5.7	8.0	9.6	11.4	18.4	6.8	5.6	6.1	16.02	
Portable Fan	59.0	56.2	67.0	60.8	59.5	58.8	60.2	52.1	62.0	64.0	63.9	3.22	
Exhaust Fan	55.9	30.4	41.0	44.4	50.9	58.4	67.4	72.0	37.0	38.1	40.4	4.44	
Furnace Fan	53.6	33.1	39.2	47.2	54.9	55.3	61.9	62.2	36.8	39.2	42.8	4.88	
Evaporative Cooler	4.0	5.2	5.0	3.9	4.6	5.6	3.7	1.3	5.2	5.8	5.6	22.47	
Dehumidifier	12.0	Q	4.4	7.5	9.7	11.2	15.6	21.8	3.1	3.0	5.4	13.88	
Water Heater	37.1	37.8	36.5	41.3	41.1	39.9	35.8	29.4	37.9	39.1	38.4	6.24	
For One Housing Unit ²	35.7	33.4	33.9	39.9	39.6	37.9	35.0	29.4	34.8	36.4	36.0	6.58	
For Two or More Units ³	1.4	4.4	2.6	1.4	Q	1.9	Q	Q	3.1	2.7	2.4	30.10	
Portable Space Heater	14.4	13.5	14.7	14.5	16.3	13.0	11.2	16.7	14.4	13.7	14.1	9.72	
Waterbed Heater	14.5	7.2	5.6	11.3	14.7	18.0	20.6	15.4	7.7	9.0	8.8	12.01	
Swimming-Pool Pump	5.4	Q	Q	1.9	2.8	5.2	7.9	12.1	Q	1.2	2.1	16.44	
Hot-Tub or Spa Pump	3.5	Q	NC	Q	1.6	1.4	4.2	11.6	Q	Q	Q	22.66	
Hot-Tub or Spa Heater	1.8	NC	NC	Q	1.3	Q	2.9	5.2	NC	NC	Q	26.49	
Well Pump	15.3	9.2	15.3	14.2	14.6	19.1	15.4	14.9	13.0	13.8	14.9	11.53	

See footnotes at end of table.

**Table 38. Appliances by Family Income,
Percent of U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Fed- er- al Assist- ance ¹	RSE Row Factors	
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Per- cent	125 Per- cent				
		RSE Column Factors:	0.475	1.978	1.293	1.145	0.935	0.940	0.899	0.885	1.220	1.039	0.811	
Appliance Types														
Natural Gas Appliances														
Range Top or Burners	36.2	42.5	41.5	38.8	38.1	31.0	34.3	33.8	43.0	40.9	41.2	6.00		
Oven	35.1	42.1	40.3	38.3	37.6	30.6	34.2	30.2	42.4	40.4	40.6	6.08		
Outdoor Grill	2.6	Q	Q	Q	1.3	2.0	3.3	6.6	Q	Q	.7	30.85		
Clothes Dryer	15.4	3.4	9.1	10.7	12.7	16.1	18.7	25.2	5.5	7.1	10.0	12.53		
Water Heater	52.9	47.8	52.6	50.5	51.0	49.8	53.5	60.2	50.6	48.9	50.4	4.83		
For One Housing Unit ²	44.1	30.4	40.2	38.7	41.0	41.6	49.0	55.1	36.7	36.9	38.6	6.08		
For Two or More Units ³	8.7	17.4	12.3	11.8	10.0	8.1	4.6	5.1	13.9	12.0	11.7	13.35		
Swimming-Pool Heater9	Q	Q	NC	Q	Q	Q	Q	3.5	Q	Q	Q	34.42	
Hot-Tub or Spa Heater	1.4	Q	NC	Q	Q	Q	Q	1.0	5.6	Q	Q	Q	28.45	
Outdoor Light	1.0	Q	Q	Q	Q	Q	Q	1.4	1.8	Q	Q	Q	33.73	
LPG Appliances														
Range Top or Burners	5.9	12.6	10.1	7.2	6.4	5.1	3.9	2.6	12.1	11.5	10.0	17.56		
Oven	5.7	10.9	10.1	7.2	6.4	5.1	3.7	2.3	11.5	11.0	9.7	17.62		
Outdoor Grill	24.0	4.0	9.1	9.3	17.0	24.8	36.6	42.9	8.0	9.5	10.3	9.09		
Clothes Dryer9	Q	Q	Q	Q	Q	.8	1.1	1.0	Q	Q	1.0	42.77	
Water Heater	3.3	5.4	4.7	3.7	3.2	3.2	2.8	2.1	5.4	5.9	4.8	23.72		
Fuel Oil Appliances														
Water Heater	4.3	6.7	4.2	3.3	2.9	4.5	4.8	5.0	4.5	4.6	4.5	17.23		
For One Housing Unit ²	2.1	Q	1.7	1.2	1.3	2.1	2.7	3.7	1.0	1.1	1.7	24.77		
For Two or More Units ³	2.1	5.9	2.5	2.1	1.6	2.4	2.0	Q	3.5	3.4	2.9	23.27		
Water Heated by Furnace ⁴	1.1	Q	Q	Q	Q	1.3	1.5	2.1	Q	Q	.7	40.67		
Kerosene Appliances														
Portable Space Heater	4.9	3.5	5.8	4.7	5.1	7.1	4.5	3.3	5.5	5.2	5.6	17.60		
Appliance Characteristics														
Lights														
Used 4 to 12 Hours per Day														
Total Number of Lights														
None	7.4	17.7	14.2	9.3	7.5	5.8	4.4	3.0	16.5	14.9	12.6	12.69		
1	22.3	38.4	37.4	32.9	23.5	20.0	14.0	9.9	33.6	34.8	33.0	6.30		
2	30.2	27.2	30.5	32.5	33.7	32.0	34.3	20.4	28.7	28.8	29.8	6.77		
3	17.7	7.9	11.3	15.5	19.5	21.0	18.6	20.6	11.3	11.8	13.8	8.64		
4	10.0	5.4	3.2	5.9	7.8	11.1	12.9	16.7	5.9	5.3	5.7	14.73		
5	4.6	Q	Q	1.8	4.4	3.9	6.5	8.6	1.3	1.6	2.0	19.45		
6 or More	7.8	2.8	2.0	2.2	3.6	6.4	9.2	20.8	2.7	2.7	3.1	17.95		
Used 12 to 24 Hours per Day														
Total Number of Lights														
None	60.5	62.7	64.2	63.3	63.9	58.8	55.8	58.2	60.2	60.9	62.6	3.44		
1	21.4	23.8	25.5	22.4	20.2	21.0	23.5	16.7	27.3	26.2	23.9	7.32		
2	10.5	10.2	5.5	9.4	10.6	11.9	11.4	12.1	7.6	7.7	6.2	11.01		
3 or More	7.7	Q	4.8	4.9	5.3	8.3	9.3	13.0	4.8	5.1	5.2	16.35		
Fluorescent Lamp Used														
Yes ⁵	9.4	6.0	6.1	6.9	7.2	9.8	11.8	13.6	6.7	7.3	6.6	13.94		
No	90.6	94.0	93.9	93.1	92.8	90.2	88.2	86.4	93.3	92.7	93.4	1.28		
Flood Light Used														
Yes ⁵	4.6	Q	3.4	3.0	3.2	6.0	4.5	7.6	3.1	3.0	3.1	19.56		
No	95.4	97.8	96.6	97.0	96.8	94.0	95.5	92.4	96.9	97.0	96.9	.89		

See footnotes at end of table.

**Table 38. Appliances by Family Income,
Percent of U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Fed- eral Assist- ance ¹	RSE Row Factors	
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Per- cent	125 Per- cent				
		RSE Column Factors:	0.475	1.978	1.293	1.145	0.935	0.940	0.899	0.885	1.220	1.039	0.811	
Appliance Characteristics														
Refrigerators														
Number of Refrigerators														
1	84.5	94.8	90.9	89.7	87.8	85.3	83.7	70.7	93.0	91.8	90.2	1.36		
2 or More	15.3	3.5	8.4	10.0	12.2	14.6	16.3	29.3	6.1	7.2	9.1	10.31		
Most-Used Refrigerator Defrost Method														
Frost-Free	79.4	59.4	67.6	69.1	75.5	81.0	88.5	93.2	62.4	65.3	68.5	2.36		
Manual	20.4	38.9	31.7	30.6	24.5	18.8	11.5	6.8	36.6	33.7	30.8	0.68		
Age														
Less than 2 Years	12.9	12.3	11.2	12.3	10.9	14.2	14.0	14.3	13.0	13.0	12.8	5.54		
2 to 4 Years	18.0	16.7	14.5	14.8	17.9	16.7	19.6	22.2	14.1	14.4	16.2	7.88		
5 to 9 Years	26.4	18.0	21.5	26.7	27.6	27.5	25.7	30.3	22.9	23.1	23.2	6.77		
10 to 19 Years	27.6	19.5	30.4	26.6	27.7	29.3	30.0	25.3	22.9	24.4	25.7	6.52		
20 Years or More	7.8	13.7	11.3	7.9	8.3	6.9	7.1	4.7	10.4	10.5	9.9	11.20		
Don't Know	7.1	18.0	10.5	11.4	7.6	5.3	3.6	3.2	15.7	13.6	11.4	1.92		
Type														
2-Doors (top and bottom)	67.1	64.1	69.6	64.1	70.9	65.0	71.5	62.0	65.6	67.9	66.8	2.85		
2-Doors (side-by-side)	16.7	5.3	7.7	12.9	10.8	18.6	18.8	30.6	7.4	7.5	10.2	10.20		
Regular (single door)	14.7	27.3	20.5	20.9	17.3	14.7	8.5	6.3	24.7	22.1	20.9	9.02		
Half-Size/Other	1.3	Q	Q	1.8	Q	1.5	1.3	Q	Q	1.4	1.3	33.55		
Freezers														
Type														
Chest	17.2	15.7	18.8	16.2	16.6	17.7	19.4	15.4	19.5	19.2	18.6	8.45		
Upright	17.3	5.2	11.5	15.4	16.2	17.7	18.7	25.1	8.8	10.9	12.5	3.67		
Age														
Less than 2 Years	2.3	Q	Q	2.7	1.3	2.2	3.0	3.4	Q	2.0	1.8	25.52		
2 to 4 Years	3.9	Q	3.7	4.5	3.1	3.4	4.8	4.7	4.8	3.9	4.3	19.34		
5 to 9 Years	7.0	7.5	5.4	5.2	7.3	6.3	7.3	9.1	6.5	6.3	6.0	14.08		
10 to 19 Years	13.7	7.1	12.8	10.2	13.1	15.9	14.4	16.7	10.0	11.5	11.6	10.48		
20 Years or More	6.6	Q	5.9	7.2	6.9	6.8	7.5	6.5	4.2	5.3	6.2	13.07		
Don't Know9	Q	Q	Q	Q	Q	Q	Q	1.3	1.1	1.1	33.42		
Number of Waterbed Heaters														
1	11.6	6.0	5.1	9.8	12.3	15.3	14.7	11.6	6.8	7.6	7.4	12.05		
2 or More	2.9	Q	Q	1.5	2.4	2.7	5.9	3.8	Q	1.5	1.4	26.68		

See footnotes at end of table.

**Table 38. Appliances by Family Income,
Percent of U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	1990 Family Income								Below Poverty Line		Eligible for Fed- er- al Assist- ance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Per- cent	125 Per- cent			
	RSE Column Factors:	0.475	1.978	1.293	1.145	0.935	0.940	0.899	0.885	1.220	1.039	0.811	
Appliance Characteristics													
Water Heater (for one housing unit) ² ..	85.7	70.2	80.8	84.0	85.1	85.5	90.4	90.7	78.3	80.5	81.5	2.03	
Age													
Less than 2 Years	11.5	10.3	8.3	8.8	10.5	11.7	12.8	15.5	10.1	9.3	10.3	10.90	
2 to 4 Years	16.8	11.9	13.0	19.7	14.0	16.6	17.1	21.1	14.0	14.1	15.1	9.70	
5 to 9 Years	21.3	15.0	16.7	16.7	21.7	22.3	25.9	23.4	15.6	17.2	16.4	8.11	
10 to 19 Years	20.6	11.7	22.5	16.8	21.5	21.2	22.5	21.2	17.2	18.4	19.2	8.12	
20 Years or More	6.5	4.8	8.7	8.0	7.9	5.5	5.1	5.6	5.5	6.5	7.5	14.31	
Don't Know	9.0	16.4	11.6	14.1	9.4	8.2	7.1	4.0	15.9	15.1	13.0	11.86	
Size													
Small	17.4	20.0	25.0	24.6	21.7	16.0	14.1	7.1	21.7	23.4	23.4	8.52	
Medium	45.8	36.6	40.0	39.9	40.5	48.9	52.4	52.5	39.6	40.7	40.3	4.99	
Large	17.9	8.6	9.5	14.5	16.9	15.7	20.2	28.8	10.5	10.2	12.0	10.00	
Don't Know	4.6	4.9	6.3	5.0	6.0	4.9	3.8	2.4	6.6	6.2	5.8	15.55	
Location													
Heated Area	59.3	53.8	61.2	61.2	60.3	58.6	60.6	56.9	57.7	58.7	59.6	3.73	
Unheated Area	25.6	16.4	18.2	21.5	23.8	26.3	29.1	33.7	19.5	20.7	21.0	8.37	
Don't Know8	NC	Q	Q	1.0	Q	Q	Q	Q	1.1	1.0	35.77	
Number of Television Sets													
Color													
1	46.0	60.0	65.4	63.4	51.4	46.5	37.4	20.5	60.4	59.9	59.0	3.72	
2	32.5	20.6	21.2	25.1	34.4	34.1	37.9	39.5	24.0	24.7	25.3	5.69	
3	13.1	5.4	4.3	4.4	9.2	13.6	17.8	25.5	4.8	5.2	6.5	12.09	
4	3.3	Q	Q	1.4	1.5	2.4	4.8	8.1	Q	.9	1.2	23.98	
5 or More	1.3	NC	NC	Q	Q	Q	1.4	4.4	NC	NC	Q	24.88	
Black/White													
1	25.9	28.3	28.1	27.2	25.5	24.8	26.5	23.7	30.6	30.3	28.9	6.24	
2 or More	4.7	Q	3.4	3.1	5.3	5.6	4.1	6.2	4.0	3.6	4.0	18.24	

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

² A count of main water heaters that are totally separate units from the household's space-heating system. For "Fuel Oil", combined units are shown as the separate category "Water Heated by Furnace."

³ An unknown number may be heated by the furnace.

⁴ For one housing unit only.

⁵ Refers to lights used 12 to 24 hours per day.

NC = No cases in sample.

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

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 39. Appliances by Year of Construction,
Million U.S. Households, 1990**

Appliance Types and Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
		RSE Column Factors:	0.349	2.103	2.037	1.372	0.779	0.930	0.819	1.132
Total	94.0	2.8	5.1	8.0	21.4	14.8	13.4	7.0	21.5	6.10
Appliance Types										
Electric Appliances										
Refrigerator	93.8	2.8	5.1	8.0	21.4	14.8	13.3	7.0	21.4	6.12
Frost-Free	75.0	2.5	4.6	6.5	16.7	11.5	11.2	5.8	16.3	6.65
Manual Defrost	24.8	.6	.5	1.9	5.9	4.4	3.2	1.7	6.6	10.19
Freezer	32.4	.7	1.4	2.4	7.5	5.0	5.3	2.6	7.4	8.20
Frost-Free	10.8	.2	.6	1.0	2.6	1.7	1.6	.9	2.2	13.75
Manual Defrost	21.7	.5	.8	1.4	5.0	3.3	3.7	1.7	5.3	9.98
Range Top or Burners	54.3	1.8	3.9	6.0	15.1	8.8	6.8	3.1	8.8	7.81
Oven	55.3	1.9	3.9	6.0	15.3	8.9	7.1	3.2	9.1	7.75
Microwave Oven	74.1	2.4	4.7	6.8	17.5	11.8	10.7	5.3	14.8	6.44
Dishwasher	42.7	1.8	4.3	5.4	12.4	6.6	5.1	1.9	5.2	8.56
Clothes Washer	71.7	2.5	4.7	6.4	15.1	10.5	11.2	5.5	15.8	6.23
Clothes Dryer	49.5	1.8	4.0	5.3	11.8	6.9	7.0	3.3	9.3	7.35
Television Set	92.9	2.8	5.1	7.9	21.2	14.6	13.2	7.0	21.2	6.12
Color	90.3	2.7	5.1	7.7	20.7	14.2	12.9	6.8	20.1	6.23
Black/White	28.7	1.0	1.5	2.2	6.2	4.1	4.0	2.3	7.3	9.14
Personal Computer	14.8	.9	1.0	1.9	3.9	2.3	1.6	.9	2.3	12.14
Air Conditioner	63.3	2.0	4.3	6.3	16.2	10.9	8.7	4.2	10.7	7.49
Room	29.1	.2	.3	1.6	4.8	5.1	5.1	3.0	8.9	11.31
Central	36.2	1.9	4.0	4.9	11.8	6.3	4.1	1.3	2.0	10.17
For One Housing Unit	35.7	1.9	3.9	4.9	11.6	6.1	4.0	1.3	2.0	10.24
For Two or More Units5	NC	Q	Q	.2	Q	Q	Q	Q	77.5C
Window or Ceiling Fan	47.9	2.0	3.3	3.8	10.5	7.5	7.1	3.3	10.4	7.42
Whole-House Fan	9.4	.3	.3	.9	2.2	2.1	1.8	.5	1.3	16.73
Portable Fan	55.5	1.1	2.5	4.3	12.2	8.5	8.1	4.4	14.4	6.78
Exhaust Fan	52.5	2.2	4.2	6.2	14.5	9.0	7.1	2.3	7.0	7.59
Furnace Fan	50.4	1.9	2.7	4.6	13.6	8.3	7.3	3.5	8.6	8.23
Evaporative Cooler	3.8	Q	Q	.4	.8	.6	.8	.4	.5	26.81
Dehumidifier	11.3	.2	.6	.9	2.3	1.8	2.2	.9	2.5	13.68
Water Heater	34.9	1.3	3.5	4.5	10.3	4.6	3.4	2.2	5.1	10.04
For One Housing Unit ²	33.5	1.3	3.5	4.3	9.7	4.4	3.3	2.1	4.9	10.25
For Two or More Units ³	1.4	NC	NC	Q	.6	.2	Q	Q	Q	53.96
Portable Space Heater	13.5	.3	.2	.6	2.8	1.9	2.5	1.2	4.0	13.20
Waterbed Heater	13.7	.6	.7	1.8	3.8	2.0	1.6	.8	2.3	12.44
Swimming-Pool Pump	5.0	Q	Q	.4	1.5	1.3	.9	Q	.6	20.64
Hot-Tub or Spa Pump	3.3	.6	.3	.5	.6	.4	.4	Q	.4	23.68
Hot-Tub or Spa Heater	1.7	.4	Q	Q	.4	.2	.2	Q	Q	33.21
Well Pump	14.3	.7	.7	.9	3.3	2.5	1.6	1.1	3.5	12.99

See footnotes at end of table.

**Table 39. Appliances by Year of Construction,
Million U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	Year of Construction								RSE Row Factors	
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before		
		RSE Column Factors:	0.349	2.103	2.037	1.372	0.779	0.930	0.819	1.132	0.725
Appliance Types											
Natural Gas Appliances											
Range Top or Burners	34.0	0.7	0.9	1.4	5.2	5.2	5.9	3.3	11.4	10.30	
Oven	33.0	.6	.9	1.4	5.0	5.1	5.7	3.3	11.1	10.48	
Outdoor Grill	2.4	Q	Q	Q	.5	.5	.6	Q	.3	30.80	
Clothes Dryer	14.5	.5	.4	.6	2.0	2.8	3.3	1.4	3.6	15.66	
Water Heater	49.7	1.1	1.3	2.9	9.5	9.2	8.0	4.1	13.5	8.96	
For One Housing Unit ²	41.5	1.1	1.2	2.6	7.2	7.3	7.5	3.8	10.8	10.04	
For Two or More Units ³	8.2	Q	Q	.3	2.4	1.9	.5	.3	2.7	23.14	
Swimming-Pool Heater8	Q	NC	Q	Q	.3	Q	NC	Q	50.57	
Hot-Tub or Spa Heater	1.4	Q	Q	Q	.2	Q	.2	Q	.2	39.97	
Outdoor Light	1.0	Q	Q	NC	Q	.3	.3	Q	Q	38.44	
LPG Appliances											
Range Top or Burners	5.6	.3	.3	.6	1.1	.8	.8	.5	1.3	23.41	
Oven	5.4	.3	.3	.6	1.1	.7	.7	.5	1.3	23.84	
Outdoor Grill	22.5	1.3	1.6	2.2	5.5	3.5	3.5	1.1	4.0	10.57	
Clothes Dryer9	Q	Q	Q	.2	Q	Q	Q	.2	44.55	
Water Heater	3.1	.2	.2	.4	.5	.3	.4	.3	.7	27.94	
Fuel Oil Appliances											
Water Heater	4.0	Q	Q	Q	.7	.5	1.1	.3	1.4	21.48	
For One Housing Unit ²	2.0	Q	Q	Q	.3	.3	.7	.1	.5	32.35	
For Two or More Units ³	2.0	NC	NC	NC	.4	Q	.4	.2	.8	29.94	
Water Heated by Furnace ⁴	1.1	Q	Q	Q	.2	.2	.2	NC	.4	51.63	
Kerosene Appliances											
Portable Space Heater	4.6	Q	Q	.4	1.3	.7	.5	.4	1.2	22.04	
Appliance Characteristics											
Lights											
Used 4 to 12 Hours per Day											
Total Number of Lights											
None	6.9	Q	.3	.7	1.7	1.1	1.0	.5	1.5	16.60	
1	21.0	.6	.9	1.7	5.2	3.0	2.6	1.6	5.3	10.19	
2	28.4	.9	1.8	2.4	5.9	4.5	4.1	2.3	6.6	9.02	
3	16.7	.5	.9	1.3	3.9	2.6	2.3	1.4	3.8	10.75	
4	9.4	.2	.6	.9	2.1	1.8	1.7	.6	1.6	15.42	
5	4.3	Q	Q	.4	.9	.9	.5	.3	1.1	20.81	
6 or More	7.3	Q	.4	.7	1.8	1.0	1.3	.3	1.6	15.66	
Used 12 to 24 Hours per Day											
Total Number of Lights											
None	56.8	1.7	3.5	5.1	13.1	8.6	8.0	4.2	12.6	6.79	
1	20.1	.5	.8	1.7	4.6	3.5	2.8	1.5	4.5	10.42	
2	9.8	.5	.4	.7	2.0	1.5	1.4	.9	2.5	13.69	
3 or More	7.2	Q	.4	.5	1.7	1.2	1.1	.4	1.9	16.88	
Fluorescent Lamp Used											
Yes ⁵	8.8	.2	.4	.7	2.3	1.4	1.5	.5	1.8	16.62	
No	85.2	2.5	4.7	7.4	19.1	13.4	11.8	6.5	19.7	6.30	
Flood Light Used											
Yes ⁵	4.4	Q	Q	.4	.8	.7	.9	.3	1.1	22.33	
No	89.6	2.7	4.9	7.6	20.6	14.1	12.5	6.8	20.3	6.27	

See footnotes at end of table.

**Table 39. Appliances by Year of Construction,
Million U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	Year of Construction								RSE Row Factors	
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before		
		RSE Column Factors:	0.349	2.103	2.037	1.372	0.779	0.930	0.819	1.132	0.725
Appliance Characteristics											
Refrigerators											
Number of Refrigerators											
1	79.4	2.1	4.6	7.0	18.8	12.1	10.8	5.9	18.1	6.64	
2 or More	14.4	.7	.5	1.0	2.6	2.6	2.5	1.1	3.2	11.94	
Most-Used Refrigerator Defrost Method											
Frost-Free	74.6	2.5	4.6	6.5	16.6	11.4	11.2	5.7	16.2	6.66	
Manual	19.1	.3	.5	1.5	4.8	3.4	2.2	1.3	5.1	11.97	
Age											
Less than 2 Years	12.1	1.3	.4	.7	2.6	2.0	1.6	.8	2.7	12.38	
2 to 4 Years	16.9	.7	1.9	1.2	3.4	2.9	2.0	1.1	3.6	10.55	
5 to 9 Years	24.8	.4	2.0	3.5	4.7	3.5	3.6	1.8	5.3	10.03	
10 to 19 Years	26.0	Q	.4	1.8	7.8	3.3	4.5	2.1	5.9	9.78	
20 Years or More	7.3	Q	Q	Q	1.0	1.6	1.1	.8	2.6	14.55	
Don't Know	6.7	Q	.3	.6	2.0	1.4	.6	.4	1.2	20.52	
Type											
2-Doors (top and bottom)	63.0	1.6	3.8	5.5	14.7	9.5	8.8	4.6	14.5	6.56	
2-Doors (side-by-side)	15.7	.9	.8	1.4	3.6	2.7	2.6	1.0	2.7	11.50	
Regular (single door)	13.8	.2	.4	1.2	2.9	2.4	1.8	1.3	3.6	14.06	
Half-Size/Other	1.2	Q	Q	Q	Q	Q	.3	Q	.4	35.90	
Freezers											
Type											
Chest	16.2	.3	.8	1.5	3.6	2.1	2.6	1.3	4.0	11.24	
Upright	16.2	.5	.6	.9	3.9	2.8	2.7	1.3	3.4	10.75	
Age											
Less than 2 Years	2.2	Q	.2	.2	.5	Q	.4	Q	.5	25.18	
2 to 4 Years	3.7	Q	.3	.4	.9	.5	.4	.4	.6	24.33	
5 to 9 Years	6.6	.3	.2	.7	1.5	.9	.9	.5	1.6	15.57	
10 to 19 Years	12.9	.2	.4	.9	3.5	2.2	2.3	.8	2.6	12.20	
20 Years or More	6.2	Q	Q	Q	1.0	1.1	1.3	.7	1.7	15.93	
Don't Know8	Q	Q	Q	Q	Q	Q	Q	.3	44.84	
Number of Waterbed Heaters											
1	10.9	.5	.5	1.5	2.8	1.6	1.3	.7	1.9	13.36	
2 or More	2.8	Q	Q	.3	.9	.4	.3	Q	.4	28.45	

See footnotes at end of table.

**Table 39. Appliances by Year of Construction,
Million U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	RSE Column Factors:	0.349	2.103	2.037	1.372	0.779	0.930	0.819	1.132	0.725
Appliance Characteristics										
Water Heater (for one housing unit)²	80.5	2.7	5.0	7.4	17.8	12.3	12.0	6.3	17.1	5.98
Age										
Less than 2 Years	10.8	1.4	.3	.5	2.2	1.6	1.3	.8	2.7	13.04
2 to 4 Years	15.8	1.1	2.6	.7	2.5	2.4	2.5	.9	3.0	12.95
5 to 9 Years	20.0	Q	1.9	4.2	2.6	2.6	3.0	1.5	4.1	10.97
10 to 19 Years	19.3	Q	NC	1.6	8.0	2.2	2.5	1.5	3.5	11.08
20 Years or More	6.1	NC	NC	NC	.7	1.7	1.5	.7	1.5	17.04
Don't Know	8.5	Q	Q	.4	1.7	1.9	1.1	.9	2.2	17.85
Size										
Small	16.3	.6	.7	1.4	3.7	2.4	2.5	1.5	3.6	11.83
Medium	43.1	.9	3.0	4.0	9.6	6.8	6.4	3.1	9.2	8.44
Large	16.8	1.2	1.0	1.6	3.5	2.4	2.6	1.3	3.2	11.70
Don't Know	4.3	Q	.2	.4	1.0	.7	.6	.3	1.1	19.83
Location										
Heated Area	55.7	2.1	3.3	4.7	12.2	8.8	8.6	4.6	11.5	7.41
Unheated Area	24.1	.6	1.7	2.7	5.3	3.4	3.4	1.6	5.5	11.17
Don't Know7	Q	Q	Q	.3	Q	Q	Q	Q	48.27
Number of Television Sets										
Color										
1	43.2	.9	2.2	3.7	9.5	6.4	5.7	3.5	11.3	7.59
2	30.6	1.0	1.9	2.6	6.9	5.1	4.5	2.2	6.5	8.13
3	12.3	.7	.8	1.2	3.0	2.1	1.8	.9	1.7	12.53
4	3.1	Q	.2	Q	1.0	.4	.5	.2	.5	25.50
5 or More	1.2	Q	NC	Q	.3	.2	.3	Q	Q	34.00
Black/White										
1	24.3	.8	1.3	1.9	5.3	3.3	3.4	1.9	6.3	9.80
2 or More	4.4	.2	Q	.2	.9	.8	.7	.4	1.0	19.97

¹ Does not include all new construction for 1990

² A count of main water heaters that are totally separate units from the household's space-heating system. For "Fuel Oil", combined units are shown as the separate category "Water Heated by Furnace."

3 An unknown number may be heated by the furnace.

4 For one housing unit only.

5 Refers to lights used 12 to 24 hours per day.

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 40. Appliances by Year of Construction,
Percent of U.S. Households, 1990**

Appliance Types and Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
		RSE Column Factors:	0.412	1.919	1.734	1.367	0.795	0.918	0.854	1.183
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Appliance Types										
Electric Appliances										
Refrigerator	99.8	100.0	100.0	99.6	99.9	99.8	99.7	100.0	99.5	NE
Frost-Free	79.8	88.8	90.3	80.6	77.8	77.8	83.8	82.5	76.0	2.33
Manual Defrost	26.4	20.3	10.1	23.4	27.7	29.5	24.1	24.7	30.6	9.26
Freezer	34.5	27.0	27.3	30.3	35.2	33.7	39.7	36.4	34.7	6.99
Frost-Free	11.4	8.1	11.4	12.6	11.9	11.7	11.9	12.9	10.1	12.87
Manual Defrost	23.0	19.0	15.9	17.7	23.3	22.0	27.8	23.6	24.6	9.28
Range Top or Burners	57.8	65.6	76.8	74.9	70.3	59.6	50.8	44.4	40.9	4.88
Oven	58.9	68.1	77.1	74.9	71.2	60.3	52.9	45.2	42.2	4.75
Microwave Oven	78.8	87.8	93.2	84.1	81.5	79.7	80.3	75.8	68.9	2.13
Dishwasher	45.4	64.1	84.4	67.2	57.8	44.5	37.9	27.1	24.4	5.35
Clothes Washer	76.3	89.5	92.4	79.3	70.5	70.8	83.6	78.8	73.7	2.76
Clothes Dryer	52.6	64.3	79.4	65.8	55.3	46.6	52.1	47.5	43.4	4.78
Television Set	98.9	99.4	100.0	98.8	98.9	98.7	99.0	99.2	98.6	NE
Color	96.1	97.5	100.0	96.3	96.6	96.1	96.4	97.1	93.8	1.07
Black/White	30.6	37.4	29.2	27.1	28.8	28.0	30.3	33.1	34.1	7.04
Personal Computer	15.7	31.7	19.8	23.4	18.4	15.4	12.1	12.5	10.7	10.27
Air Conditioner	67.4	74.0	84.1	79.0	75.4	73.8	64.8	59.3	50.0	3.83
Room	31.0	6.6	6.7	20.5	22.6	34.5	37.8	42.6	41.6	10.07
Central	38.6	67.4	78.1	61.0	54.9	42.2	30.8	18.9	9.5	6.95
For One Housing Unit	38.0	67.4	77.6	60.6	53.9	41.5	30.0	18.7	9.2	7.04
For Two or More Units6	NC	Q	Q	Q	Q	Q	Q	Q	80.27
Window or Ceiling Fan	51.0	73.8	64.7	46.9	48.8	50.3	53.4	47.5	48.6	4.66
Whole-House Fan	10.1	11.3	5.1	11.8	10.4	14.1	13.8	6.8	6.0	16.12
Portable Fan	59.0	41.0	49.1	53.5	57.1	57.1	60.4	62.0	67.1	4.27
Exhaust Fan	55.9	79.6	83.2	77.4	67.6	60.8	53.3	32.1	32.6	4.08
Furnace Fan	53.6	67.6	52.3	56.8	63.6	55.9	54.3	50.3	40.0	5.74
Evaporative Cooler	4.0	Q	Q	5.0	4.0	4.1	6.2	5.5	2.5	25.85
Dehumidifier	12.0	8.4	11.0	10.6	10.7	12.2	16.2	12.6	11.4	12.82
Water Heater	37.1	46.9	68.9	56.3	47.9	31.2	25.5	31.1	23.8	7.99
For One Housing Unit ²	35.7	46.9	68.9	53.7	45.2	29.5	24.9	29.8	23.0	8.24
For Two or More Units ³	1.4	NC	NC	Q	2.6	1.7	Q	Q	Q	51.14
Portable Space Heater	14.4	10.9	4.1	7.3	12.9	12.8	18.7	17.3	18.8	12.26
Waterbed Heater	14.5	21.6	14.1	23.0	17.6	13.4	11.9	11.7	10.9	10.96
Swimming-Pool Pump	5.4	Q	Q	5.4	6.8	8.6	7.0	Q	2.6	19.36
Hot-Tub or Spa Pump	3.5	20.2	5.9	5.9	3.0	3.0	3.2	Q	1.8	23.51
Hot-Tub or Spa Heater	1.8	13.0	Q	Q	1.7	1.4	1.5	Q	Q	30.59
Well Pump	15.3	23.7	13.1	11.8	15.5	17.0	11.8	16.0	16.5	12.62

See footnotes at end of table.

**Table 40. Appliances by Year of Construction,
Percent of U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	RSE Column Factors:	0.412	1.919	1.734	1.367	0.795	0.918	0.854	1.183	0.723
Appliance Types										
Natural Gas Appliances										
Range Top or Burners	36.2	23.8	17.3	18.1	24.3	35.4	44.0	47.5	53.0	8.70
Oven	35.1	20.0	17.0	17.7	23.2	34.5	42.4	47.0	51.8	8.87
Outdoor Grill	2.6	Q	Q	Q	2.6	3.1	4.7	Q	1.5	29.70
Clothes Dryer	15.4	17.3	8.2	8.0	9.1	18.7	24.6	19.7	16.6	14.64
Water Heater	52.9	41.4	25.7	36.6	44.5	62.0	59.6	58.8	62.9	6.87
For One Housing Unit ²	44.1	40.9	24.3	32.2	33.4	49.3	55.7	54.3	50.3	8.16
For Two or More Units ³	8.7	Q	Q	4.3	11.1	12.6	3.9	4.5	12.5	21.85
Swimming-Pool Heater9	Q	NC	Q	Q	1.7	Q	NC	Q	46.13
Hot-Tub or Spa Heater	1.4	Q	Q	Q	.9	Q	1.7	Q	1.1	37.72
Outdoor Light	1.0	Q	Q	NC	Q	2.2	2.0	Q	Q	36.36
LPG Appliances										
Range Top or Burners	5.9	10.6	5.1	7.0	5.1	5.3	5.6	7.5	6.1	23.70
Oven	5.7	10.6	5.1	7.0	5.0	4.7	5.1	7.5	5.9	24.21
Outdoor Grill	24.0	45.3	30.8	26.9	25.5	23.4	25.8	16.1	18.8	8.48
Clothes Dryer9	Q	Q	Q	.7	Q	Q	Q	1.0	42.26
Water Heater	3.3	8.7	4.3	5.6	2.3	1.7	3.2	3.8	3.4	28.17
Fuel Oil Appliances										
Water Heater	4.3	Q	Q	Q	3.1	3.1	8.2	4.9	6.4	20.79
For One Housing Unit ²	2.1	Q	Q	Q	1.2	1.9	5.2	2.0	2.5	31.27
For Two or More Units ³	2.1	NC	NC	NC	1.8	Q	3.0	2.9	3.9	28.63
Water Heated by Furnace ⁴	1.1	Q	Q	Q	1.0	1.3	1.4	NC	1.9	48.99
Kerosene Appliances										
Portable Space Heater	4.9	Q	Q	4.7	6.2	4.7	3.5	5.4	5.4	20.79
Appliance Characteristics										
Lights										
Used 4 to 12 Hours per Day										
Total Number of Lights										
None	7.4	Q	6.6	9.0	8.0	7.3	7.3	7.6	6.8	15.30
1	22.3	22.4	18.7	21.2	24.3	20.1	19.4	22.7	24.8	8.65
2	30.2	32.7	34.7	29.3	27.5	30.4	30.6	32.2	30.9	7.10
3	17.7	17.6	17.4	16.2	18.1	17.4	17.2	20.2	17.8	9.59
4	10.0	6.9	10.9	11.0	9.6	12.5	12.7	8.3	7.3	14.39
5	4.6	Q	Q	4.6	4.2	5.9	3.4	4.6	5.1	19.27
6 or More	7.8	13.7	7.7	8.5	8.3	6.5	9.4	4.4	7.3	16.47
Used 12 to 24 Hours per Day										
Total Number of Lights										
None	60.5	59.8	69.3	63.3	61.3	58.0	60.1	60.1	58.7	3.83
1	21.4	19.3	15.9	21.6	21.5	23.7	20.8	21.9	21.2	8.54
2	10.5	16.6	7.6	8.9	9.2	10.3	10.8	12.4	11.5	12.49
3 or More	7.7	Q	7.2	6.3	8.0	7.9	8.3	5.7	8.7	16.29
Fluorescent Lamp Used										
Yes ⁵	9.4	8.6	8.5	8.2	10.7	9.2	11.5	7.7	8.2	15.79
No	90.6	91.4	91.5	91.8	89.3	90.8	88.5	92.3	91.8	1.57
Flood Light Used										
Yes ⁵	4.6	Q	Q	4.7	3.8	4.5	6.4	3.6	5.3	21.41
No	95.4	97.8	96.1	95.3	96.2	95.5	93.6	96.4	94.7	.97

See footnotes at end of table.

**Table 40. Appliances by Year of Construction,
Percent of U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.412	1.919	1.734	1.367	0.795	0.918	0.854	1.183	0.723	
Appliance Characteristics										
Refrigerators										
Number of Refrigerators										
1	84.5	75.0	89.6	87.1	87.6	82.0	80.9	84.5	84.4	2.12
2 or More	15.3	25.0	10.4	12.5	12.4	17.9	18.8	15.5	15.1	11.24
Most-Used Refrigerator Defrost Method										
Frost-Free	79.4	88.8	90.3	80.6	77.4	77.1	83.5	81.4	75.6	2.37
Manual	20.4	11.2	9.7	19.0	22.5	22.7	16.2	18.6	24.0	11.10
Age										
Less than 2 Years	2.9	48.4	8.0	8.9	12.0	13.3	11.8	11.9	12.7	10.76
2 to 4 Years	18.0	26.7	37.4	15.5	15.7	19.9	14.8	15.5	16.8	8.78
5 to 9 Years	26.4	13.3	39.3	43.6	21.8	23.5	27.1	26.2	24.8	8.02
10 to 19 Years	27.6	Q	7.2	23.0	36.3	22.6	33.8	29.7	27.3	7.94
20 Years or More	7.8	Q	Q	Q	4.8	11.1	7.9	11.2	11.9	13.47
Don't Know	7.1	Q	6.4	7.8	9.3	9.5	4.3	5.5	5.8	19.18
Type										
2-Doors (top and bottom)	67.1	58.0	75.6	68.0	68.7	64.1	65.4	65.7	67.7	3.36
2-Doors (side-by-side)	16.7	30.8	16.7	16.9	16.9	18.3	19.1	14.7	12.8	10.27
Regular (single door)	14.7	8.7	7.6	14.3	13.6	16.0	13.1	18.6	17.0	13.24
Half-Size/Other	1.3	Q	Q	Q	Q	Q	2.0	Q	2.0	32.87
Freezers										
Type										
Chest	17.2	9.4	15.0	18.5	16.9	14.5	19.3	18.6	18.7	10.34
Upright	17.3	17.6	12.3	11.8	18.3	19.2	20.4	17.9	16.0	10.02
Age										
Less than 2 Years	2.3	Q	4.6	2.2	2.2	Q	2.7	Q	2.6	24.49
2 to 4 Years	3.9	Q	6.8	4.6	4.3	3.6	3.3	5.0	2.8	22.63
5 to 9 Years	7.0	10.3	4.1	9.2	6.9	6.1	6.4	6.8	7.7	15.55
10 to 19 Years	13.7	6.7	8.0	11.2	16.4	14.7	16.8	11.8	12.3	11.95
20 Years or More	6.6	Q	Q	Q	4.6	7.7	9.4	10.4	8.1	14.69
Don't Know	9	Q	Q	Q	Q	Q	Q	Q	1.2	41.92
Number of Waterbed Heaters										
1	11.6	19.6	10.5	18.7	13.3	10.7	10.0	9.6	8.8	12.15
2 or More	2.9	Q	Q	4.2	4.4	2.8	1.9	Q	2.1	26.98

See footnotes at end of table.

**Table 40. Appliances by Year of Construction,
Percent of U.S. Households, 1990 (Continued)**

Appliance Types and Characteristics	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	RSE Column Factors:	0.412	1.919	1.734	1.367	0.795	0.918	0.854	1.183	0.723
Appliance Characteristics										
Water Heater (for one housing unit)² ..	85.7	98.6	98.2	91.9	83.0	82.9	89.8	89.5	79.6	2.52
Age										
Less than 2 Years	11.5	51.7	5.9	6.5	10.4	10.7	10.0	10.7	12.5	11.76
2 to 4 Years	16.8	40.6	50.4	8.5	11.8	16.2	18.7	13.2	14.1	10.83
5 to 9 Years	21.3	Q	37.6	52.0	12.1	17.2	22.4	21.7	19.3	8.98
10 to 19 Years	20.6	Q	NC	19.3	37.5	14.6	19.0	21.1	16.4	9.51
20 Years or More	6.5	NC	NC	NC	3.4	11.6	11.2	9.7	7.0	15.63
Don't Know	9.0	Q	Q	5.5	7.8	12.6	8.5	13.0	10.3	16.60
Size										
Small	17.4	20.4	14.0	17.9	17.3	16.1	18.5	21.4	16.6	10.83
Medium	45.8	32.9	59.1	49.6	44.9	45.9	47.8	44.5	42.9	5.67
Large	17.9	42.0	20.5	19.4	16.3	16.4	19.3	19.0	14.8	10.54
Don't Know	4.6	Q	4.7	4.9	4.5	4.4	4.2	4.6	5.2	19.31
Location										
Heated Area	59.3	76.4	64.3	58.0	57.1	59.4	64.3	65.5	53.4	4.55
Unheated Area	25.6	21.1	33.3	33.7	24.7	22.6	25.3	22.7	26.5	9.72
Don't Know8	Q	Q	Q	1.2	Q	Q	Q	Q	43.69
Number of Television Sets										
Color										
1	46.0	32.0	43.6	46.0	44.2	43.4	42.9	50.0	52.4	5.07
2	32.5	35.8	36.6	31.8	32.2	34.4	33.5	31.5	30.1	5.91
3	13.1	25.7	15.8	15.4	14.2	13.9	13.5	12.7	8.1	11.28
4	3.3	Q	3.9	Q	4.5	2.8	4.0	2.3	2.4	25.22
5 or More	1.3	Q	NC	Q	1.6	1.6	2.4	Q	Q	32.71
Black/White										
1	25.9	29.1	26.1	24.1	24.8	22.6	25.2	27.7	29.3	7.77
2 or More	4.7	8.3	Q	3.0	4.0	5.4	5.1	5.5	4.9	19.12

¹ Does not include all new construction for 1990.

² A count of main water heaters that are totally separate units from the household's space-heating system. For "Fuel Oil", combined units are shown as the separate category "Water Heated by Furnace."

3 An unknown number may be heated by the furnace.

4 For one housing unit only.

5 Refers to lights used 12 to 24 hours per day.

NC = No cases in sample.

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

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 41. Conservation by Census Region and Urban Status,
Million U.S. Households, 1990**

Conservation-Related Items	Total	Census Region				Urban Status				RSE Row Factors
		Northeast	Midwest	South	West	Urban			RSE Row Factors	
						Total	Central City	Suburban	Rural	
RSE Column Factors	0.619	1.188	1.075	1.208	1.276	0.737	1.103	0.940	1.074	
Total	94.0	19.2	23.1	32.3	19.4	72.9	29.8	43.0	21.1	0.00
Perceptions of Householders										
Plan to Live in Home										
Less than 1 Year	8.1	1.3	1.8	2.8	2.4	6.8	3.2	3.6	1.3	9.81
1 to 2 Years	12.2	2.1	2.5	4.7	3.0	10.4	4.2	6.2	1.9	8.75
3 to 5 Years	9.4	1.7	2.6	2.5	2.6	8.3	3.2	5.1	1.1	7.64
6 to 10 Years	6.2	1.5	1.9	1.7	1.1	5.0	2.0	3.0	1.1	11.69
More than 10 Years	10.0	2.0	3.1	3.4	1.5	7.6	2.3	5.3	2.4	9.75
Rest of My Life	36.3	7.7	8.7	13.8	6.1	24.8	9.6	15.3	11.5	4.37
Don't Know	11.7	3.0	2.6	3.4	2.8	9.9	5.4	4.5	1.8	9.68
Winter Temperature Inside Housing Unit										
Prefer Usual Temperature	75.8	15.2	18.7	27.2	14.7	58.5	23.5	35.0	17.3	1.57
Prefer Warmer Temperature	14.8	3.4	3.7	4.5	3.3	11.9	5.2	6.7	2.9	6.79
Prefer Cooler Temperature	2.8	.7	.7	.5	.9	2.2	1.0	1.2	.5	17.16
Adequacy of Insulation										
Well Insulated	34.4	7.2	8.7	12.4	6.1	25.7	9.6	16.1	8.7	3.89
Adequately Insulated	37.5	8.1	9.1	12.6	7.7	30.3	12.1	18.2	7.2	3.00
Poorly Insulated	19.2	3.4	4.5	6.3	4.9	14.5	6.9	7.6	4.7	4.89
Don't Know	3.0	.6	.7	1.0	.7	2.4	1.3	1.1	.6	14.20
Reasons Unit Poorly Insulated (more than one may apply)										
Wall Insulation Inadequate	13.3	2.5	3.2	4.7	2.9	9.6	4.4	5.2	3.7	6.65
Windows Leaky	12.7	2.2	3.5	4.0	3.0	9.8	5.0	4.9	2.9	6.86
Doors Not Tight	11.5	1.7	3.1	4.1	2.6	8.6	4.3	4.3	2.9	7.37
Ceiling Insulation Inadequate	10.7	2.0	2.4	3.8	2.4	7.8	3.7	4.1	2.9	7.22
Caulking Inadequate	8.5	1.5	2.1	3.4	1.5	6.1	3.1	3.0	2.4	7.80
Don't Know4	Q	Q	Q	Q	.4	Q	Q	NC	32.92
Main Space-Heating Equipment Replaced in Past 3 Years (single-family units and mobile homes only)										
No	62.1	10.7	15.5	22.9	13.0	45.2	15.4	29.8	16.9	2.74
Yes	7.5	1.7	2.1	2.7	1.0	5.3	1.6	3.7	2.2	8.93
High Efficiency	5.7	1.5	1.7	1.7	.7	4.2	1.2	2.9	1.5	9.52
Not High Efficiency	1.1	Q	.2	.6	.2	.7	Q	.6	.4	26.82
Don't Know7	Q	.2	.4	Q	.5	.2	.3	.2	28.20

See footnotes at end of table.

**Table 41. Conservation by Census Region and Urban Status,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	RSE Column Factors	Total	Census Region				Urban Status				RSE Row Factors	
			Northeast	Midwest	South	West	Urban					
							Total	Central City	Suburban			
RSE Column Factors	0.619	1.188	1.075	1.208	1.276	0.737	1.103	0.940	1.074			
Behavior of Householders												
Participation in Demand-Side Management Programs (more than one may apply)												
No/Don't Know	89.4	18.2	22.1	30.7	18.4	69.3	28.8	40.4	20.1	0.85		
Yes	4.6	1.0	1.0	1.6	1.0	3.6	1.0	2.6	1.0	14.84		
Rebate	1.2	.2	.2	.6	.2	.8	.2	.6	.3	28.53		
Load Control	1.6	Q	.2	1.0	.3	1.3	.3	1.1	Q	25.00		
Energy Audit	1.1	.4	.4	Q	.2	.9	.4	.6	.2	26.28		
Conservation	1.3	.5	.3	.2	.3	1.1	.3	.8	.2	25.69		
Other1	NC	Q	NC	Q	Q	Q	Q	Q	42.76		
Winter Daytime Temperature												
Lower When No One Home												
No	43.0	9.6	11.7	14.9	6.7	34.1	15.2	18.9	8.9	3.61		
Yes	51.0	9.6	11.3	17.4	12.7	38.8	14.7	24.1	12.2	3.03		
Lower During Sleeping Hours												
No	45.3	8.4	12.4	16.7	7.7	36.3	14.9	21.4	9.0	3.74		
Yes	48.7	10.8	10.6	15.6	11.7	36.6	14.9	21.7	12.2	3.41		
Amount of Food Cooked In Microwave												
Most or All	6.5	1.2	1.7	2.0	1.6	5.5	2.3	3.2	1.0	10.31		
About Half	15.1	2.2	4.4	4.8	3.7	11.6	4.2	7.4	3.6	5.81		
Some or Very Little	32.3	6.4	8.6	11.0	6.4	25.0	8.8	16.2	7.3	4.76		
Only for Snacks or Defrosting	20.1	3.8	4.7	7.9	3.6	15.0	5.6	9.4	5.1	5.80		
Don't Have or Use a Microwave	19.8	5.5	3.7	6.6	4.0	15.7	8.8	6.8	4.1	5.40		
Fluorescent Lamp Used More than 12 Hours												
No	85.2	17.6	21.2	28.6	17.9	66.1	27.3	38.7	19.1	1.16		
Yes	8.8	1.6	1.9	3.7	1.6	6.8	2.5	4.3	2.0	9.63		
Tuneup of Main Heating System in the Past 12 Months (single-family units and mobile homes only)												
No	41.7	5.6	10.5	16.0	9.6	29.9	10.6	19.2	11.8	4.08		
Yes	26.2	6.7	6.8	8.9	3.9	19.3	5.7	13.6	6.9	5.38		
Don't Know	1.7	Q	.4	.7	.5	1.3	.6	.8	.4	20.84		

See footnotes at end of table.

**Table 41. Conservation by Census Region and Urban Status,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Census Region				Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			Rural		
						Total	Central City	Suburban			
RSE Column Factors	0.619	1.188	1.075	1.208	1.276	0.737	1.103	0.940	1.074		

Behavior of Householders

**Conservation Features
Added in Past 3 Years
(single-family units and
mobile homes only)
(more than one may apply)**

Automatic Setback or Clock Thermostat	5.9	1.6	1.7	1.4	1.2	5.2	1.5	3.7	0.7	11.41
Heat Pump	1.3	Q	Q	1.0	Q	1.0	.4	.6	.2	27.26
Wood-Burning Stove	2.6	.5	.6	.9	.7	1.4	.4	1.1	1.2	16.50
Roof or Ceiling Insulation	8.4	1.6	2.7	2.7	1.4	6.2	1.8	4.3	2.3	10.79
Wall Insulation	6.4	1.6	2.0	2.0	.7	4.6	.9	3.7	1.8	10.00

Characteristics of Housing Unit

**Storm Windows as
Percent of Total Windows**

100 Percent	47.9	13.7	16.8	12.9	4.5	36.1	13.8	22.3	11.8	2.98
76 to 99 Percent	6.2	1.9	2.0	1.6	.6	4.1	1.5	2.5	2.1	9.34
51 to 75 Percent	4.1	1.1	1.5	1.1	.4	3.1	1.1	2.0	1.0	13.50
1 to 50 Percent	4.4	.8	1.2	1.2	1.1	3.1	1.5	1.6	1.2	11.21
No Storm Windows	31.5	1.7	1.5	15.5	12.7	26.5	11.9	14.5	5.0	5.09

**Storm Doors as Percent
of Total Outside Doors**

100 Percent	37.6	9.8	13.9	10.2	3.7	27.9	9.8	18.1	9.7	4.16
51 to 99 Percent	8.1	1.9	2.2	2.9	1.2	6.0	1.8	4.2	2.2	10.32
1 to 50 Percent	13.9	2.1	3.5	5.6	2.7	10.0	4.0	6.1	3.9	6.83
No Storm Doors	34.3	5.4	3.6	13.6	11.8	29.0	14.3	14.7	5.3	4.54

**Energy Efficient Means of
Cooling Housing Unit
(more than one may apply)**

Large Tree(s) that Shade the Roof	37.5	7.8	9.3	13.9	6.5	27.2	9.8	18.4	10.3	3.87
Large Tree(s) that Shade the Windows	39.8	8.3	9.8	14.3	7.5	29.7	10.1	19.7	10.1	3.82
Shutters or Awnings	13.4	2.6	3.8	3.7	3.3	10.6	4.0	6.6	2.8	7.98
Blinds or Insulated Thermal Drapes	52.5	9.7	14.1	18.7	9.9	40.9	15.6	25.3	11.6	2.97
Reflective Film on Windows	4.8	.4	.9	1.8	1.7	4.0	1.4	2.5	.8	10.31
None of Above	20.3	5.1	4.3	6.1	4.8	16.4	8.9	7.5	3.9	7.00

See footnotes at end of table.

**Table 41. Conservation by Census Region and Urban Status,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Census Region					Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			Rural			
						Total	Central City	Suburban	Rural			
RSE Column Factors	0.619	1.188	1.075	1.208	1.276	0.737	1.103	0.940	1.074			
Characteristics of Housing Unit												
Total Single-Family Units and Mobile Homes Only	69.6	12.4	17.6	25.6	14.0	50.5	16.9	33.6	19.0	2.45		
Have Caulking												
No	20.3	3.5	3.7	7.2	5.9	13.7	5.1	8.6	6.6	6.48		
Yes	46.8	8.6	13.6	17.4	7.3	35.0	11.2	23.8	11.8	3.71		
Don't Know	2.5	.3	.4	1.0	.8	1.8	.6	1.2	.7	18.04		
Have Weather Stripping												
No	26.0	4.2	5.6	10.4	5.7	18.1	6.6	11.5	7.9	5.80		
Yes	41.9	7.8	11.7	14.6	7.7	31.1	9.9	21.2	10.8	4.24		
Don't Know	1.7	.3	.3	.6	.5	1.4	.5	.9	.4	18.91		
Have Roof or Ceiling Insulation												
No	7.0	1.4	1.3	2.8	1.5	4.9	2.2	2.7	2.1	11.12		
Yes	55.8	9.8	14.8	20.5	10.6	40.3	12.3	28.0	15.5	3.30		
All Insulated	45.8	7.8	12.3	17.3	8.5	32.6	9.5	23.1	13.2	3.83		
Part Insulated	5.6	1.2	1.5	1.8	1.1	4.2	1.7	2.4	1.4	8.58		
Very Little Insulated	.7	Q	.2	Q	Q	.4	Q	.3	.3	31.32		
Amount Unknown/Not Reported	3.7	.7	.8	1.2	1.0	3.1	.9	2.2	.6	16.00		
Don't Know	6.8	1.2	1.5	2.3	1.8	5.4	2.5	2.9	1.5	11.24		
Floor Insulation												
No Basement/Crawlspace	17.3	1.2	1.8	8.8	5.6	14.2	4.9	9.2	3.1	10.37		
Basement/Crawlspace	52.3	11.2	15.8	16.8	8.4	36.4	12.0	24.4	15.9	3.56		
Heated	19.4	5.3	8.9	3.4	1.8	14.3	4.3	10.0	5.1	8.34		
None or Part Heated	32.9	5.9	6.9	13.4	6.6	22.1	7.7	14.4	10.8	5.51		
Floor Not Insulated	19.5	3.3	4.2	8.1	3.9	13.4	5.2	8.2	6.1	6.78		
Floor Insulated	9.5	2.1	1.9	3.8	1.8	6.0	1.5	4.6	3.5	10.95		
All Parts Insulated	7.3	1.3	1.4	3.1	1.4	4.1	.9	3.2	3.2	13.93		
Some Parts Insulated	2.2	.7	.5	.7	.3	1.9	.5	1.4	.3	16.66		
Don't Know	3.9	.6	.8	1.5	1.0	2.6	1.0	1.6	1.3	14.27		
Have Wall Insulation												
No	10.9	1.9	1.7	4.3	2.9	7.9	3.6	4.3	3.0	9.13		
Yes	46.3	8.5	13.6	16.3	7.8	32.0	9.0	23.0	14.2	3.33		
All Walls	37.8	6.9	11.3	13.7	6.0	25.9	6.9	19.0	11.9	4.08		
Some Walls	8.4	1.7	2.3	2.7	1.8	6.1	2.1	4.0	2.3	7.88		
Don't Know	12.4	1.9	2.3	4.9	3.2	10.6	4.4	6.2	1.8	7.75		

See footnotes at end of table.

**Table 41. Conservation by Census Region and Urban Status,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Census Region					Urban Status			RSE Row Factors	
		Northeast	Midwest	South	West	Urban					
						Total	Central City	Suburban	Rural		
RSE Column Factors	0.619	1.188	1.075	1.208	1.276	0.737	1.103	0.940	1.074		
Characteristics of Housing Unit											
Have Insulation Around:											
Heating and/or Cooling Ducts											
No	40.8	9.4	11.9	12.0	7.6	28.8	9.6	19.2	12.1	4.35	
Yes	22.6	2.3	4.4	11.3	4.6	16.5	5.4	11.1	6.0	6.09	
Don't Know	6.2	.7	1.4	2.3	1.8	5.2	1.9	3.3	1.0	13.47	
Hot Water Pipes											
No	39.5	7.7	10.8	13.3	7.7	29.0	10.1	18.8	10.5	4.04	
Yes	29.7	4.1	5.7	9.9	4.0	16.1	5.0	11.2	7.6	5.80	
Don't Know	6.4	.6	1.1	2.4	2.3	5.5	1.9	3.6	.9	13.98	
Water Heater											
No	47.2	8.8	12.6	17.7	8.0	34.6	12.0	22.6	12.5	3.27	
Yes	19.5	3.1	4.5	6.8	5.0	13.6	4.1	9.5	5.9	6.60	
Don't Know	2.9	.5	.5	1.0	.9	2.3	.9	1.5	.6	16.45	

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 42. Conservation by Census Region and Urban Status,
Percent of U.S. Households, 1990**

Conservation-Related Items	RSE Column Factors	Total	Census Region				Urban Status				RSE Row Factors
			Northeast	Midwest	South	West	Urban			RSE Row Factors	
							Total	Central City	Suburban	Rural	
RSE Column Factors	0.619	1.172	1.101	1.205	1.248	0.728	1.087	0.929	1.130	0.00	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Perceptions of Householders											
Plan to Live in Home											
Less than 1 Year	8.7	6.6	7.6	8.6	12.1	9.4	10.8	8.4	6.2	9.81	
1 to 2 Years	13.0	10.8	10.9	14.4	15.3	14.2	14.0	14.4	8.8	8.75	
3 to 5 Years	10.0	8.8	11.4	7.9	13.2	11.4	10.6	11.9	5.4	7.64	
6 to 10 Years	6.6	7.8	8.1	5.3	5.6	6.9	6.8	7.0	5.4	11.69	
More than 10 Years	10.6	10.5	13.3	10.5	7.8	10.4	7.6	12.4	11.3	9.75	
Rest of My Life	38.7	40.1	37.7	42.7	31.7	34.1	32.1	35.5	54.4	4.37	
Don't Know	12.5	15.5	11.1	10.6	14.3	13.6	18.2	10.4	8.6	9.68	
Winter Temperature Inside Housing Unit											
Prefer Usual Temperature	80.7	79.1	81.2	84.2	75.7	80.3	78.9	81.3	81.8	1.57	
Prefer Warmer Temperature	15.7	17.4	15.9	13.9	16.9	16.3	17.4	15.6	13.7	6.79	
Prefer Cooler Temperature	2.9	3.5	2.9	1.5	4.8	3.1	3.3	2.9	2.5	17.16	
Adequacy of Insulation											
Well Insulated	36.6	37.3	37.7	38.3	31.7	35.3	32.2	37.4	41.1	3.89	
Adequately Insulated	39.9	41.9	39.5	39.1	39.6	41.5	40.6	42.2	34.1	3.00	
Poorly Insulated	20.4	17.9	19.6	19.6	25.2	19.9	23.0	17.7	22.2	4.89	
Don't Know	3.2	2.9	3.2	3.0	3.6	3.3	4.2	2.7	2.7	14.20	
Reasons Unit Poorly Insulated (more than one may apply)											
Wall Insulation Inadequate	14.1	13.1	13.8	14.5	15.0	13.2	14.9	12.0	17.4	6.65	
Windows Leaky	13.5	11.4	15.3	12.4	15.5	13.5	16.6	11.3	13.7	6.86	
Doors Not Tight	12.2	8.8	13.5	12.7	13.2	11.8	14.3	10.0	13.6	7.37	
Ceiling Insulation Inadequate	11.4	10.6	10.3	11.8	12.6	10.7	12.3	9.6	13.6	7.22	
Caulking Inadequate	9.0	7.8	9.3	10.4	7.6	8.3	10.3	6.9	11.5	7.80	
Don't Know4	Q	Q	Q	Q	.5	Q	Q	NC	33.10	
Main Space-Heating Equipment Replaced in Past 3 Years (single-family units and mobile homes only)											
No	89.3	86.1	87.8	89.6	93.1	89.5	90.7	88.9	88.7	1.13	
Yes	10.7	13.9	12.2	10.4	6.9	10.5	9.3	11.1	11.3	8.58	
High Efficiency	8.2	12.1	9.9	6.7	5.2	8.2	7.3	8.7	8.0	9.36	
Not High Efficiency	1.5	Q	1.1	2.3	1.3	1.3	Q	1.6	2.1	26.29	
Don't Know	1.1	Q	1.1	1.4	Q	1.0	1.4	.8	1.2	27.86	

See footnotes at end of table.

Table 42. Conservation by Census Region and Urban Status, Percent of U.S. Households, 1990 (Continued)

Conservation-Related Items	RSE Column Factors	Total	Census Region				Urban Status				RSE Row Factors	
			Northeast	Midwest	South	West	Urban			Rural		
							Total	Central City	Suburban	Rural		
RSE Column Factors	0.619	1.172	1.101	1.205	1.248	0.728	1.087	0.929	1.130			
Behavior of Householders												
Participation in Demand-Side Management Programs (more than one may apply)												
No/Don't Know	95.1	94.9	95.7	95.0	94.9	95.1	96.7	94.0	95.3	0.86		
Yes	4.9	5.1	4.3	5.0	5.1	4.9	3.3	6.0	4.7	14.84		
Rebate	1.3	1.0	.9	1.7	1.2	1.2	.7	1.5	1.6	28.53		
Load Control	1.7	Q	1.0	3.1	1.6	1.8	.9	2.5	Q	25.13		
Energy Audit	1.2	2.2	1.5	Q	1.0	1.3	1.3	1.3	.9	26.27		
Conservation	1.4	2.6	1.1	.7	1.6	1.5	.9	1.9	1.1	25.69		
Other1	NC	Q	NC	Q	Q	Q	Q	Q	42.70		
Winter Daytime Temperature												
Lower When No One Home												
No	45.8	50.1	50.9	46.2	34.7	46.8	50.8	44.0	42.3	3.61		
Yes	54.2	49.9	49.1	53.8	65.3	53.2	49.2	56.0	57.7	3.03		
Lower During Sleeping Hours												
No	48.2	43.6	53.9	51.9	39.8	49.8	50.1	49.7	42.5	3.74		
Yes	51.8	56.4	46.1	48.1	60.2	50.2	49.9	50.3	57.5	3.41		
Amount of Food Cooked in Microwave												
Most or All	6.9	6.4	7.5	6.1	8.1	7.6	7.7	7.5	4.5	10.31		
About Half	16.1	11.3	18.9	15.0	19.3	15.9	14.1	17.1	17.0	5.81		
Some or Very Little	34.4	33.3	37.1	34.0	33.0	34.3	29.6	37.6	34.6	4.76		
Only for Snacks or Defrosting	21.4	20.0	20.5	24.5	18.7	20.6	18.7	21.8	24.3	5.80		
Don't Have or Use a Microwave	21.1	28.7	16.0	20.4	20.7	21.5	29.6	15.9	19.6	5.40		
Fluorescent Lamp Used More than 12 Hours												
No	90.6	91.5	91.7	88.5	92.0	90.7	91.6	90.0	90.5	1.15		
Yes	9.4	8.5	8.3	11.5	8.0	9.3	8.4	10.0	9.5	9.63		
Tuneup of Main Heating System in the Past 12 Months (single-family units and mobile homes only)												
No	59.9	44.8	59.5	62.6	68.7	59.1	62.7	57.3	61.9	3.00		
Yes	37.7	54.3	38.3	34.6	27.8	38.2	33.8	40.5	36.3	4.95		
Don't Know	2.4	Q	2.1	2.8	3.5	2.7	3.5	2.3	1.8	20.67		

See footnotes at end of table.

**Table 42. Conservation by Census Region and Urban Status,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Census Region					Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			Rural			
						Total	Central City	Suburban	Rural			
RSE Column Factors	0.619	1.172	1.101	1.205	1.248	0.728	1.087	0.929	1.130			
Behavior of Householders												
Conservation Features												
Added in Past 3 Years												
(single-family units and mobile homes only)												
(more than one may apply)												
Automatic Setback or Clock Thermostat	8.5	13.2	9.6	5.4	8.8	10.3	8.9	11.0	3.9	10.70		
Heat Pump	1.8	Q	Q	3.7	Q	2.0	2.6	1.8	1.2	26.95		
Wood-Burning Stove	3.8	3.9	3.2	3.3	5.1	2.9	2.2	3.2	6.1	16.03		
Roof or Ceiling Insulation	12.1	12.9	15.2	10.7	10.2	12.2	10.7	13.0	12.0	10.31		
Wall Insulation	9.1	13.1	11.2	8.0	5.1	9.1	5.3	11.0	9.3	9.65		
Characteristics of Housing Unit												
Storm Windows as Percent of Total Windows												
100 Percent	51.0	71.3	72.8	39.8	23.4	49.6	46.3	51.9	55.7	2.98		
76 to 99 Percent	6.6	10.0	8.8	5.0	3.0	5.6	5.1	5.9	9.9	9.34		
51 to 75 Percent	4.3	5.5	6.6	3.3	2.2	4.2	3.6	4.6	4.7	13.50		
1 to 50 Percent	4.6	4.4	5.1	3.7	5.8	4.3	5.0	3.8	5.8	11.21		
No Storm Windows	33.5	8.8	6.6	48.1	65.6	36.3	40.0	33.7	23.9	5.09		
Storm Doors as Percent of Total Outside Doors												
100 Percent	40.0	51.1	60.1	31.5	19.3	38.3	32.9	42.0	46.1	4.16		
51 to 99 Percent	8.6	10.1	9.3	8.8	6.1	8.2	5.9	9.8	10.3	10.32		
1 to 50 Percent	14.8	10.9	15.1	17.4	14.0	13.8	13.3	14.1	18.4	6.83		
No Storm Doors	36.5	27.9	15.4	42.2	60.6	39.8	47.9	34.1	25.2	4.54		
Energy Efficient Means of Cooling Housing Unit												
(more than one may apply)												
Large Tree(s) that Shade the Roof	39.9	40.7	40.3	43.2	33.5	37.3	29.3	42.9	49.0	3.87		
Large Tree(s) that Shade the Windows	42.4	43.0	42.3	44.4	38.5	40.8	33.7	45.7	47.7	3.82		
Shutters or Awnings	14.3	13.3	16.4	11.6	17.2	14.6	13.4	15.4	13.3	7.98		
Blinds or Insulated Thermal Drapes	55.8	50.6	61.1	57.9	51.2	56.1	52.2	58.8	54.9	2.97		
Reflective Film on Windows	5.1	2.2	3.8	5.7	8.7	5.4	4.8	5.9	4.0	10.31		
None of Above	21.6	26.8	18.6	18.8	24.8	22.5	29.9	17.3	18.5	7.00		

See footnotes at end of table.

Table 42. Conservation by Census Region and Urban Status, Percent of U.S. Households, 1990 (Continued)

Conservation-Related Items	RSE Column Factors	Total	Census Region				Urban Status				RSE Row Factors	
			Northeast	Midwest	South	West	Urban			Rural		
							Total	Central City	Suburban	Rural		
		0.619	1.172	1.101	1.205	1.248	0.728	1.087	0.929	1.130		
Characteristics of Housing Unit												
Total Single-Family Units and Mobile Homes Only		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00	
Have Caulking												
No		29.1	28.3	20.9	28.1	42.1	27.1	30.2	25.6	34.4	5.93	
Yes		67.3	69.0	77.1	68.1	52.1	69.3	66.4	70.8	62.2	2.74	
Don't Know		3.5	2.7	2.0	3.8	5.8	3.6	3.4	3.7	3.4	17.71	
Have Weather Stripping												
No		37.3	34.0	31.8	40.7	41.1	35.8	38.8	34.3	41.3	5.40	
Yes		60.2	63.3	66.3	57.1	55.4	61.5	58.3	63.1	56.8	3.29	
Don't Know		2.5	2.8	1.9	2.2	3.5	2.7	2.9	2.6	2.0	18.54	
Have Roof or Ceiling Insulation												
No		10.0	11.5	7.3	10.9	10.6	9.6	12.8	8.0	11.1	11.31	
Yes		80.1	79.1	84.2	80.0	76.2	79.7	72.4	83.4	81.2	1.81	
All Insulated		65.8	62.6	69.8	67.4	60.7	64.5	56.1	68.8	69.2	2.46	
Part Insulated		8.1	9.6	8.8	7.0	7.9	8.2	10.3	7.2	7.6	9.15	
Very Little Insulated		1.0	Q	1.3	Q	Q	.8	Q	.9	1.3	30.54	
Amount Unknown/Not Reported		5.3	5.9	4.4	4.7	6.9	6.1	5.4	6.5	3.0	15.53	
Don't Know		9.8	9.4	8.4	9.2	13.2	10.6	14.7	8.6	7.7	10.84	
Floor Insulation												
No Basement/Crawlspace		24.9	9.3	10.1	34.3	39.9	28.0	29.1	27.5	16.5	9.62	
Basement/Crawlspace		75.1	90.7	89.9	65.7	60.1	72.0	70.9	72.5	83.5	2.82	
Heated		27.9	42.9	50.7	13.2	12.6	28.3	25.6	29.7	26.7	7.96	
None or Part Heated		47.3	47.8	39.2	52.4	47.5	43.6	45.2	42.8	56.9	5.09	
Floor Not Insulated		28.0	26.6	23.6	31.7	27.9	26.5	30.5	24.6	31.8	6.45	
Floor Insulated		13.7	16.7	10.8	14.8	12.6	11.9	8.6	13.6	18.5	10.75	
All Parts Insulated		10.5	10.7	8.0	12.1	10.3	8.1	5.4	9.5	16.7	13.75	
Some Parts Insulated		3.2	6.0	2.8	2.7	2.3	3.8	3.2	4.1	1.8	16.58	
Don't Know		5.6	4.4	4.8	5.9	7.0	5.2	6.1	4.7	6.6	14.26	
Have Wall Insulation												
No		15.7	15.4	9.9	16.9	21.1	15.7	21.3	12.9	15.7	8.65	
Yes		66.5	69.0	77.0	63.8	56.1	63.4	53.1	68.6	74.7	2.61	
All Walls		54.4	55.4	64.0	53.4	43.1	51.3	40.7	56.6	62.6	3.39	
Some Walls		12.1	13.6	13.0	10.4	13.0	12.1	12.4	12.0	12.1	7.74	
Don't Know		17.8	15.7	13.1	19.3	22.8	20.9	25.7	18.5	9.6	7.03	

See footnotes at end of table.

**Table 42. Conservation by Census Region and Urban Status,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Census Region					Urban Status				RSE Row Factors	
		Northeast	Midwest	South	West	Urban			Rural			
						Total	Central City	Suburban	Rural			
RSE Column Factors	0.619	1.172	1.101	1.205	1.248	0.728	1.087	0.929	1.130			
Characteristics of Housing Unit												
Have Insulation Around:												
Heating and/or Cooling Ducts												
No	58.7	76.0	67.3	46.8	54.2	57.0	56.6	57.1	63.3	3.44		
Yes	32.4	18.6	25.0	44.1	32.7	32.7	32.1	33.0	31.6	5.54		
Don't Know	8.9	5.5	7.7	9.1	13.1	10.3	11.2	9.8	5.1	13.19		
Hot Water Pipes												
No	56.8	62.0	61.3	52.0	55.1	57.3	59.8	56.1	55.3	3.51		
Yes	34.1	33.0	32.5	38.7	28.4	31.9	29.3	33.2	39.8	4.78		
Don't Know	9.2	5.0	6.1	9.3	16.5	10.8	11.0	10.7	4.8	13.81		
Water Heater												
No	67.8	71.3	71.5	69.3	57.2	68.5	70.9	67.3	65.8	2.73		
Yes	28.0	24.9	25.7	26.7	36.0	26.9	24.0	28.3	31.0	5.66		
Don't Know	4.2	3.8	2.8	4.0	6.7	4.6	5.1	4.3	3.2	16.10		

NC = No cases in sample.

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. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 43. Conservation by Type and Ownership of Housing Unit,
Million U.S. Households, 1990**

Conservation-Related Items			Type and Ownership of Housing Unit												RSE Row Factors	
			Single-Family			Multifamily						Mobile Home				
						Two to Four Units			Five or More Units							
			Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors	0.302	0.346	0.387	0.833	1.033	2.004	1.038	.021	2.529	1.048	1.359	1.559	2.413			
Total	94.0	64.4	53.7	10.7	10.0	2.5	7.5	14.4	1.8	12.6	5.2	4.3	1.0		7.31	
Perceptions of Householders																
Plan to Live in Home																
Less than 1 Year	8.1	3.2	1.6	1.6	1.7	Q	1.4	2.8	Q	2.7	.6	.3	.2		15.60	
1 to 2 Years	12.2	4.9	2.2	2.8	2.4	Q	2.2	4.0	Q	3.9	.8	.5	.3		15.10	
3 to 5 Years	9.4	6.4	5.0	1.4	1.0	Q	.7	1.4	.3	1.1	.6	.5	.5		16.33	
6 to 10 Years	6.2	5.3	4.9	.4	.3	Q	Q	.3	Q	.2	.3	.3	.3		24.34	
More than 10 Years	10.0	8.9	8.4	.5	.4	Q	.3	Q	Q	Q	.4	.4	.4		21.58	
Rest of My Life	36.3	29.1	27.3	1.8	2.3	1.2	1.1	3.0	.7	2.4	1.9	1.8	Q		11.13	
Don't Know	11.7	6.5	4.4	2.1	2.0	.2	1.8	2.7	.4	2.3	.6	.5	Q		14.09	
Winter Temperature Inside Housing Unit																
Prefer Usual Temperature	75.8	52.6	44.4	8.1	7.5	1.8	5.8	11.6	1.4	10.2	4.1	3.4	.7		7.77	
Prefer Warmer Temperature	14.8	9.9	7.9	2.0	2.0	.6	1.3	1.9	.3	1.6	1.1	.8	.2		15.04	
Prefer Cooler Temperature	2.8	1.5	1.1	.3	.4	Q	.3	.9	Q	.7	Q	Q	Q		23.49	
Adequacy of Insulation																
Well Insulated	34.4	25.1	22.6	2.5	2.5	.9	1.6	5.2	.9	4.3	1.6	1.4	.2		11.37	
Adequately Insulated	37.5	25.9	22.1	3.8	4.2	1.2	3.0	5.3	.6	4.7	2.1	1.9	.3		9.31	
Poorly Insulated	19.2	12.2	8.3	3.9	2.6	.3	2.3	3.0	.3	2.7	1.3	.9	.4		11.61	
Don't Know	3.0	1.3	.7	.5	.6	Q	.6	1.0	Q	.9	Q	Q	Q		25.60	
Reasons Unit Poorly Insulated (more than one may apply)																
Wall Insulation Inadequate	13.3	9.3	6.5	2.8	1.5	.2	1.2	1.5	.2	1.4	1.0	.8	.3		13.71	
Windows Leaky	12.7	7.3	4.3	3.0	2.0	.2	1.8	2.3	Q	2.1	1.1	.7	.3		13.47	
Doors Not Tight	11.5	6.7	3.8	2.9	1.8	.2	1.6	1.9	.2	1.8	1.0	.7	.3		14.33	
Ceiling Insulation Inadequate	10.7	7.7	5.2	2.6	1.1	.2	.9	1.1	Q	1.0	.7	.5	.2		14.56	
Caulking Inadequate	8.5	5.5	3.2	2.2	1.2	.1	1.0	1.3	Q	1.2	.6	.4	.2		15.70	
Don't Know4	.2	Q	Q	NC	Q	Q	NC	NC	Q	Q	NC	Q		79.41	
Main Space-Heating Equipment Replaced in Past 3 Years (single-family units and mobile homes only)																
No	62.1	57.4	47.5	9.9	--	--	--	--	--	--	4.7	3.8	.9		7.00	
Yes	7.5	7.0	6.2	.8	--	--	--	--	--	--	.5	.4	Q		16.61	
High Efficiency	5.7	5.4	5.1	.3	--	--	--	--	--	--	.3	.3	Q		19.16	
Not High Efficiency	1.1	1.0	.6	.4	--	--	--	--	--	--	Q	Q	NC		45.54	
Don't Know7	.6	.5	Q	--	--	--	--	--	--	Q	Q	Q		55.98	

See footnotes at end of table.

**Table 43. Conservation by Type and Ownership of Housing Unit,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items		Type and Ownership of Housing Unit												RSE Row Factors	
		Single-Family			Multifamily						Mobile Home				
					Two to Four Units			Five or More Units							
	Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors	0.302	0.346	0.387	0.833	1.033	2.004	1.038	1.021	2.529	1.048	1.359	1.559	2.413		
Behavior of Householders															
Participation in Demand-Side Management Programs (more than one may apply)															
No/Don't Know	89.4	60.5	50.2	10.3	9.8	2.4	7.4	14.1	1.8	12.3	5.0	4.1	0.9	7.47	
Yes	4.6	3.9	3.5	.4	.2	Q	Q	.3	Q	.3	.2	Q	Q	31.01	
Rebate	1.2	.9	.8	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	66.22	
Load Control	1.6	1.5	1.4	Q	Q	NC	Q	Q	Q	Q	Q	Q	Q	52.85	
Energy Audit	1.1	1.0	.8	Q	Q	Q	Q	NC	Q	Q	Q	Q	Q	48.51	
Conservation	1.3	1.1	1.0	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	50.16	
Other1	Q	Q	Q	NC	NC	NC	Q	NC	Q	Q	Q	Q	87.54	
Winter Daytime Temperature															
Lower When No One Home															
No	43.0	27.7	23.5	4.2	5.2	1.4	3.9	8.2	1.1	7.1	1.9	1.5	.4	9.07	
Yes	51.0	36.6	30.1	6.5	4.8	1.2	3.6	6.2	.7	5.5	3.3	2.7	.6	9.01	
Lower During Sleeping Hours															
No	45.3	28.9	23.2	5.7	5.6	1.5	4.1	8.7	.9	7.7	2.2	1.7	.5	8.73	
Yes	48.7	35.5	30.5	5.0	4.4	1.1	3.4	5.8	.9	4.9	3.0	2.6	.4	9.38	
Amount of Food Cooked in Microwave															
Most or All	6.5	4.3	3.6	.6	.6	Q	.4	1.4	.2	1.1	.3	.3	NC	19.54	
About Half	15.1	11.1	9.3	1.7	1.3	.3	1.0	1.8	.3	1.5	1.1	.9	Q	14.54	
Some or Very Little	32.3	24.4	21.0	3.4	2.9	.9	2.0	3.2	.6	2.7	1.8	1.6	.2	11.81	
Only for Snacks or Defrosting	20.1	15.3	13.0	2.3	1.8	.6	1.3	2.2	.2	2.0	.8	.6	.2	12.63	
Don't Have or Use a Microwave	19.8	9.3	6.7	2.6	3.5	.6	2.8	5.8	.5	5.3	1.3	.8	.4	10.53	
Fluorescent Lamp Used More than 12 Hours															
No	85.2	57.3	47.4	9.9	9.4	2.4	7.1	13.5	1.8	11.8	4.9	4.0	.9	7.44	
Yes	8.8	7.1	6.3	.8	.6	.1	.4	.9	Q	.8	.3	.3	Q	21.66	
Tuneup of Main Heating System in the Past 12 Months (single-family units and mobile homes only)															
No	41.7	37.9	30.7	7.2	--	--	--	--	--	--	3.7	3.1	.6	8.08	
Yes	26.2	24.9	22.3	2.6	--	--	--	--	--	--	1.3	1.1	.2	11.73	
Don't Know	1.7	1.6	.7	.9	--	--	--	--	--	--	Q	Q	Q	40.54	

See footnotes at end of table.

**Table 43. Conservation by Type and Ownership of Housing Unit,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	RSE Column Factors	Total	Type and Ownership of Housing Unit												RSE Row Factors	
			Single-Family			Multifamily						Mobile Home				
						Two to Four Units			Five or More Units							
			Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors	0.302	0.346	0.387	0.833	1.033	2.004	1.038	1.021	2.529	1.048	1.359	1.559	2.413			
Behavior of Householders																
Conservation Features Added in Past 3 Years (single-family units and mobile homes only) (more than one may apply)																
Automatic Setback or Clock Thermostat	5.9	5.7	5.3	0.4	--	--	--	--	--	--	0.3	0.3	Q	22.39		
Heat Pump	1.3	1.2	1.1	Q	--	--	--	--	--	--	Q	Q	NC	60.76		
Wood-Burning Stove	2.6	2.4	2.1	.3	--	--	--	--	--	--	.2	.2	NC	26.49		
Roof or Ceiling Insulation	8.4	8.1	7.1	.9	--	--	--	--	--	--	.4	.4	Q	19.41		
Wall Insulation	6.4	6.0	5.5	.5	--	--	--	--	--	--	.3	.3	NC	18.84		
Characteristics of Housing Unit																
Storm Windows as Percent of Total Windows																
100 Percent	47.9	34.1	30.1	4.0	5.3	1.4	3.8	6.0	1.1	4.8	2.6	2.4	0.2	9.32		
76 to 99 Percent	6.2	5.1	4.7	.5	.4	Q	.3	.2	Q	Q	.4	.3	Q	19.33		
51 to 75 Percent	4.1	3.4	3.0	.4	.3	Q	.2	.2	Q	Q	.2	Q	Q	26.70		
1 to 50 Percent	4.4	3.4	2.7	.7	.5	Q	.4	.3	Q	Q	.2	Q	Q	24.17		
No Storm Windows	31.5	18.3	13.2	5.1	3.5	.9	2.7	7.7	.6	7.2	1.9	1.3	.6	11.62		
Storm Doors as Percent of Total Outside Doors																
100 Percent	37.6	30.3	26.4	3.9	3.0	1.0	2.1	3.0	Q	2.2	1.3	1.1	Q	10.77		
51 to 99 Percent	8.1	7.9	7.2	.6	Q	Q	Q	NC	NC	NC	Q	Q	Q	18.38		
1 to 50 Percent	13.9	9.8	8.1	1.7	1.2	.5	.7	.8	Q	.7	2.1	1.9	.2	14.45		
No Storm Doors	34.3	16.4	11.9	4.5	5.6	.9	4.6	10.6	.9	9.7	1.7	1.1	.6	9.85		
Energy Efficient Means of Cooling Housing Unit (more than one may apply)																
Large Tree(s) that Shade the Roof	37.5	31.6	26.9	4.7	2.6	.8	1.8	1.3	Q	1.2	2.0	1.7	.4	11.25		
Large Tree(s) that Shade the Windows	39.8	32.9	28.2	4.8	3.1	.9	2.2	1.9	Q	1.8	1.9	1.5	.3	10.39		
Shutters or Awnings	13.4	10.8	9.3	1.5	.8	.2	.5	.7	Q	.6	1.1	.9	.2	17.21		
Blinds or Insulated Thermal Drapes	52.5	38.9	33.2	5.7	4.6	1.3	3.3	6.2	.9	5.2	2.9	2.5	.3	8.88		
Reflective Film on Windows	4.8	4.0	3.6	.4	.2	Q	Q	.3	Q	Q	.3	.2	Q	24.64		
None of Above	20.3	9.2	7.0	2.2	3.3	.6	2.7	6.8	.7	6.1	1.0	.7	.3	13.98		

See footnotes at end of table.

**Table 43. Conservation by Type and Ownership of Housing Unit,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	RSE Column Factors	Total	Type and Ownership of Housing Unit												RSE Row Factors	
			Single-Family			Multifamily						Mobile Home				
						Two to Four Units			Five or More Units							
			Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors	0.302	0.346	0.387	0.833	1.033	2.004	1.038	1.021	2.529	1.048	1.359	1.559	2.413			
Characteristics of Housing Unit																
Total Single-Family Units and Mobile Homes Only	69.6	64.4	53.7	10.7	--	--	--	--	--	--	--	5.2	4.3	1.0	6.68	
Have Caulking																
No	20.3	18.0	12.9	5.2	--	--	--	--	--	--	--	2.2	1.6	.6	11.70	
Yes	46.8	44.1	39.5	4.7	--	--	--	--	--	--	--	2.7	2.4	.3	8.69	
Don't Know	2.5	2.2	1.3	.8	--	--	--	--	--	--	--	.3	.2	Q	27.61	
Have Weather Stripping																
No	26.0	23.6	18.2	5.5	--	--	--	--	--	--	--	2.3	1.8	.5	10.78	
Yes	41.9	39.2	34.5	4.7	--	--	--	--	--	--	--	2.7	2.3	.3	9.27	
Don't Know	1.7	1.5	1.0	.5	--	--	--	--	--	--	--	.2	Q	Q	31.88	
Have Roof or Ceiling Insulation																
No	7.0	6.5	4.5	2.0	--	--	--	--	--	--	--	.5	.4	Q	18.79	
Yes	55.8	52.2	46.5	5.7	--	--	--	--	--	--	--	3.5	3.0	.5	7.85	
All Insulated	45.8	42.7	38.9	3.8	--	--	--	--	--	--	--	3.1	2.6	.4	8.92	
Part Insulated	5.6	5.5	4.6	.9	--	--	--	--	--	--	--	.2	Q	Q	17.61	
Very Little Insulated	.7	.6	.5	Q	--	--	--	--	--	--	--	Q	Q	Q	62.06	
Amount Unknown/Not Reported	3.7	3.4	2.6	.9	--	--	--	--	--	--	--	.2	.2	Q	27.21	
Don't Know	6.8	5.7	2.7	3.0	--	--	--	--	--	--	--	1.2	.9	.3	16.34	
Floor Insulation																
No Basement/Crawlspace	17.3	16.6	12.9	3.7	--	--	--	--	--	--	--	.7	.6	Q	18.01	
Basement/Crawlspace	52.3	47.8	40.8	7.0	--	--	--	--	--	--	--	4.5	3.7	.9	8.22	
Heated	19.4	19.3	17.4	1.9	--	--	--	--	--	--	--	Q	Q	NC	15.23	
None or Part Heated	32.9	28.5	23.4	5.1	--	--	--	--	--	--	--	4.4	3.6	.9	9.52	
Floor Not Insulated	19.5	18.4	15.4	3.0	--	--	--	--	--	--	--	1.0	.7	.3	13.29	
Floor Insulated	9.5	6.8	5.9	.8	--	--	--	--	--	--	--	2.7	2.4	.3	15.70	
All Parts Insulated	7.3	4.8	4.2	.6	--	--	--	--	--	--	--	2.5	2.2	.3	18.21	
Some Parts Insulated	2.2	2.0	1.7	.3	--	--	--	--	--	--	--	.3	.2	Q	25.96	
Don't Know	3.9	3.3	2.0	1.2	--	--	--	--	--	--	--	.6	.4	.2	20.38	
Have Wall Insulation																
No	10.9	10.6	8.5	2.1	--	--	--	--	--	--	--	.3	.2	Q	17.23	
Yes	46.3	42.1	38.0	4.1	--	--	--	--	--	--	--	4.2	3.6	.6	7.93	
All Walls	37.8	34.3	31.4	2.9	--	--	--	--	--	--	--	3.5	3.1	.5	8.96	
Some Walls	8.4	7.8	6.6	1.2	--	--	--	--	--	--	--	.6	.5	Q	15.73	
Don't Know	12.4	11.7	7.1	4.5	--	--	--	--	--	--	--	.7	.4	.3	14.37	

See footnotes at end of table.

Table 43. Conservation by Type and Ownership of Housing Unit, Million U.S. Households, 1990 (Continued)

Conservation-Related Items		Type and Ownership of Housing Unit												RSE Row Factors	
		Single-Family			Multifamily						Mobile Home				
					Two to Four Units			Five or More Units							
	Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors	0.302	0.346	0.387	0.833	1.033	2.004	1.038	1.021	2.529	1.048	1.359	1.559	2.413		

Characteristics of Housing Unit														
Have Insulation Around:														
Heating and/or Cooling Ducts														
No														
No	40.8	38.9	31.9	6.9	--	--	--	--	--	--	2.0	1.5	0.4	9.40
Yes	22.6	19.9	17.9	2.0	--	--	--	--	--	--	2.7	2.4	.3	11.76
Don't Know	6.2	5.6	3.8	1.8	--	--	--	--	--	--	.5	.4	Q	21.93
Hot Water Pipes														
No														
No	39.5	37.9	32.0	5.9	--	--	--	--	--	--	1.6	1.3	.2	9.34
Yes	23.7	20.6	18.0	2.6	--	--	--	--	--	--	3.1	2.6	.6	10.59
Don't Know	6.4	5.9	3.7	2.2	--	--	--	--	--	--	.5	.4	Q	21.90
Water Heater														
No														
No	47.2	44.7	37.5	7.2	--	--	--	--	--	--	2.5	2.1	.4	8.36
Yes	19.5	17.2	14.9	2.4	--	--	--	--	--	--	2.3	1.8	.4	11.98
Don't Know	2.9	2.5	1.3	1.1	--	--	--	--	--	--	.5	.3	Q	25.96

NC = No cases in sample.

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

-- = Data not applicable.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 44. Conservation by Type and Ownership of Housing Unit,
Percent of U.S. Households, 1990**

Conservation-Related Items		Type and Ownership of Housing Unit												RSE Row Factors	
		Single-Family			Multifamily						Mobile Home				
					Two to Four Units			Five or More Units							
	Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors	0.355	0.386	0.422	0.862	1.009	2.133	1.034	1.019	2.333	1.026	1.210	1.356	2.249		
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00	
Perceptions of Householders															
Plan to Live in Home															
Less than 1 Year	8.7	4.9	2.9	15.0	16.5	Q	19.3	19.1	Q	21.2	10.7	7.2	26.0	13.83	
1 to 2 Years	13.0	7.7	4.0	26.0	24.4	Q	29.2	27.7	Q	30.6	16.2	12.4	33.2	12.52	
3 to 5 Years	10.0	10.0	9.3	13.5	10.2	11.4	9.8	9.7	14.6	9.0	11.3	11.6	Q	15.10	
6 to 10 Years	6.6	8.2	9.1	4.0	2.6	Q	2.2	Q	1.2	5.4	6.2	Q	22.94		
More than 10 Years	10.6	13.9	15.7	4.7	3.9	10.8	Q	1.6	Q	Q	8.0	8.4	Q	20.44	
Rest of My Life	38.7	45.2	50.8	17.2	22.7	47.2	14.4	21.0	37.2	18.7	37.4	43.3	Q	8.83	
Don't Know	12.5	10.1	8.2	19.6	19.8	7.5	23.9	18.7	22.1	18.2	11.1	10.8	Q	12.81	
Winter Temperature Inside Housing Unit															
Prefer Usual Temperature	80.7	81.7	82.8	76.3	75.4	70.3	77.2	80.4	74.7	81.2	78.4	79.5	73.2	3.43	
Prefer Warmer Temperature	15.7	15.3	14.6	18.6	19.6	24.5	18.0	13.2	14.0	13.0	20.3	19.1	25.9	12.94	
Prefer Cooler Temperature	2.9	2.3	2.1	3.0	3.5	Q	3.4	6.1	Q	5.5	Q	Q	Q	26.64	
Adequacy of Insulation															
Well Insulated	36.6	38.9	42.1	23.2	25.4	36.5	21.7	35.8	49.5	33.8	30.9	33.1	21.4	8.36	
Adequately Insulated	39.9	40.2	41.2	35.2	41.9	48.7	39.7	36.5	32.3	37.1	41.2	43.9	29.1	6.39	
Poorly Insulated	20.4	18.9	15.4	36.6	26.3	13.9	30.6	20.8	15.2	21.6	25.8	21.5	44.7	10.05	
Don't Know	3.2	2.0	1.4	5.0	6.3	Q	8.1	6.8	Q	7.4	Q	Q	Q	24.06	
Reasons Unit Poorly Insulated (more than one may apply)															
Wall Insulation Inadequate	14.1	14.4	12.1	25.8	14.7	9.4	16.4	10.7	Q	11.0	19.6	17.7	27.8	12.42	
Windows Leaky	13.5	11.4	8.1	28.0	20.2	9.0	24.0	16.0	Q	17.0	20.2	16.9	35.0	12.30	
Doors Not Tight	12.2	10.4	7.1	27.3	18.3	7.7	21.9	13.5	9.5	14.1	18.6	16.2	29.4	13.14	
Ceiling Insulation Inadequate	11.4	12.0	9.7	23.9	11.3	8.1	12.3	7.3	Q	7.7	14.3	12.7	21.5	13.77	
Caulking Inadequate	9.0	8.5	6.0	21.1	11.6	5.3	19.8	8.8	Q	9.4	10.9	9.0	19.8	14.91	
Don't Know4	.3	Q	Q	NC	Q	Q	NC	Q	Q	NC	Q	Q	68.67	
Main Space-Heating Equipment Replaced In Past 3 Years (single-family units and mobile homes only)															
No	89.3	89.2	88.5	92.7	--	--	--	--	--	--	90.5	90.0	92.8	1.62	
Yes	10.7	10.8	11.5	7.3	--	--	--	--	--	--	9.5	10.0	Q	15.42	
High Efficiency	8.2	8.3	9.4	2.8	--	--	--	--	--	--	6.3	7.2	Q	17.89	
Not High Efficiency	1.5	1.5	1.2	3.3	--	--	--	--	--	--	Q	Q	NC	40.89	
Don't Know	1.1	1.0	.9	Q	--	--	--	--	--	--	Q	Q	Q	49.38	

See footnotes at end of table.

Table 44. Conservation by Type and Ownership of Housing Unit, Percent of U.S. Households, 1990 (Continued)

Conservation-Related Items		Type and Ownership of Housing Unit												RSE Row Factors	
		Single-Family			Multifamily						Mobile Home				
					Two to Four Units			Five or More Units							
	Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors	0.355	0.386	0.422	0.862	1.009	2.133	1.034	1.019	2.333	1.026	1.210	1.356	2.249		
Behavior of Householders															
Participation in Demand-Side Management Programs (more than one may apply)															
No/Don't Know	95.1	94.0	93.5	96.2	97.9	95.7	98.6	97.7	96.6	97.9	96.9	96.7	97.5	1.16	
Yes	4.9	6.0	6.5	3.8	2.1	Q	Q	2.3	Q	2.1	3.1	Q	Q	29.54	
Rebate	1.3	1.5	1.5	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	58.42	
Load Control	1.7	2.3	2.6	Q	Q	NC	Q	Q	Q	Q	Q	Q	Q	47.29	
Energy Audit	1.2	1.5	1.5	Q	Q	Q	NC	Q	NC	Q	Q	Q	Q	42.07	
Conservation	1.4	1.7	1.9	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	44.35	
Other	-	Q	Q	Q	NC	NC	NC	Q	NC	Q	Q	Q	NC	74.46	
Winter Daytime Temperature Lower When No One Home															
No	45.6	43.1	43.9	39.1	52.5	53.8	52.0	56.8	61.3	56.2	36.1	35.9	37.2	5.99	
Yes	54.2	56.9	56.1	60.9	47.5	46.2	48.0	43.2	38.7	43.8	63.9	64.1	62.8	5.34	
Lower During Sleeping Hours															
No	48.2	44.8	43.2	53.0	55.7	58.0	54.9	60.1	51.7	61.3	42.1	39.4	54.6	5.42	
Yes	51.8	55.2	56.8	47.0	44.3	42.0	45.1	39.9	48.3	38.7	57.9	60.6	45.4	5.7	
Amount of Food Cooked in Microwave															
Most or All	6.9	6.6	6.8	5.7	5.7	Q	5.7	9.4	12.4	9.0	5.8	7.1	NC	17.38	
About Half	16.1	17.2	17.4	16.1	12.6	11.8	12.8	12.3	13.8	12.1	20.3	21.2	Q	12.10	
Some or Very Little	34.4	37.9	39.1	32.0	28.6	34.9	26.5	22.4	31.8	21.0	34.8	37.8	21.5	8.30	
Only for Snacks or Defrosting	21.4	23.8	24.2	21.9	18.2	22.1	16.8	15.3	12.8	15.6	15.0	14.1	18.8	11.58	
Don't Have or Use a Microwave	21.1	14.5	12.5	24.2	34.5	25.4	37.6	40.2	29.2	41.8	24.2	19.8	43.8	9.28	
Fluorescent Lamp Used More than 12 Hours															
No	90.6	89.0	88.3	92.9	94.4	94.7	94.4	93.9	96.6	93.6	93.8	93.1	96.7	1.40	
Yes	9.4	11.0	11.7	7.1	5.6	5.3	5.6	6.1	Q	6.4	6.2	6.9	Q	20.45	
Tuneup of Main Heating System in the Past 12 Months (single-family units and mobile homes only)															
No	59.9	58.9	57.2	67.4	--	--	--	--	--	--	71.8	73.4	64.7	4.80	
Yes	37.7	38.7	41.5	24.2	--	--	--	--	--	--	25.7	25.7	25.5	9.14	
Don't Know	2.4	2.4	1.2	8.4	--	--	--	--	--	--	Q	Q	Q	35.87	

See footnotes at end of table.

**Table 44. Conservation by Type and Ownership of Housing Unit,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items		Type and Ownership of Housing Unit												RSE Row Factors		
		Single-Family				Multifamily						Mobile Home				
						Two to Four Units			Five or More Units							
		Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
RSE Column Factors		0.355	0.386	0.422	0.862	1.009	2.133	1.034	1.019	2.333	1.026	1.210	1.356	2.249		
Behavior of Householders																
Conservation Features Added in Past 3 Years (single-family units and mobile homes only) (more than one may apply)																
Automatic Setback or																
Clock Thermostat	8.5	8.8	9.8	3.6	--	--	--	--	--	--	5.2	6.0	Q	20.47		
Heat Pump	1.8	1.8	2.0	Q	--	--	--	--	--	--	Q	Q	NC	53.30		
Wood-Burning Stove	3.8	3.8	3.9	3.1	--	--	--	--	--	--	3.7	4.6	NC	25.23		
Roof or Ceiling Insulation	12.1	12.5	13.3	8.6	--	--	--	--	--	--	7.3	8.6	Q	17.91		
Wall Insulation	9.1	9.4	10.3	4.7	--	--	--	--	--	--	6.0	7.3	NC	17.33		
Characteristics of Housing Unit																
Storm Windows as Percent of Total Windows																
100 Percent	51.0	52.9	56.0	37.3	52.7	56.8	51.3	41.3	60.9	38.5	50.5	57.1	21.4	6.82		
76 to 99 Percent	6.6	8.0	8.7	4.5	3.6	Q	4.4	1.6	Q	Q	8.3	7.2	Q	17.59		
51 to 75 Percent	4.3	5.3	5.6	3.8	3.5	Q	3.2	1.6	Q	1.5	Q	Q	Q	25.77		
1 to 50 Percent	4.6	5.3	5.1	6.1	4.9	Q	5.7	1.9	Q	1.7	3.7	Q	Q	23.37		
No Storm Windows	33.5	28.5	24.6	48.2	35.4	35.3	35.4	53.6	30.6	56.9	36.0	30.3	61.7	8.71		
Storm Doors as Percent of Total Outside Doors																
100 Percent	40.0	47.1	49.2	36.3	30.5	38.9	27.6	20.9	45.5	17.4	24.2	26.6	Q	9.16		
51 to 99 Percent	8.6	12.2	13.5	5.7	Q	Q	Q	NC	NC	NC	Q	Q	Q	16.56		
1 to 50 Percent	14.8	15.2	15.1	15.7	12.3	20.0	9.8	5.7	Q	5.6	40.3	43.8	24.5	12.71		
No Storm Doors	36.5	25.5	22.2	42.3	55.7	37.6	61.7	73.4	48.7	77.0	33.2	27.0	60.9	6.82		
Energy Efficient Means of Cooling Housing Unit (more than one may apply)																
Large Tree(s) that																
Shade the Roof	39.9	49.1	50.1	43.8	26.2	33.4	23.7	9.0	Q	9.4	39.0	39.5	36.7	9.31		
Large Tree(s) that																
Shade the Windows	42.4	51.2	52.5	44.8	30.9	36.3	29.0	13.3	Q	14.2	35.8	36.3	33.5	8.36		
Shutters or Awnings	14.3	16.8	17.3	14.0	7.8	9.4	7.3	5.2	Q	4.5	21.2	22.2	17.1	16.04		
Blinds or Insulated																
Thermal Drapes	55.8	60.4	61.8	53.2	45.7	50.8	44.0	42.8	50.5	41.6	54.9	59.6	34.1	6.30		
Reflective Film on Windows	5.1	6.3	6.7	4.0	2.4	Q	Q	1.9	Q	Q	4.9	4.7	Q	24.18		
None of Above	21.6	14.2	13.0	20.2	33.4	25.4	36.1	47.2	40.7	48.1	19.2	16.0	33.4	11.00		

See footnotes at end of table.

**Table 44. Conservation by Type and Ownership of Housing Unit,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items			Type and Ownership of Housing Unit												RSE Row Factors	
			Single-Family			Multifamily						Mobile Home				
						Two to Four Units			Five or More Units							
	Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	RSE	
RSE Column Factors	0.355	0.386	0.422	0.862	1.009	2.133	1.034	1.019	2.333	1.026	1.210	1.356	2.249	0.00	Row Factors	
Characteristics of Housing Unit																
Total Single-Family Units and Mobile Homes Only	100.0	100.0	100.0	100.0	--	--	--	--	--	--	--	100.0	100.0	100.0	0.00	
Have Caulking																
No	28.1	28.0	24.0	48.4	--	--	--	--	--	--	--	42.5	38.0	62.5	7.95	
Yes	67.3	68.6	73.5	43.6	--	--	--	--	--	--	--	51.9	57.3	27.7	5.61	
Don't Know	3.5	3.4	2.5	7.9	--	--	--	--	--	--	--	5.6	4.7	Q	26.38	
Have Weather Stripping																
No	37.3	36.7	33.8	51.3	--	--	--	--	--	--	--	44.9	42.5	55.7	7.80	
Yes	60.2	60.9	64.3	43.7	--	--	--	--	--	--	--	51.4	55.2	34.5	6.26	
Don't Know	2.5	2.4	1.9	5.0	--	--	--	--	--	--	--	3.7	Q	Q	29.84	
Have Roof or Ceiling Insulation																
No	10.0	10.0	8.4	18.4	--	--	--	--	--	--	--	9.9	9.3	Q	17.35	
Yes	80.1	81.2	86.6	53.8	--	--	--	--	--	--	--	67.5	70.6	53.7	4.32	
All Insulated	65.8	66.4	72.4	36.0	--	--	--	--	--	--	--	58.8	62.1	44.3	5.31	
Part Insulated	8.1	8.5	8.5	8.2	--	--	--	--	--	--	--	3.1	Q	Q	17.37	
Very Little Insulated	1.0	.9	.9	Q	--	--	--	--	--	--	--	Q	Q	Q	53.76	
Amount Unknown/Not Reported	5.3	5.4	4.8	8.3	--	--	--	--	--	--	--	4.4	4.2	Q	25.68	
Don't Know	9.8	8.8	5.0	27.8	--	--	--	--	--	--	--	22.6	20.1	33.4	13.70	
Floor Insulation																
No Basement/Crawlspace	24.9	25.8	24.0	34.6	--	--	--	--	--	--	--	13.5	14.2	Q	16.00	
Basement/Crawlspace	75.1	74.2	76.0	65.4	--	--	--	--	--	--	--	86.5	85.8	89.4	4.18	
Heated	27.9	30.0	32.5	17.7	--	--	--	--	--	--	--	Q	Q	NC	12.66	
None or Part Heated	47.3	44.2	43.5	47.7	--	--	--	--	--	--	--	84.8	83.8	89.4	5.39	
Floor Not Insulated	28.0	28.6	28.7	28.2	--	--	--	--	--	--	--	20.1	17.5	31.8	11.51	
Floor Insulated	13.7	10.5	11.1	7.9	--	--	--	--	--	--	--	52.6	57.0	33.1	11.85	
All Parts Insulated	10.5	7.4	7.9	5.2	--	--	--	--	--	--	--	47.7	51.6	30.4	14.34	
Some Parts Insulated	3.2	3.1	3.2	2.7	--	--	--	--	--	--	--	4.9	5.4	Q	24.58	
Don't Know	5.6	5.1	3.7	11.7	--	--	--	--	--	--	--	12.1	9.4	24.5	19.64	
Have Wall Insulation																
No	15.7	16.5	15.9	19.4	--	--	--	--	--	--	--	6.2	4.9	Q	15.82	
Yes	66.5	65.4	70.8	38.2	--	--	--	--	--	--	--	80.2	84.7	60.1	4.09	
All Walls	54.4	53.2	58.4	27.1	--	--	--	--	--	--	--	68.1	72.0	50.6	5.28	
Some Walls	12.1	12.1	12.4	11.1	--	--	--	--	--	--	--	12.1	12.7	Q	14.89	
Don't Know	17.8	18.1	13.3	42.4	--	--	--	--	--	--	--	13.6	10.4	27.9	11.96	

See footnotes at end of table.

**Table 44. Conservation by Type and Ownership of Housing Unit,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items	RSE Column Factors		Type and Ownership of Housing Unit												RSE Row Factors		
			Single-Family				Multifamily						Mobile Home				
							Two to Four Units			Five or More Units							
			Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent		
Have Insulation Around:																	
Heating and/or Cooling Ducts																	
No	58.7	60.4	59.5	64.7	--	--	--	--	--	--	38.0	36.0	46.8	6.61			
Yes	32.4	30.9	33.4	18.3	--	--	--	--	--	--	51.6	55.5	34.4	8.28			
Don't Know	8.9	8.8	7.1	17.0	--	--	--	--	--	--	10.4	8.5	Q	21.25			
Hot Water Pipes																	
No	56.8	58.9	59.6	55.5	--	--	--	--	--	--	29.9	31.3	23.4	7.01			
Yes	34.1	31.9	33.4	24.3	--	--	--	--	--	--	60.4	60.3	60.7	6.60			
Don't Know	9.2	9.1	6.9	20.1	--	--	--	--	--	--	9.7	8.4	Q	19.53			
Water Heater																	
No	67.8	69.4	69.8	67.5	--	--	--	--	--	--	47.7	49.0	41.8	5.36			
Yes	28.0	26.8	27.7	22.1	--	--	--	--	--	--	43.4	43.4	43.5	8.58			
Don't Know	4.2	3.8	2.5	10.5	--	--	--	--	--	--	8.9	7.6	Q	24.65			

NC = No cases in sample.

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

-- = Data not applicable.

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. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 45. Conservation by Climate Zone and Census Region, Million U.S. Households, 1990

Conservation-Related Items	Total	Climate Zone					Census Region and Climate Zone								RSE Row Factors	
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest		South		West			
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD			
RSE Column Factors	0.357	1.558	0.910	1.183	1.124	1.121	0.842	1.694	0.613	1.046	1.229	1.233	0.958			
Total	94.0	10.1	26.7	20.9	19.3	17.0	12.3	6.9	23.1	17.6	14.7	7.1	12.3		6.43	
Perceptions of Householders																
Plan to Live in Home																
Less than 1 Year	8.1	.8	2.3	1.1	2.2	1.8	1.0	.2	1.8	1.4	1.4	.8	1.6		16.23	
1 to 2 Years	12.2	1.0	3.1	2.7	2.8	2.6	1.3	.8	2.5	2.3	2.3	1.0	1.9		13.78	
3 to 5 Years	9.4	.8	2.8	2.3	2.1	1.4	1.0	.7	2.6	1.5	1.1	.6	1.9		12.27	
6 to 10 Years	6.2	.9	2.0	1.3	1.1	.8	1.0	.5	1.9	1.0	.7	.4	.7		17.61	
More than 10 Years	10.0	1.7	2.9	2.5	1.2	1.7	1.4	.6	3.1	1.9	1.5	.7	.3		16.19	
Rest of My Life	36.3	3.9	10.5	8.0	7.3	6.5	5.4	2.3	8.7	7.9	5.9	2.8	3.4		8.99	
Don't Know	11.7	1.1	3.0	3.0	2.6	2.1	1.2	1.7	2.6	1.6	1.8	.9	1.9		7.45	
Winter Temperature Inside Housing Unit																
Prefer Usual Temperature	75.8	8.1	21.2	16.9	15.5	14.2	9.5	5.7	18.7	14.6	12.6	5.7	9.0		6.32	
Prefer Warmer Temperature	14.8	1.8	4.5	3.3	3.1	2.0	2.4	.9	3.7	2.7	1.8	1.0	2.2		11.65	
Prefer Cooler Temperature ...	2.8	.3	1.0	.7	.5	.3	.4	Q	.7	.3	Q	.4	.6		23.70	
Adequacy of Insulation																
Well Insulated	34.4	4.1	9.6	8.2	6.8	5.6	4.3	2.9	8.7	7.1	5.2	2.7	3.5		5.27	
Adequately Insulated	37.5	4.2	10.7	8.2	7.5	6.9	5.4	2.7	9.1	6.7	5.9	2.7	5.0		7.36	
Poorly Insulated	19.2	1.5	5.8	3.8	4.2	3.9	2.5	1.0	4.5	3.2	3.1	1.6	3.3		8.32	
Don't Know	3.0	.3	.5	.7	.8	.6	.2	.3	.7	.5	.5	Q	.6		20.55	
Reasons Unit Poorly Insulated (more than one may apply)																
Wall Insulation Inadequate ...	13.3	1.2	4.1	2.4	3.2	2.4	1.9	.6	3.2	2.6	2.1	.9	2.0		11.82	
Windows Leaky	12.7	1.1	4.2	2.5	2.7	2.2	1.7	.5	3.5	2.1	1.9	1.1	1.9		11.99	
Doors Not Tight	11.5	.9	3.6	2.0	2.6	2.3	1.3	.4	3.1	2.0	2.0	.9	1.7		12.80	
Ceiling Insulation																
Inadequate	10.7	.9	3.0	2.0	2.7	2.1	1.4	.6	2.4	2.0	1.8	.7	1.7		11.82	
Caulking Inadequate	8.5	.6	2.5	1.7	1.9	1.7	1.1	.5	2.1	1.8	1.6	.5	.9		12.38	
Don't Know4	NC	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		62.86	
Main Space-Heating Equipment Replaced in Past 3 Years (single-family units and mobile homes only)																
No	62.1	6.8	17.3	13.2	12.8	12.0	7.5	3.2	15.5	12.6	10.3	5.2	7.8		7.80	
Yes	7.5	1.0	2.2	1.9	1.2	1.0	1.2	.5	2.1	1.7	.9	.4	.5		14.24	
High Efficiency	5.7	.9	1.9	1.5	.8	.7	1.1	.4	1.7	1.1	.6	.3	.4		14.06	
Not High Efficiency	1.1	Q	.2	.3	Q	Q	Q	Q	.2	.4	Q	Q	G		36.73	
Don't Know7	Q	.2	.2	.2	Q	Q	Q	.2	.2	Q	NC	G		33.95	

See footnotes at end of table.

**Table 45. Conservation by Climate Zone and Census Region,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Climate Zone				Census Region and Climate Zone								RSE Row Factors	
		Fewer than 2,000 CDD and --													
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD	More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest		South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD		
RSE Column Factors	0.357	1.558	0.910	1.183	1.124	1.121	0.842	1.694	0.613	1.046	1.229	1.233	0.958		

Behavior of Householders

Participation in Demand-Side Management Programs (more than one may apply)														
No/Don't Know	89.4	9.4	25.7	20.0	17.7	16.6	11.6	6.7	22.1	16.2	14.5	7.0	11.4	6.60
Yes	4.6	.7	1.0	1.0	1.5	.4	.8	.2	1.0	1.4	Q	Q	.9	19.37
Rebate	1.2	.2	.2	Q	.6	Q	Q	Q	.2	.5	Q	Q	.2	41.30
Load Control	1.6	Q	Q	.4	.7	Q	Q	NC	.2	.9	Q	NC	.3	33.02
Energy Audit	1.1	.2	.5	.2	Q	Q	.3	Q	.4	Q	Q	Q	Q	31.08
Conservation	1.3	.2	.4	.3	.3	Q	.4	Q	.3	Q	Q	Q	.3	32.58
Other1	Q	Q	Q	Q	NC	NC	NC	Q	NC	NC	Q	Q	74.07
Winter Daytime Temperature														
Lower When No One Home														
No	43.0	4.3	12.7	10.3	8.2	7.4	5.1	4.5	11.7	8.7	6.3	2.2	4.5	8.58
Yes	51.0	5.8	13.9	10.6	11.1	9.6	7.2	2.4	11.3	8.9	8.4	4.9	7.8	7.25
Lower During Sleeping Hours														
No	45.3	4.4	13.4	9.3	9.2	9.1	5.4	3.0	12.4	8.9	7.8	2.2	5.5	8.32
Yes	48.7	5.7	13.3	11.7	10.1	7.9	6.9	3.9	10.6	8.7	6.9	4.8	6.8	7.72
Amount of Food Cooked in Microwave														
Most or All	6.5	.7	2.0	1.4	1.4	1.0	.8	.4	1.7	1.2	.8	.6	.9	16.99
About Half	15.1	1.9	4.5	3.5	3.0	2.3	1.7	.5	4.4	3.0	1.8	1.6	2.1	11.26
Some or Very Little	32.3	4.0	9.5	6.5	6.5	5.9	4.5	1.9	8.6	5.9	5.1	2.2	4.2	9.72
Only for Snacks or Defrosting	20.1	2.0	5.3	4.1	4.3	4.3	2.4	1.4	4.7	4.0	3.9	1.2	2.5	10.10
Don't Have or Use a Microwave	19.8	1.6	5.4	5.4	4.0	3.5	2.8	2.7	3.7	3.5	3.1	1.5	2.5	9.54
Fluorescent Lamp Used More than 12 Hours														
No	85.2	9.2	24.4	19.0	17.5	15.1	11.2	6.4	21.2	15.7	12.9	6.5	11.3	6.73
Yes	8.8	.9	2.3	1.9	1.8	1.9	1.1	.5	1.9	1.9	1.8	.6	1.0	14.11
Tuneup of Main Heating System in the Past 12 Months (single-family units and mobile homes only)														
No	41.7	4.3	10.8	8.5	9.4	8.7	3.7	1.9	10.5	8.5	7.5	3.7	5.9	8.38
Yes	26.2	3.4	8.2	6.4	4.2	4.0	5.0	1.8	6.8	5.4	3.5	1.8	2.1	9.79
Don't Know	1.7	.1	.4	.3	.5	.3	Q	Q	.4	.5	Q	.2	.3	28.91

See footnotes at end of table.

Table 45. Conservation by Climate Zone and Census Region, Million U.S. Households, 1990 (Continued)

Conservation-Related Items	Total	Climate Zone					Census Region and Climate Zone								RSE Fcy Fac-
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest		South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD or More	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD		
RSE Column Factors	0.357	1.558	0.910	1.183	1.124	1.121	0.842	1.694	0.613	1.046	1.229	1.233	0.958		RSE Fcy Fac-

Behavior of Householders**Conservation Features**

Added in Past 3 Years
(single-family units and mobile homes only)
(more than one may apply)

Automatic Setback or Clock Thermostat	5.9	0.6	2.0	1.4	1.2	0.7	1.0	0.6	1.7	0.8	0.6	0.3	1.0	16.92
Heat Pump	1.3	Q	Q	.2	.7	.3	Q	Q	Q	.7	.3	NC	Q	28.11
Wood-Burning Stove	2.6	.5	.7	.7	.6	Q	.4	Q	6	.7	Q	.5	.2	23.54
Roof or Ceiling Insulation	8.4	1.5	2.6	1.7	1.2	1.4	1.3	3	2.7	1.5	1.2	.6	.8	16.77
Wall Insulation	6.4	1.0	2.2	1.5	.8	.8	1.4	.3	2.0	1.3	.7	.3	.4	15.37

Characteristics of Housing Unit**Storm Windows as Percent of Total Windows**

100 Percent	47.9	8.0	18.0	13.0	5.9	3.0	8.8	4.9	16.8	10.1	2.8	3.4	1.2	8.43
76 to 99 Percent	6.2	.7	2.7	1.8	.6	.3	1.4	.5	2.0	1.4	.3	.5	Q	4.54
51 to 75 Percent	4.1	.5	1.7	1.1	.4	.3	.7	.3	1.5	.8	.3	.4	Q	9.93
1 to 50 Percent	4.4	.4	1.5	1.1	.7	.7	.5	.4	1.2	.7	.5	.6	.5	7.16
No Storm Windows	31.5	.5	2.7	3.8	11.7	12.8	.8	.9	1.5	4.7	10.9	2.2	10.5	11.82

Storm Doors as Percent of Total Outside Doors

100 Percent	37.6	6.1	14.5	9.1	5.0	2.9	6.5	3.4	13.9	7.4	2.8	2.4	1.3	9.83
51 to 99 Percent	8.1	.9	2.8	2.3	1.2	1.0	1.6	.3	2.2	1.9	.9	.6	.6	6.05
1 to 50 Percent	13.9	1.4	4.0	3.0	2.7	2.7	1.6	.5	3.5	3.1	2.5	1.6	1.1	12.04
No Storm Doors	34.3	1.7	5.3	6.6	10.4	10.4	2.7	2.7	3.6	5.1	8.5	2.5	9.3	8.53

**Energy Efficient Means of Cooling Housing Unit
(more than one may apply)**

Large Tree(s) that Shade the Roof	37.5	4.1	11.1	8.1	7.1	7.1	5.9	1.9	9.3	7.7	6.2	2.9	3.5	8.60
Large Tree(s) that Shade the Windows	39.8	4.5	11.4	8.9	7.4	7.7	6.0	2.3	9.8	7.8	6.5	3.0	4.5	7.85
Shutters or Awnings	13.4	1.3	4.2	3.0	2.9	2.0	1.8	.7	3.8	2.3	1.5	1.1	2.2	13.02
Blinds or Insulated Thermal Drapes	52.5	5.8	15.1	11.9	9.9	9.8	6.6	3.2	14.1	10.1	8.6	3.8	6.1	7.87
Reflective Film on Windows	4.8	.5	.8	.5	1.4	1.7	.3	Q	.9	.5	1.4	.3	1.4	7.08
None of Above	20.3	2.0	5.3	5.0	4.9	3.1	2.5	2.7	4.3	3.4	2.6	1.3	3.5	11.37

See footnotes at end of table.

**Table 45. Conservation by Climate Zone and Census Region,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Climate Zone				Census Region and Climate Zone								RSE Row Factors		
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest		South		West			
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD			
		0.357	1.558	0.910	1.183	1.124	1.121	0.842	1.694	0.613	1.046	1.229	1.233	0.958		

Characteristics of Housing Unit

Total Single-Family Units and Mobile Homes Only	69.6	7.8	19.5	15.2	14.1	13.0	8.7	3.6	17.6	14.4	11.2	5.7	8.3	6.90
Have Caulking														
No	20.3	1.8	5.1	4.0	5.1	4.2	2.5	1.0	3.7	3.8	3.4	2.1	3.7	11.86
Yes	46.8	5.9	13.8	10.7	8.1	8.4	6.1	2.5	13.6	9.9	7.6	3.2	4.1	8.00
Don't Know	2.5	.1	.6	.5	.9	.3	Q	Q	.4	.7	.3	.3	.5	25.47
Have Weather Stripping														
No	26.0	2.1	6.6	5.4	5.9	5.9	2.9	1.3	5.6	5.4	5.1	2.0	3.7	10.76
Yes	41.9	5.7	12.3	9.4	7.7	6.9	5.6	2.2	11.7	8.6	6.0	3.4	4.3	8.77
Don't Know	1.7	Q	.6	.4	.5	Q	.2	Q	.3	.4	Q	.2	.2	31.22
Have Roof or Ceiling Insulation														
No	7.0	.3	1.9	1.2	1.6	2.0	1.0	.5	1.3	1.3	1.5	.3	1.2	16.60
Yes	55.8	7.0	15.9	12.5	10.7	9.6	7.1	2.7	14.8	11.9	8.5	4.8	5.9	7.66
All Insulated	45.8	6.0	12.8	10.1	8.7	8.2	5.7	2.1	12.3	9.9	7.4	3.9	4.5	8.21
Part Insulated	5.6	.6	1.9	1.3	.9	.9	.9	.3	1.5	1.1	.7	.4	.7	12.83
Very Little Insulated7	.1	.2	Q	Q	Q	Q	Q	.2	Q	Q	Q	Q	39.35
Amount Unknown/Not Reported	3.7	.3	1.0	.9	1.1	.5	.4	.3	.8	.9	.3	.3	.7	23.44
Don't Know	6.8	.5	1.7	1.5	1.7	1.4	.7	.5	1.5	1.2	1.2	.6	1.2	16.49
Floor Insulation														
No Basement/Crawlspace ...	17.3	.6	2.1	1.9	4.5	8.1	.7	.5	1.8	2.2	6.6	1.0	4.6	16.09
Basement/Crawlspace	52.3	7.2	17.4	13.3	9.5	4.9	8.1	3.2	15.8	12.2	4.6	4.7	3.7	8.29
Heated	19.4	3.8	9.1	5.2	1.2	Q	3.9	1.4	8.9	3.3	Q	1.4	.3	12.46
None or Part Heated	32.9	3.4	8.3	8.0	8.4	4.7	4.2	1.8	6.9	8.9	4.5	3.3	3.3	10.63
Floor Not Insulated	19.5	2.1	4.6	4.2	5.1	3.5	2.5	.8	4.2	4.8	3.4	1.6	2.3	11.51
Floor Insulated	9.5	1.0	2.8	2.7	2.3	.8	1.5	.6	1.9	3.1	.7	1.2	.6	18.82
All Parts Insulated	7.3	.8	2.0	1.9	2.0	.6	1.0	Q	1.4	2.6	.5	1.0	.5	22.19
Some Parts Insulated	2.2	.2	.8	.8	.3	Q	.5	.3	.5	.5	Q	.2	Q	22.73
Don't Know/Not Reported	3.9	.3	1.0	1.1	1.0	.4	.2	.3	.8	1.1	.4	.5	.4	22.54
Have Wall Insulation														
No	10.9	.5	2.6	2.0	2.9	2.9	1.1	.8	1.7	2.0	2.4	.7	2.2	14.06
Yes	46.3	6.7	13.8	10.8	7.8	7.1	6.4	2.1	13.6	10.0	6.3	4.2	3.7	7.83
All Walls	37.8	5.9	11.0	8.7	6.4	5.8	5.2	1.7	11.3	8.5	5.2	3.2	2.9	8.62
Some Walls	8.4	.8	2.8	2.1	1.4	1.3	1.2	.5	2.3	1.5	1.1	1.0	.8	12.36
Don't Know	12.4	.6	3.1	2.4	3.3	3.0	1.2	.7	2.3	2.4	2.6	.8	2.4	13.94

See footnotes at end of table.

**Table 45. Conservation by Climate Zone and Census Region,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Climate Zone				Census Region and Climate Zone								RSE Row Factors				
		Fewer than 2,000 CDD and --				Northeast Midwest South West												
		More than 2,000 CDD and --		Fewer than 4,000 HDD		More than 5,500 HDD or More		Fewer than 5,500 HDD		4,000 HDD or More		Fewer than 2,000 CDD or More		2,000 HDD or More		4,000 HDD or More		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD	5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD or More	2,000 HDD or More	4,000 HDD or More	Fewer than 4,000 HDD						
RSE Column Factors	0.357	1.558	0.910	1.183	1.124	1.121	0.842	1.694	0.613	1.046	1.229	1.233	0.958					

Characteristics of Housing Unit**Have Insulation Around:
Heating and/or Cooling
Ducts**

No	40.8	5.8	13.5	9.2	6.4	5.8	6.8	2.6	11.9	7.1	4.9	3.7	3.9	8.91
Yes	22.6	1.7	4.5	4.8	5.7	5.8	1.6	.7	4.4	6.0	5.3	1.5	3.1	11.23
Don't Know	6.2	.3	1.5	1.1	1.9	1.3	.3	.3	1.4	1.3	1.0	.5	1.3	18.89
Hot Water Pipes														
No	39.5	4.6	11.8	8.6	7.1	7.5	5.4	2.3	10.8	7.0	6.3	2.9	4.8	8.64
Yes	23.7	2.9	6.3	5.4	4.8	4.2	3.0	1.1	5.7	6.0	3.9	2.0	1.9	10.44
Don't Know	6.4	.3	1.4	1.2	2.2	1.3	.4	.2	1.1	1.4	1.0	.7	1.6	21.03
Water Heater														
No	47.2	5.0	13.6	10.3	8.6	9.6	6.1	2.7	12.6	9.4	8.3	2.8	5.1	8.13
Yes	19.5	2.7	5.0	4.3	4.6	2.9	2.3	.7	4.5	4.3	2.5	2.4	2.6	11.60
Don't Know	2.9	.2	.9	.6	.8	.5	.3	Q	.5	.7	.4	.4	.6	23.84

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Conservation

Table 46. Conservation by Climate Zone and Census Region, Percent of U.S. Households, 1990

		Climate Zone				Census Region and Climate Zone									
		Fewer than 2,000 CDD and --		More than 2,000 CDD		Northeast		Midwest		South		West			
		More than 5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD	5,500 or More HDD	Fewer than 5,500 HDD	5,500 or More HDD	Fewer than 5,500 HDD	5,500 or More HDD	Fewer than 2,000 CDD	2,000 or More CDD	Fewer than 4,000 HDD	4,000 or More HDD		
Conservation-Related Items	Total	8.7	7.8	8.6	5.4	11.4	10.3	8.5	3.3	7.6	7.8	9.5	10.7	12.9	15.04
	1 to 2 Years	9.7	9.7	11.7	13.0	14.4	15.5	10.4	11.5	10.9	13.3	15.7	14.5	15.8	12.26
	3 to 5 Years	10.0	7.9	10.5	10.9	10.9	8.5	8.3	9.7	11.4	8.3	7.4	8.9	15.6	11.20
	6 to 10 Years	6.6	8.6	7.6	6.3	5.9	4.7	7.9	7.5	8.1	5.8	4.7	5.0	5.9	16.69
	More than 10 Years	10.6	16.4	10.8	12.1	6.1	10.1	11.2	9.2	13.3	10.8	10.1	9.9	6.6	13.77
	Rest of My Life	38.7	39.0	39.5	38.2	38.0	38.5	43.7	33.7	37.7	44.9	40.0	38.8	27.6	6.27
	Don't Know	12.5	10.6	11.3	14.3	13.3	12.4	10.1	25.2	11.1	9.0	12.5	12.1	15.5	13.59
Total														0.00	
Total														0.00	
Perceptions of Householders															
Plan to Live in Home															
	Less than 1 Year	13.0	10.0	9.5	10.5	10.9	10.9	8.5	9.7	11.4	13.3	15.7	14.5	15.8	12.26
	1 to 2 Years	10.0	7.9	7.6	6.3	5.9	4.7	7.9	7.5	8.1	5.8	4.7	5.0	5.9	11.20
	3 to 5 Years	6.6	8.6	7.6	6.3	5.9	4.7	7.9	7.5	8.1	5.8	4.7	5.0	5.9	16.69
	6 to 10 Years	10.6	16.4	10.8	12.1	6.1	10.1	11.2	9.2	13.3	10.8	10.1	9.9	6.6	13.77
	More than 10 Years	38.7	39.0	39.5	38.2	38.0	38.5	43.7	33.7	37.7	44.9	40.0	38.8	27.6	6.27
	Rest of My Life	12.5	10.6	11.3	14.3	13.3	12.4	10.1	25.2	11.1	9.0	12.5	12.1	15.5	13.59
Winter Temperature															
Inside Housing Unit															
	Prefer Warmer Temperature	80.7	79.8	79.6	80.6	80.2	83.4	77.1	82.6	81.2	82.9	85.7	80.2	73.2	2.16
	Prefer Cooler Temperature	2.9	2.5	3.6	3.5	2.8	1.7	3.3	Q	2.9	1.6	Q	14.6	18.2	9.73
	Don't Know	3.2	3.4	2.1	3.4	3.9	3.6	1.8	4.8	3.2	2.9	3.2	Q	5.2	4.6
Adequacy of Insulation															
	Well Insulated	36.6	40.5	36.1	39.3	35.3	33.1	34.6	42.2	37.7	40.5	35.6	37.9	28.1	5.62
	Adequately Insulated	39.9	41.6	40.2	39.3	38.8	40.3	43.7	38.7	39.5	38.2	40.3	38.1	40.4	4.54
	Poorly Insulated	20.4	14.5	21.7	17.9	22.0	23.0	19.9	14.3	19.6	18.5	20.9	22.9	26.6	6.99
	Don't Know	3.2	3.4	2.1	3.4	3.9	3.6	1.8	4.8	3.2	2.9	3.2	Q	5.0	20.25
Reasons Unit Poorly Insulated (more than one may apply)															
	Wall Insulation Inadequate	14.1	11.6	15.5	11.6	16.4	14.1	15.7	8.3	13.8	14.7	14.3	13.0	16.1	9.24
	Windows Leaky	13.5	10.7	15.9	12.0	14.0	12.8	13.7	7.3	15.3	12.0	12.8	15.3	15.6	10.51
	Doors Not Tight	12.2	8.7	13.5	9.7	13.6	13.7	10.5	5.7	13.5	11.6	13.9	12.8	13.4	10.83
	Ceiling Insulation Inadequate	11.4	8.6	11.3	9.8	13.8	12.3	11.6	8.6	10.3	11.3	12.5	10.1	14.0	10.31
	Caulking Inadequate	9.0	6.3	9.4	8.3	9.9	10.0	8.5	6.6	9.3	10.1	10.8	7.5	7.7	11.20
	Don't Know	.4	NC	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	50.67
Main Space-Heating Equipment Replaced In Past 3 Years (single-family units and mobile homes only)															
	No	89.3	86.9	88.6	87.2	91.1	92.1	85.8	87.0	87.8	87.8	91.9	92.1	93.9	1.50
	Yes	10.7	13.1	11.4	12.8	8.9	7.9	14.2	13.0	12.2	12.2	8.1	7.9	6.1	12.94
	High Efficiency	8.2	11.1	9.5	9.8	5.6	5.3	12.4	11.2	9.9	7.7	5.4	5.7	4.9	12.84
	Not High Efficiency	1.5	Q	.9	1.6	2.0	Q	Q	Q	1.1	2.7	Q	Q	Q	36.21
	Don't Know	1.1	Q	1.1	1.2	1.3	Q	Q	Q	1.1	1.7	Q	NC	Q	35.03

See footnotes at end of table.

Table 46. Conservation by Climate Zone and Census Region, Percent of U.S. Households, 1990 (Continued)

Conservation-Related Items	Total	Climate Zone					Census Region and Climate Zone								RSE Row Factors	
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest		South		West			
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD			
RSE Column Factors	0.439	1.105	0.783	0.936	1.002	1.161	0.961	1.574	0.779	1.084	1.300	1.337	1.090			

Behavior of Householders**Participation in Demand-Side Management Programs**

(more than one may apply)

No/Don't Know	95.1	92.6	96.4	95.4	92.0	97.9	93.7	97.0	95.7	92.2	98.5	98.3	92.9	1.5
Yes	4.9	7.4	3.6	4.6	8.0	2.1	6.3	3.0	4.3	7.8	Q	Q	7.1	19.27
Rebate	1.3	1.8	.7	Q	3.0	Q	Q	Q	.9	2.7	Q	Q	1.7	40.23
Load Control	1.7	Q	Q	2.1	3.9	Q	Q	NC	1.0	5.3	Q	NC	2.5	31.23
Energy Audit	1.2	2.0	1.7	1.1	Q	Q	2.6	Q	1.5	Q	Q	Q	Q	34.21
Conservation	1.4	2.4	1.4	1.4	1.7	Q	3.2	Q	1.1	Q	Q	Q	Q	2.2
Other1	Q	Q	Q	Q	NC	NC	NC	Q	NC	NC	Q	Q	60.27

Winter Daytime Temperature

Lower When No One Home															
No	45.8	42.8	47.8	49.3	42.6	43.6	41.7	64.9	50.9	49.2	42.7	30.9	36.9	5.27	
Yes	54.2	57.2	52.2	50.7	57.4	56.4	58.3	35.1	49.1	50.8	57.3	69.1	63.1	4.38	
Lower During Sleeping Hours															
No	48.2	43.5	50.2	44.2	47.5	53.3	44.0	42.8	53.9	50.8	53.1	31.7	44.5	5.38	
Yes	51.8	56.5	49.8	55.8	52.5	46.7	56.0	57.2	46.1	49.2	46.9	68.3	55.5	4.71	

Amount of Food Cooked in Microwave

Most or All	6.9	6.7	7.7	6.5	7.2	6.0	6.8	5.5	7.5	6.9	5.2	9.1	7.5	15.08
About Half	16.1	18.6	16.7	16.5	15.6	13.7	13.7	7.0	18.9	17.2	12.4	22.8	17.3	8.88
Some or Very Little	34.4	39.5	35.5	31.1	33.8	34.4	36.8	26.9	37.1	33.3	34.8	30.6	34.3	8.70
Only for Snacks or Defrosting	21.4	19.7	19.9	19.8	22.5	25.5	19.6	20.6	20.5	22.6	26.7	16.5	20.1	8.50
Don't Have or Use a Microwave	21.1	15.4	20.1	26.0	20.7	20.4	22.7	39.5	16.0	20.0	20.9	21.0	20.5	7.58

Fluorescent Lamp Used More than 12 Hours

No	90.6	90.9	91.4	91.0	90.9	88.6	90.7	93.0	91.7	89.2	87.6	92.2	91.9	1.48
Yes	9.4	9.1	8.6	9.0	9.1	11.4	9.3	7.0	8.3	10.8	12.4	7.8	8.1	12.47

Tuneup of Main Heating System in the Past 12 Months (single-family units and mobile homes only)

No	59.9	54.3	55.5	56.0	66.7	66.9	42.2	50.9	59.5	59.4	66.6	64.8	71.4	3.99
Yes	37.7	43.8	42.2	42.3	29.6	30.5	56.8	48.2	38.3	37.3	31.1	31.6	25.2	8.38
Don't Know	2.4	1.9	2.2	1.7	3.6	2.6	Q	Q	2.1	3.2	2.3	3.6	3.4	29.28

See footnotes at end of table.

Conservation

Table 46. Conservation by Climate Zone and Census Region, Percent of U.S. Households, 1990 (Continued)

		Climate Zone		Census Region and Climate Zone			
		Fewer than 2,000 CDD and --	More than 2,000 CDD and Fewer than 4,000 HDD	Northeast	Midwest	South	West
		More than 5,500 to 7,000 HDD	4,000 to 5,499 HDD	5,500 HDD or More	4,000 HDD or More	4,000 CDD or More	4,000 HDD or More
Conservation-Related Items	Total	0.439	1.105	0.783	0.936	1.002	1.161
RSE Column Factors				0.961	1.574	0.779	1.084
					1.300	1.337	1.090

Behavior of Householders

Conservation Features

Added in Past 3 Years
 (single-family units and mobile homes only)
 (more than one may apply)

Automatic Setback or Clock Thermostat	8.5	8.1	10.2	9.3	8.8	5.2	11.8	16.3	9.6	5.3	5.5	4.5	11.8	
Heat Pump	1.8	Q	Q	1.4	4.8	2.2	Q	4.2	Q	3.2	5.2	Q	2.3	28.92
Wood-Burning Stove	3.8	6.2	3.5	4.9	4.1	Q	4.2	6.0	6.6	4.6	4.4	1.9	2.7	21.37
Roof or Ceiling Insulation	12.1	18.9	13.4	11.3	8.7	10.8	15.2	7.6	15.2	10.4	11.1	10.3	10.2	15.04
Wall Insulation	9.1	13.4	11.5	9.6	5.9	6.1	15.5	7.4	11.2	9.4	6.2	5.9	4.6	14.28

Characteristics of Housing Unit

Storm Windows as Percent of Total Windows

100 Percent	51.0	79.1	67.6	62.3	30.5	17.5	71.7	70.6	72.8	57.4	18.8	47.3	9.6	
76 to 99 Percent	6.6	7.2	10.3	8.7	3.1	1.5	11.7	6.8	8.8	7.7	1.7	7.4	Q	13.52
51 to 75 Percent	4.3	5.2	6.5	5.2	2.3	1.6	6.0	4.6	6.6	4.4	1.9	4.9	Q	18.94
1 to 50 Percent	4.6	3.9	5.5	5.4	3.6	3.9	3.7	5.6	5.1	3.8	3.6	8.8	4.1	16.62
No Storm Windows	33.5	4.5	10.2	18.3	60.5	75.4	6.8	12.3	6.6	26.6	74.0	31.6	85.2	8.52

Storm Doors as Percent of Total Outside Doors

100 Percent	40.0	60.7	54.4	43.4	25.8	17.3	52.5	48.7	60.1	42.1	18.9	34.1	10.8	
76 to 99 Percent	8.6	9.1	10.5	10.8	6.1	5.7	13.1	4.6	9.3	10.9	6.3	8.3	4.8	6.45
51 to 50 Percent	14.8	13.9	15.1	14.5	14.3	15.8	12.8	7.5	15.1	17.8	17.0	22.5	9.0	12.99
No Storm Doors	36.5	16.3	19.9	31.3	53.9	61.2	21.6	39.2	15.4	29.2	57.8	35.1	75.4	9.87

Energy Efficient Means of Cooling Housing Unit (more than one may apply)

Large Tree(s) that Shade the Roof	39.9	40.7	41.8	38.7	36.7	42.0	47.8	28.0	40.3	43.7	42.5	41.0	29.2
Large Tree(s) that Shade the Windows	42.4	44.1	42.6	42.5	38.6	45.1	48.3	33.4	42.3	44.3	44.5	42.2	36.4
Shutters or Awnings	14.3	12.7	15.9	14.5	15.0	11.7	14.8	10.8	16.4	12.8	10.1	15.8	18.0
Blinds or Insulated Thermal Drapes	55.8	57.2	56.4	57.1	51.5	57.4	53.2	46.1	61.1	57.3	58.7	53.6	49.8
Reflective Film on Windows	5.1	4.5	3.0	2.3	7.3	9.7	2.6	Q	3.8	2.6	9.3	4.1	11.3
None of Above	21.6	20.0	19.9	23.7	25.2	18.5	19.9	39.0	18.6	19.5	17.9	16.9	28.2

See footnotes at end of table.

Table 46. Conservation by Climate Zone and Census Region, Percent of U.S. Households, 1990 (Continued)

Conservation-Related Items		Climate Zone					Census Region and Climate Zone							
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest		South		West	
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
		Total												
RSE Column Factors		0.439	1.105	0.783	0.936	1.002	1.161	0.961	1.574	0.779	1.084	1.300	1.337	1.090

Characteristics of Housing Unit

Total Single-Family Units and Mobile Homes Only	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Have Caulking														
No	29.1	23.4	26.2	26.5	36.1	32.5	28.5	27.6	20.9	26.4	30.3	37.9	45.0	8.59
Yes	67.3	74.8	70.8	70.3	57.5	64.9	69.6	67.7	77.1	68.7	67.3	56.4	49.2	4.04
Don't Know	3.5	1.8	3.1	3.3	6.4	2.5	Q	Q	2.0	4.9	2.4	5.7	5.8	23.97
Have Weather Stripping														
No	37.3	26.6	33.8	35.7	42.2	45.6	33.5	35.0	31.8	37.3	45.1	35.2	45.0	7.91
Yes	60.2	72.4	63.0	61.8	54.4	52.9	64.2	61.0	66.3	59.6	53.7	60.4	52.0	4.86
Don't Know	2.5	Q	3.2	2.5	3.3	Q	2.3	Q	1.9	3.1	Q	4.3	3.0	28.69
Have Roof or Ceiling Insulation														
No	10.0	3.7	9.8	8.0	11.4	15.1	10.9	12.9	7.3	8.7	13.6	5.2	14.2	14.85
Yes	80.1	89.5	81.4	82.4	76.4	74.1	81.2	74.0	84.2	83.1	75.9	84.1	70.8	2.41
All Insulated	65.8	76.7	65.4	66.8	62.0	63.0	65.2	56.5	69.8	68.6	65.9	69.4	54.7	3.32
Part Insulated	8.1	7.2	9.9	8.7	6.5	6.9	9.8	9.0	8.8	7.4	6.5	7.9	7.8	1.28
Very Little Insulated	1.0	1.7	1.3	Q	Q	Q	Q	Q	1.3	Q	Q	Q	Q	37.01
Amount Unknown/Not Reported	5.3	3.9	4.9	5.9	7.5	3.5	5.1	8.0	4.4	6.2	2.8	5.4	7.9	22.10
Don't Know	9.8	6.8	8.8	9.6	12.2	10.8	7.9	13.1	8.4	8.1	10.5	10.7	15.0	14.41
Floor Insulation														
No Basement/Crawlspac...	24.9	7.8	11.0	12.6	32.2	62.4	7.9	12.7	10.1	15.1	58.9	16.8	55.7	13.65
Basement/Crawlspac...	75.1	92.2	89.0	87.4	67.8	37.6	92.1	87.3	89.9	84.9	41.1	83.2	44.3	3.66
Heated	27.9	48.4	46.4	34.5	8.3	Q	44.4	39.1	50.7	22.7	Q	25.1	4.0	11.05
None or Part Heated	47.3	43.8	42.6	52.9	59.5	36.5	47.6	48.2	39.2	62.2	39.9	58.0	40.3	7.12
Floor Not Insulated	28.0	26.7	23.4	27.9	36.0	27.1	28.2	23.0	23.3	33.1	30.0	27.5	28.1	8.76
Floor Insulated	13.7	13.1	14.2	17.8	16.1	5.9	16.7	16.7	10.3	21.6	6.2	20.8	7.1	16.46
All Parts Insulated	10.5	10.6	10.2	12.7	14.2	4.3	11.3	Q	8.0	18.0	4.6	16.9	5.9	19.67
Some Parts Insulated	3.2	2.6	4.0	5.1	1.9	Q	5.4	7.3	2.8	3.5	Q	3.9	Q	22.12
Don't Know/Not Reported	5.6	4.0	5.0	7.3	7.4	3.4	2.7	8.6	4.8	7.6	3.8	9.7	5.2	21.22
Have Wall Insulation														
No	15.7	6.2	13.5	13.0	20.9	22.4	13.0	21.1	9.9	13.7	21.0	12.9	26.6	12.05
Yes	66.5	86.1	70.8	71.4	55.4	54.6	73.2	58.7	77.0	69.8	56.0	73.4	44.3	3.59
All Walls	54.4	75.6	56.3	57.3	45.6	44.8	59.2	46.2	64.0	59.1	46.0	55.9	34.3	4.61
Some Walls	12.1	10.4	14.5	14.1	9.8	9.8	14.0	12.5	13.0	10.7	10.0	17.5	10.0	11.08
Don't Know	17.8	7.8	15.8	15.6	23.7	23.0	13.8	20.2	13.1	16.4	23.0	13.6	29.1	10.54

See footnotes at end of table.

**Table 46. Conservation by Climate Zone and Census Region,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items		Climate Zone					Census Region and Climate Zone								RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Few- er than 4,000	Northeast		Midwest		South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Few- er than 4,000 HDD		5,500 HDD or More	Few- er than 5,500 HDD	4,000 HDD or More	Few- er than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Few- er than 4,000 HDD		
		Total													
RSE Column Factors		0.439	1.105	0.783	0.936	1.002	1.161	0.961	1.574	0.779	1.084	1.300	1.337	1.090	

Characteristics of Housing Unit

**Have Insulation Around:
Heating and/or Cooling
Ducts**

No	58.7	74.1	69.3	60.9	45.8	44.9	77.6	72.1	67.3	49.2	43.7	65.2	46.7	4.84
Yes	32.4	22.0	22.9	31.7	40.7	44.8	18.4	18.9	25.0	41.6	47.2	25.7	37.5	7.80
Don't Know	8.9	3.9	7.8	7.4	13.5	10.3	4.0	9.0	7.7	9.1	9.1	9.0	15.8	17.10
Hot Water Pipes														
No	56.8	58.9	60.2	56.6	50.3	57.4	61.9	62.3	61.3	48.6	56.3	51.9	57.2	4.90
Yes	34.1	36.9	32.4	35.8	34.3	32.6	33.8	31.2	32.5	41.7	34.9	36.0	23.2	6.47
Don't Know	9.2	4.1	7.4	7.6	15.5	9.9	4.3	6.6	6.1	9.7	8.7	12.1	19.5	19.80
Water Heater														
No	67.8	64.0	69.9	68.0	61.3	73.6	69.8	74.9	71.5	65.5	74.1	50.3	62.0	4.11
Yes	28.0	33.9	25.7	28.1	32.9	22.4	26.8	20.5	25.7	29.8	22.7	43.0	31.3	8.26
Don't Know	4.2	2.1	4.4	3.8	5.8	3.9	3.4	Q	2.8	4.7	3.2	6.7	6.7	22.63

NC = No cases in sample.

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. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 47. Conservation by Year of Construction,
Million U.S. Households, 1990**

Conservation-Related Items	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	Total	0.343	2.114	2.036	1.346	0.796	0.938	0.822	1.121	0.731
Total	94.0	2.8	5.1	8.0	21.4	14.8	13.4	7.0	21.5	6.09
Perceptions of Householders										
Plan to Live in Home										
Less than 1 Year	8.1	.2	.6	.7	2.4	1.2	.9	.4	1.7	16.07
1 to 2 Years	12.2	.2	1.4	1.4	3.0	2.1	1.1	.7	2.2	13.98
3 to 5 Years	9.4	.2	.5	1.2	2.2	1.5	1.3	.6	1.9	14.20
6 to 10 Years	6.2	.2	.6	.6	1.5	1.0	.9	.4	1.0	17.32
More than 10 Years	10.0	.8	.6	.9	2.3	1.4	1.5	.7	1.8	14.72
Rest of My Life	36.3	.9	1.1	2.2	7.3	5.7	6.1	3.4	9.5	8.54
Don't Know	11.7	Q	.2	1.0	2.6	2.0	1.6	.9	3.3	15.07
Winter Temperature Inside Housing Unit										
Prefer Usual Temperature	75.8	2.2	4.0	6.5	17.7	12.3	10.7	5.6	16.8	6.60
Prefer Warmer Temperature	14.8	.5	.9	1.3	2.9	2.0	2.2	1.1	3.9	12.43
Prefer Cooler Temperature	2.8	NC	Q	.2	.7	.4	.3	.2	.7	28.99
Adequacy of Insulation										
Well Insulated	34.4	1.9	2.4	3.8	7.4	5.9	5.3	1.9	5.8	8.55
Adequately Insulated	37.5	.7	2.2	2.9	9.5	5.7	5.6	2.9	8.0	8.16
Poorly Insulated	19.2	.2	.3	1.2	3.9	2.5	2.3	1.9	7.0	12.02
Don't Know	3.0	Q	.2	Q	.7	.7	.3	.2	.8	24.53
Reasons Unit Poorly Insulated (more than one may apply)										
Wall Insulation Inadequate	13.3	Q	Q	.6	2.4	1.7	1.6	1.5	5.4	12.70
Windows Leaky	12.7	Q	.2	.8	2.5	1.7	1.5	1.2	4.6	13.66
Doors Not Tight	11.5	Q	.2	.6	2.5	1.6	1.1	1.2	4.1	14.31
Ceiling Insulation										
Inadequate	10.7	Q	Q	.5	1.9	1.4	1.2	1.2	4.2	14.10
Caulking Inadequate	8.5	Q	Q	.3	1.6	1.1	1.0	.9	3.5	15.06
Don't Know4	NC	NC	Q	Q	Q	Q	Q	Q	64.78
Main Space-Heating Equipment Replaced in Past 3 Years (single-family units and mobile homes only)										
No	62.1	2.1	3.8	5.7	13.4	9.4	9.9	5.0	12.9	6.93
Yes	7.5	.3	Q	.3	1.0	1.3	1.7	.7	2.1	15.73
High Efficiency	5.7	.3	Q	Q	.7	1.1	1.2	.5	1.6	17.34
Not High Efficiency	1.1	Q	Q	Q	Q	Q	.3	Q	.3	42.77
Don't Know7	NC	NC	Q	.2	Q	Q	Q	.2	45.06

See footnotes at end of table.

**Table 47. Conservation by Year of Construction,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Year of Construction								RSE Row Factors	
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before		
		RSE Column Factors	0.343	2.114	2.036	1.346	0.796	0.938	0.822	1.121	0.731
Behavior of Householders											
Participation in Demand-Side Management Programs (more than one may apply)											
No/Don't Know	89.4	2.6	4.6	7.3	20.5	14.4	12.7	6.7	20.5	6.12	
Yes	4.6	Q	Q	.7	1.0	.4	.6	.3	.9	23.05	
Rebate	1.2	Q	Q	.3	.2	Q	Q	Q	.3	39.36	
Load Control	1.6	Q	Q	.4	.5	Q	Q	Q	.2	35.86	
Energy Audit	1.1	Q	Q	Q	Q	Q	.2	Q	.4	41.68	
Conservation	1.3	Q	Q	.3	Q	.3	Q	Q	.2	38.27	
Other1	NC	NC	Q	Q	Q	Q	Q	Q	77.06	
Winter Daytime Temperature											
Lower When No One Home											
No	43.0	1.1	2.3	3.6	9.0	6.6	6.1	3.5	10.7	8.12	
Yes	51.0	1.6	2.8	4.4	12.4	8.2	7.2	3.5	10.7	7.06	
Lower During Sleeping Hours											
No	45.3	1.4	2.7	4.3	10.4	7.0	5.7	3.7	10.0	8.22	
Yes	48.7	1.4	2.4	3.7	11.0	7.8	7.7	3.3	11.4	7.22	
Amount of Food Cooked in Microwave											
Most or All	6.5	.3	.4	.6	1.5	.9	1.1	.4	1.3	17.85	
About Half	15.1	.4	1.3	2.0	3.6	2.5	1.7	.9	2.7	11.15	
Some or Very Little	32.3	1.1	2.2	2.7	8.2	4.8	4.6	2.3	6.4	9.16	
Only for Snacks or Defrosting	20.1	.7	.9	1.5	4.2	3.5	3.3	1.7	4.4	10.34	
Don't Have or Use a Microwave	19.8	.3	.3	1.3	4.0	3.0	2.6	1.7	6.6	11.43	
Fluorescent Lamp Used More than 12 Hours											
No	85.2	2.5	4.7	7.4	19.1	13.4	11.8	6.5	19.7	6.29	
Yes	8.8	.2	.4	.7	2.3	1.4	1.5	.5	1.8	16.62	
Tuneup of Main Heating System in the Past 12 Months (single-family units and mobile homes only)											
No	41.7	1.9	2.7	4.0	8.6	5.9	6.6	3.4	8.5	7.58	
Yes	26.2	.5	1.0	1.8	5.5	4.4	4.8	2.1	6.1	10.10	
Don't Know	1.7	Q	Q	Q	.3	.3	Q	.2	.4	36.37	

See footnotes at end of table.

**Table 47. Conservation by Year of Construction,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	RSE Column Factors	0.343	2.114	2.036	1.346	0.796	0.938	0.822	1.121	0.731
Behavior of Householders										
Conservation Features Added in Past 3 Years (single-family units and mobile homes only) (more than one may apply)										
Automatic Setback or Clock Thermostat	5.9	0.4	0.4	0.4	1.2	0.9	1.2	0.4	1.1	17.85
Heat Pump	1.3	Q	Q	Q	Q	.3	.2	Q	Q	45.20
Wood-Burning Stove	2.6	.2	Q	Q	.7	.4	.3	Q	.5	24.81
Roof or Ceiling Insulation	8.4	1.5	.4	.3	1.1	1.2	1.4	.7	1.8	16.11
Wall Insulation	6.4	1.4	.3	.3	.8	.7	1.0	.3	1.5	17.15
Characteristics of Housing Unit										
Storm Windows as Percent of Total Windows										
100 Percent	47.9	2.1	3.0	4.2	10.7	6.4	6.9	3.6	11.1	7.75
76 to 99 Percent	6.2	Q	Q	.2	1.0	1.1	1.0	.6	2.0	17.42
51 to 75 Percent	4.1	NC	Q	Q	.7	.5	.5	.5	1.6	21.30
1 to 50 Percent	4.4	Q	Q	.3	.6	.5	.8	.3	1.9	21.01
No Storm Windows	31.5	.6	1.8	3.3	8.5	6.3	4.1	2.0	4.9	9.87
Storm Doors as Percent of Total Outside Doors										
100 Percent	37.6	1.2	1.7	2.3	7.6	5.6	6.4	3.5	9.5	8.54
51 to 99 Percent	8.1	Q	.5	.8	1.7	1.3	1.5	.3	1.8	16.86
1 to 50 Percent	13.9	.7	1.0	1.1	3.8	1.9	1.3	1.0	3.1	11.79
No Storm Doors	34.3	.7	2.0	3.7	8.4	6.1	4.2	2.2	7.2	8.68
Energy Efficient Means of Cooling Housing Unit (more than one may apply)										
Large Tree(s) that Shade the Roof	37.5	.8	1.0	1.5	7.1	7.0	6.7	3.6	9.8	8.06
Large Tree(s) that Shade the Windows	39.8	.8	1.4	2.0	7.8	7.2	6.6	3.4	10.5	7.92
Shutters or Awnings	13.4	.2	.4	.9	2.8	1.9	2.9	1.4	3.0	13.42
Blinds or Insulated Thermal Drapes	52.5	1.9	3.7	4.7	12.7	7.6	8.1	3.4	10.3	7.19
Reflective Film on Windows	4.8	.3	.3	.6	1.3	.9	.8	Q	.6	18.38
None of Above	20.3	.5	.8	2.3	4.9	3.2	2.4	1.3	5.1	11.56

See footnotes at end of table.

**Table 47. Conservation by Year of Construction,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	RSE Column Factors	0.343	2.114	2.036	1.346	0.796	0.938	0.822	1.121	0.731
Characteristics of Housing Unit										
Total Single-Family Units and Mobile Homes Only	69.6	2.4	3.9	5.9	14.4	10.7	11.5	5.7	15.0	6.54
Have Caulking										
No	20.3	.5	.8	2.1	3.8	2.8	3.3	2.0	5.0	10.69
Yes	46.8	1.8	2.8	3.5	9.9	7.7	8.0	3.5	9.6	7.83
Don't Know	2.5	Q	.3	.3	.7	.2	.2	.2	.4	27.69
Have Weather Stripping										
No	26.0	.7	1.1	2.1	5.1	4.0	4.2	2.5	6.3	10.43
Yes	41.9	1.7	2.6	3.6	8.9	6.5	7.1	3.0	8.4	8.26
Don't Know	1.7	Q	Q	.3	.4	Q	.2	Q	.3	34.71
Have Roof or Ceiling Insulation										
No	7.0	Q	Q	.2	.5	.9	1.0	.9	3.2	19.04
Yes	55.8	2.2	3.3	5.2	12.2	8.8	9.6	4.3	10.3	7.07
All Insulated	45.8	2.0	2.8	4.4	10.4	7.5	7.8	3.2	7.6	7.55
Part Insulated	5.6	Q	Q	.3	1.0	.8	1.1	.5	1.8	17.01
Very Little Insulated	.7	Q	Q	Q	Q	Q	Q	Q	.2	49.01
Amount Unknown/Not Reported	3.7	Q	.4	.4	.7	.5	.6	.4	.6	23.11
Don't Know	6.8	Q	.4	.5	1.7	1.0	1.0	.6	1.5	17.82
Floor Insulation										
No Basement/Crawlspace	17.3	.7	1.3	2.9	5.2	3.6	2.0	.8	.7	14.34
Basement/Crawlspace	52.3	1.8	2.5	3.0	9.2	7.1	9.5	4.9	14.3	7.50
Heated	19.4	.9	1.0	1.0	2.9	2.6	3.6	1.7	5.7	12.16
None or Part Heated	32.9	.9	1.5	2.0	6.3	4.5	5.9	3.2	8.6	8.97
Floor Not Insulated	19.5	.3	.5	.7	2.4	2.6	3.9	2.2	6.9	11.98
Floor Insulated	9.5	.6	.8	1.0	3.0	1.4	1.1	.5	1.2	15.27
All Parts Insulated	7.3	.5	.8	.9	2.4	1.0	.7	.3	.6	17.39
Some Parts Insulated	2.2	Q	Q	Q	.5	.3	.4	.2	.6	28.99
Don't Know	3.9	Q	Q	.3	.9	.5	.9	.5	.5	22.06
Have Wall Insulation										
No	10.9	Q	Q	.2	.8	1.6	2.1	1.6	4.4	16.77
Yes	46.3	2.1	3.0	4.7	11.0	7.1	7.1	2.9	8.3	7.32
All Walls	37.8	2.1	2.9	4.3	9.5	5.9	5.6	1.9	5.5	8.14
Some Walls	8.4	Q	Q	.4	1.5	1.2	1.5	.9	2.8	14.67
Don't Know	12.4	Q	.8	1.1	2.6	2.0	2.2	1.2	2.3	14.04

See footnotes at end of table.

**Table 47. Conservation by Year of Construction,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	Total	RSE Column Factors	0.343	2.114	2.036	1.346	0.796	0.938	0.822	1.121
Characteristics of Housing Unit										
Have Insulation Around:										
Heating and/or Cooling Ducts										
No	40.8	1.1	1.3	2.3	6.7	6.0	7.8	4.0	11.8	8.31
Yes	22.6	1.2	1.6	2.7	6.3	4.0	3.0	1.3	2.6	10.35
Don't Know	6.2	.2	1.0	1.0	1.4	.7	.8	.4	.7	19.29
Hot Water Pipes										
No	39.5	1.3	1.6	2.4	6.8	6.4	7.4	3.6	10.0	8.25
Yes	23.7	.9	1.5	2.4	5.9	3.5	3.4	1.7	4.3	10.04
Don't Know	6.4	.2	.8	1.1	1.7	.8	.7	.4	.6	19.01
Water Heater										
No	47.2	1.9	2.0	4.1	9.0	7.7	8.2	3.9	10.5	7.68
Yes	19.5	.4	1.4	1.5	4.8	2.8	3.0	1.5	4.1	10.77
Don't Know	2.9	Q	.4	.3	.6	.3	.4	.3	.5	26.61

¹ Does not include all new construction for 1990.

NC = No cases in sample.

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

-- = Data not applicable.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 48. Conservation by Year of Construction,
Percent of U.S. Households, 1990**

Conservation-Related Items	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	RSE Column Factors	0.400	1.917	1.923	1.327	0.796	0.917	0.846	1.159	0.712
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Perceptions of Householders										
Plan to Live in Home										
Less than 1 Year	8.7	6.3	12.2	9.3	11.4	8.0	6.5	5.3	8.1	15.01
1 to 2 Years	13.0	9.0	28.4	18.0	14.1	13.8	8.0	10.0	10.4	12.41
3 to 5 Years	10.0	8.0	10.6	14.5	10.4	10.2	9.4	8.7	8.7	13.25
6 to 10 Years	6.6	8.4	11.2	7.5	7.2	6.4	7.0	5.1	4.5	16.13
More than 10 Years	10.6	28.6	11.6	10.7	10.7	9.7	11.3	9.3	8.5	13.11
Rest of My Life	38.7	33.6	22.2	27.9	34.1	38.2	45.8	48.1	44.5	7.24
Don't Know	12.5	Q	3.7	12.1	12.1	13.6	12.0	13.5	15.2	13.90
Winter Temperature Inside Housing Unit										
Prefer Usual Temperature	80.7	78.7	78.0	80.6	82.8	83.3	80.2	80.3	78.1	2.40
Prefer Warmer Temperature	15.7	17.5	17.6	15.9	13.6	13.8	16.3	15.7	18.1	11.08
Prefer Cooler Temperature	2.9	NC	Q	3.0	3.3	2.7	2.5	3.3	3.3	27.67
Adequacy of Insulation										
Well Insulated	36.6	67.6	47.6	47.5	34.7	39.6	39.4	27.5	26.9	6.35
Adequately Insulated	39.9	25.0	43.5	36.5	44.2	38.6	41.7	41.3	37.1	6.05
Poorly Insulated	20.4	5.5	6.0	14.5	18.0	16.9	16.9	27.6	32.4	10.63
Don't Know	3.2	Q	3.0	Q	3.1	4.9	2.0	3.5	3.5	23.71
Reasons Unit Poorly Insulated (more than one may apply)										
Wall Insulation Inadequate	14.1	Q	Q	7.0	11.0	11.5	11.6	21.7	25.1	10.94
Windows Leaky	13.5	Q	4.7	10.3	11.9	11.6	10.9	17.3	21.5	12.45
Doors Not Tight	12.2	Q	4.4	7.6	11.8	11.0	8.3	16.7	19.0	13.21
Ceiling Insulation										
Inadequate	11.4	Q	Q	6.1	8.8	9.7	9.3	17.0	19.5	12.75
Caulking Inadequate	9.0	Q	Q	3.5	7.3	7.2	7.3	12.5	16.3	14.11
Don't Know	.4	NC	NC	Q	Q	Q	Q	Q	Q	55.56
Main Space-Heating Equipment Replaced in Past 3 Years (single-family units and mobile homes only)										
No	89.3	86.2	97.8	95.3	92.8	88.1	85.7	88.0	85.8	1.57
Yes	10.7	13.8	Q	4.7	7.2	11.9	14.3	12.0	14.2	15.05
High Efficiency	8.2	12.0	Q	Q	4.8	10.6	10.1	9.2	11.0	16.60
Not High Efficiency	1.5	Q	Q	Q	Q	Q	2.6	Q	1.7	40.33
Don't Know	1.1	NC	NC	Q	1.3	Q	Q	Q	1.5	42.85

See footnotes at end of table.

**Table 48. Conservation by Year of Construction,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	RSE Column Factors	0.400	1.917	1.923	1.327	0.796	0.917	0.846	1.159	0.712
Behavior of Householders										
Participation in Demand-Side Management Programs (more than one may apply)										
No/Don't Know	95.1	94.8	91.2	90.8	95.6	97.0	95.2	95.9	95.7	1.45
Yes	4.9	Q	Q	9.2	4.4	3.0	4.8	4.1	4.3	21.74
Rebate	1.3	Q	Q	3.4	.8	Q	Q	Q	1.2	37.73
Load Control	1.7	Q	Q	4.4	2.4	Q	Q	Q	.9	33.42
Energy Audit	1.2	Q	Q	Q	Q	Q	1.5	Q	1.7	39.44
Conservation	1.4	Q	Q	Q	1.6	Q	1.9	Q	1.1	36.77
Other1	NC	NC	Q	Q	Q	Q	Q	Q	66.09
Winter Daytime Temperature										
Lower When No One Home										
No	45.8	40.4	45.7	45.5	41.9	44.7	45.8	49.6	49.9	5.56
Yes	54.2	59.6	54.3	54.5	58.1	55.3	54.2	50.4	50.1	4.64
Lower During Sleeping Hours										
No	48.2	50.4	52.4	53.8	48.6	47.5	42.8	52.5	46.8	5.21
Yes	51.8	49.6	47.6	46.2	51.4	52.5	57.2	47.5	53.2	5.04
Amount of Food Cooked in Microwave										
Most or All	6.9	10.2	8.2	7.4	7.0	6.3	8.0	5.1	6.1	16.48
About Half	16.1	14.1	24.7	25.0	16.8	17.0	13.1	13.5	12.4	10.07
Some or Very Little	34.4	39.6	42.6	33.1	38.2	32.7	34.5	33.2	29.9	6.84
Only for Snacks and or Defrosting	21.4	23.9	17.7	18.6	19.4	23.7	24.7	23.9	20.5	8.74
Don't Have or Use a Microwave	21.1	12.2	6.8	15.9	18.5	20.2	19.2	23.9	31.0	9.86
Fluorescent Lamp Used More than 12 Hours										
No	90.6	91.4	91.5	91.8	89.3	90.8	88.5	92.3	91.8	1.56
Yes	9.4	8.6	8.5	8.2	10.7	9.2	11.5	7.7	8.2	15.79
Tuneup of Main Heating System in the Past 12 Months (single-family units and mobile homes only)										
No	59.9	79.2	68.9	66.7	59.9	55.4	57.6	59.7	56.7	4.04
Yes	37.7	20.1	26.7	30.2	38.1	41.6	41.2	37.0	40.7	7.24
Don't Know	2.4	Q	Q	Q	2.1	3.0	Q	3.2	2.6	34.39

See footnotes at end of table.

**Table 48. Conservation by Year of Construction,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	Total	0.400	1.917	1.923	1.327	0.796	0.917	0.846	1.159	0.712
Behavior of Householders										
Conservation Features Added in Past 3 Years (single-family units and mobile homes only) (more than one may apply)										
Automatic Setback or Clock Thermostat	8.5	16.3	10.4	5.9	8.5	8.4	10.7	6.5	7.1	16.92
Heat Pump	1.8	Q	Q	Q	Q	2.6	1.6	Q	Q	42.47
Wood-Burning Stove	3.8	6.7	Q	Q	4.8	3.6	2.5	Q	3.5	24.04
Roof or Ceiling Insulation	12.1	59.9	10.0	5.8	7.8	11.0	12.5	12.8	11.8	14.17
Wall Insulation	9.1	58.6	7.8	5.7	5.3	6.5	9.0	5.1	10.0	15.16
Characteristics of Housing Unit										
Storm Windows as Percent of Total Windows										
100 Percent	51.0	74.1	59.6	52.1	49.7	42.9	51.5	51.6	51.8	5.11
76 to 99 Percent	6.6	Q	Q	2.4	4.8	7.5	7.7	8.5	9.2	16.32
51 to 75 Percent	4.3	NC	Q	Q	3.1	3.3	4.1	7.8	7.4	20.88
1 to 50 Percent	4.6	Q	Q	3.3	2.6	3.5	6.1	3.9	8.6	20.14
No Storm Windows	33.5	20.8	35.2	40.8	39.7	42.7	30.6	28.2	23.0	8.16
Storm Doors as Percent of Total Outside Doors										
100 Percent	40.0	41.6	32.7	28.6	35.4	37.7	47.9	50.0	44.1	6.27
51 to 99 Percent	8.6	Q	9.3	10.4	8.0	8.5	11.3	4.7	8.2	15.59
1 to 50 Percent	14.8	25.9	19.4	14.3	17.6	12.8	9.5	14.7	14.4	10.59
No Storm Doors	36.5	23.8	38.6	46.7	39.1	40.9	31.3	30.6	33.3	7.04
Energy Efficient Means of Cooling Housing Unit (more than one may apply)										
Large Tree(s) that Shade the Roof	39.9	29.2	19.2	18.6	33.2	47.5	49.7	51.7	45.8	6.54
Large Tree(s) that Shade the Windows	42.4	27.9	28.3	24.5	36.6	48.8	49.7	49.0	48.8	6.28
Shutters or Awnings	14.3	7.7	7.6	11.5	12.9	13.0	21.4	19.7	13.8	12.32
Blinds or Insulated Thermal Drapes	55.8	68.4	73.5	58.7	59.2	61.5	60.2	49.0	48.0	4.26
Reflective Film on Windows	5.1	10.2	5.5	7.0	5.9	5.7	6.2	Q	2.9	17.97
None of Above	21.6	16.8	15.2	28.8	22.8	21.5	17.6	17.8	23.7	10.27

See footnotes at end of table.

**Table 48. Conservation by Year of Construction,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	RSE Column Factors	0.400	1.917	1.923	1.327	0.796	0.917	0.846	1.159	0.712
Characteristics of Housing Unit										
Total Single-Family Units and Mobile Homes Only	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Have Caulking										
No	29.1	22.2	20.8	35.0	26.1	25.8	28.7	35.3	33.3	9.11
Yes	67.3	72.4	72.5	59.2	68.8	71.9	69.5	61.8	64.2	4.03
Don't Know	3.5	Q	6.7	5.8	5.1	2.3	1.8	2.9	2.5	25.88
Have Weather Stripping										
No	37.3	27.6	27.4	35.0	35.4	37.7	36.6	44.4	41.9	8.34
Yes	60.2	70.5	67.0	60.7	61.9	60.8	61.5	53.1	56.1	4.91
Don't Know	2.5	Q	Q	4.3	2.7	Q	1.9	Q	2.0	33.05
Have Roof or Ceiling Insulation										
No	10.0	Q	Q	4.2	3.7	8.3	8.8	15.1	21.5	17.51
Yes	80.1	89.7	85.8	86.9	84.4	82.8	82.9	75.0	68.4	2.62
All Insulated	65.8	83.7	73.1	74.6	72.2	70.0	67.4	56.9	50.6	3.66
Part Insulated	8.1	Q	Q	4.6	6.8	7.6	9.3	9.5	12.3	16.22
Very Little Insulated	1.0	Q	Q	Q	Q	Q	Q	Q	Q	45.51
Amount Unknown/Not Reported	5.3	Q	11.4	7.1	4.7	4.4	5.3	6.7	4.2	21.67
Don't Know	9.8	Q	11.5	9.0	11.9	8.9	8.3	10.0	10.2	15.90
Floor Insulation										
No Basement/Crawlspace	24.9	26.7	34.0	49.2	36.3	33.9	17.7	13.8	4.8	11.97
Basement/Crawlspace	75.1	73.3	66.0	50.8	63.7	66.1	82.3	86.2	95.2	4.35
Heated	27.9	35.6	27.1	17.7	19.9	24.3	31.1	30.3	37.7	10.30
None or Part Heated	47.3	37.7	38.9	33.1	43.8	41.7	51.2	56.0	57.5	6.84
Floor Not Insulated	28.0	11.6	12.2	11.5	16.7	24.0	33.9	39.1	46.1	10.51
Floor Insulated	13.7	23.1	21.9	17.0	20.6	12.8	9.2	8.1	8.3	14.23
All Parts Insulated	10.5	21.6	20.8	14.9	17.0	9.7	6.2	4.4	4.1	16.83
Some Parts Insulated	3.2	Q	Q	Q	3.6	3.1	3.0	3.6	4.2	27.37
Don't Know	5.6	Q	Q	4.5	6.5	5.0	8.1	8.7	3.1	20.99
Have Wall Insulation										
No	15.7	Q	Q	2.7	5.7	14.7	18.6	27.9	29.4	14.65
Yes	66.5	87.7	77.7	78.8	76.5	66.5	61.9	50.5	55.3	4.00
All Walls	54.4	85.9	75.2	72.2	65.8	55.6	48.7	34.2	36.9	4.96
Some Walls	12.1	Q	Q	6.6	10.7	10.9	13.2	16.3	18.4	13.54
Don't Know	17.8	Q	19.6	18.6	17.7	18.8	19.5	21.6	15.3	11.39

See footnotes at end of table.

**Table 48. Conservation by Year of Construction,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	Year of Construction								RSE Row Factors
		1988 to 1990 ¹	1985 to 1987	1980 to 1984	1970 to 1979	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
	RSE Column Factors	0.400	1.917	1.923	1.327	0.796	0.917	0.846	1.159	0.712
Characteristics of Housing Unit										
Have Insulation Around:										
Heating and/or Cooling Ducts										
No	58.7	43.2	32.7	38.6	46.7	56.3	67.3	69.8	78.2	5.32
Yes	32.4	48.8	40.3	45.3	43.8	37.3	26.8	22.6	17.0	7.63
Don't Know	8.9	8.0	27.0	16.1	9.5	6.3	6.9	7.6	4.8	17.94
Hot Water Pipes										
No	56.8	52.2	41.3	40.2	47.0	60.1	64.4	62.9	66.8	5.20
Yes	34.1	37.8	38.1	41.2	41.1	32.8	29.3	30.2	28.9	7.41
Don't Know	9.2	10.0	20.5	18.6	11.9	7.0	6.3	6.9	4.3	17.61
Water Heater										
No	67.8	79.7	52.4	68.4	62.1	71.7	70.8	68.6	69.6	3.79
Yes	28.0	14.6	37.6	25.8	33.5	25.8	26.0	25.8	27.2	8.70
Don't Know	4.2	Q	10.0	5.8	4.4	2.5	3.2	5.6	3.2	25.17

¹ Does not include all new construction for 1990.

NC = No cases in sample.

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

-- = Data not applicable.

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. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 49. Conservation by Family Income,
Million U.S. Households, 1990**

Conservation-Related Items	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent			
		RSE Column Factors:	0.419	1.939	1.336	1.113	0.934	0.934	0.952	0.956	1.235	1.045	0.808
Total	94.0	5.2	10.7	11.4	17.4	15.3	16.7	17.3	13.2	18.2	27.9		4.04
Perceptions of Householders													
Plan to Live in Home													
Less than 1 Year	8.1	.8	.9	1.1	1.8	1.2	1.2	1.2	1.5	1.8	2.7		11.83
1 to 2 Years	12.2	.6	1.0	1.9	2.4	2.1	2.4	1.8	1.8	2.3	3.2		11.01
3 to 5 Years	9.4	.5	.4	.7	1.8	1.5	2.1	2.4	1.1	1.4	2.1		12.49
6 to 10 Years	6.2	Q	.2	.3	.9	1.1	1.2	2.2	.5	.7	1.0		18.24
More than 10 Years	10.0	Q	.3	.6	1.4	1.8	2.4	3.3	.6	.9	1.5		14.95
Rest of My Life	36.3	2.1	6.1	5.4	6.3	5.7	5.8	4.9	5.4	8.2	13.0		6.67
Don't Know	11.7	1.0	1.7	1.4	2.8	1.8	1.6	1.5	2.3	2.9	4.3		10.69
Winter Temperature Inside Housing Unit													
Prefer Usual Temperature	75.8	4.2	8.4	9.4	13.9	12.5	13.9	13.5	10.1	14.1	22.0		4.47
Prefer Warmer Temperature	14.8	.9	2.0	1.6	2.7	2.3	2.3	3.1	2.6	3.6	4.9		9.64
Prefer Cooler Temperature	2.8	Q	Q	.3	.6	.4	.5	.6	.3	.5	.8		24.31
Adequacy of Insulation													
Well Insulated	34.4	1.6	3.8	3.9	5.4	5.3	7.1	7.3	4.1	5.9	9.3		7.27
Adequately Insulated	37.5	1.7	3.5	4.3	7.6	6.3	6.7	7.2	4.4	6.2	9.7		6.04
Poorly Insulated	19.2	1.5	2.7	2.6	3.8	3.3	2.7	2.6	3.8	5.1	7.4		8.05
Don't Know	3.0	.3	.6	.5	.6	.4	.3	Q	.8	1.0	1.4		19.50
Reasons Unit Poorly Insulated (more than one may apply)													
Wall Insulation Inadequate	13.3	1.0	1.8	1.9	2.7	2.1	1.9	1.8	2.7	3.6	5.1		9.44
Windows Leaky	12.7	1.1	1.6	1.5	2.9	2.2	1.8	1.5	2.6	3.5	4.7		10.15
Doors Not Tight	11.5	1.0	1.6	1.5	2.7	2.0	1.5	1.1	2.5	3.3	4.6		10.22
Ceiling Insulation													
Inadequate	10.7	.7	1.6	1.3	2.1	1.6	1.8	1.6	2.2	2.9	4.0		9.88
Caulking Inadequate	8.5	.9	1.2	1.1	2.0	1.3	1.2	.8	2.1	2.7	3.4		11.76
Don't Know4	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		53.07
Main Space-Heating Equipment Replaced in Past 3 Years (single-family units and mobile homes only)													
No	62.1	2.2	6.3	6.8	11.1	10.3	12.2	13.2	7.2	10.5	16.7		5.18
Yes	7.5	.4	.7	.8	1.3	1.1	1.4	1.7	.9	1.2	1.9		13.77
High Efficiency	5.7	.2	.4	.6	.9	.9	1.2	1.5	.5	.7	1.2		16.10
Not High Efficiency	1.1	Q	Q	Q	.3	Q	Q	Q	.3	.4	.5		31.57
Don't Know7	Q	Q	Q	Q	Q	Q	Q	Q	.2	.3		36.85

See footnotes at end of table.

**Table 49. Conservation by Family Income,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors	
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent				
		RSE Column Factors:	0.419	1.939	1.336	1.113	0.934	0.934	0.952	0.956	1.235	1.045	0.808	
Behavior of Householders														
Participation in Demand-Side Management Programs (more than one may apply)														
No/Don't Know	89.4	5.1	10.4	10.9	16.6	14.5	15.9	16.0	12.7	17.6	26.9	4.16		
Yes	4.6	Q	.3	.5	.8	.7	.8	1.2	.4	.6	1.0	19.82		
Rebate	1.2	Q	Q	Q	Q	Q	Q	.2	.3	.2	.2	.3	32.82	
Load Control	1.6	Q	NC	Q	.4	Q	Q	.4	.6	Q	Q	.2	35.38	
Energy Audit	1.1	NC	Q	.2	.2	.2	Q	.3	Q	Q	.3	34.49		
Conservation	1.3	Q	Q	Q	.3	.2	.2	.4	Q	Q	Q	.3	33.97	
Other1	NC	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	63.13	
Winter Daytime Temperature														
Lower When No One Home														
No	43.0	2.7	5.4	5.1	8.0	6.8	7.6	7.5	6.6	8.8	13.5	5.96		
Yes	51.0	2.5	5.3	6.3	9.5	8.5	9.1	9.8	6.6	9.4	14.4	5.31		
Lower During Sleeping Hours														
No	45.3	3.0	5.2	5.5	8.4	7.7	7.9	7.5	7.1	9.4	14.1	5.71		
Yes	48.7	2.2	5.5	5.8	9.0	7.6	8.8	9.8	6.1	8.8	13.8	5.16		
Amount of Food Cooked In Microwave														
Most or All	6.5	.2	.6	.9	1.3	1.0	1.3	1.1	.6	.9	1.4	16.70		
About Half	15.1	.5	.9	1.5	2.5	3.0	3.1	3.6	1.1	1.7	2.7	10.21		
Some or Very Little	32.3	1.0	2.8	3.0	5.8	5.5	6.7	7.5	2.9	4.4	7.6	7.02		
Only for Snacks or Defrosting	20.1	.9	2.4	2.2	3.7	3.3	4.0	3.5	2.7	4.0	6.0	8.50		
Don't Have or Use a Microwave	19.8	2.6	4.0	3.8	4.1	2.4	1.5	1.5	5.8	7.2	10.1	7.61		
Fluorescent Lamp Used More than 12 Hours														
No	85.2	4.9	10.0	10.6	16.2	13.8	14.8	14.9	12.3	16.9	26.0	4.24		
Yes	8.8	.3	.7	.8	1.3	1.5	2.0	2.3	.9	1.3	1.8	14.36		
Tuneup of Main Heating System in the Past 12 Months (single-family units and mobile homes only)														
No	41.7	1.9	4.7	5.0	7.5	6.7	7.9	8.1	5.8	8.4	12.5	6.35		
Yes	26.2	.6	2.2	2.3	4.4	4.4	5.7	6.6	2.0	2.9	5.5	8.72		
Don't Know	1.7	Q	.1	.4	.5	.3	Q	.2	.3	.4	.7	27.43		

See footnotes at end of table.

**Table 49. Conservation by Family Income,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent			
		RSE Column Factors:	0.419	1.939	1.336	1.113	0.934	0.934	0.952	0.956	1.235	1.045	0.808

Behavior of Householders

Conservation Features

Added in Past 3 Years
(single-family units and
mobile homes only)

(more than one may apply)

Automatic Setback or Clock Thermostat	5.9	Q	0.3	0.3	0.7	0.7	1.5	2.5	0.2	0.4	0.8	21.17
Heat Pump	1.3	Q	Q	Q	Q	Q	.4	.3	Q	Q	Q	31.59
Wood-Burning Stove	2.6	Q	.4	.2	.5	.5	.6	.4	.5	.7	.9	24.70
Roof or Ceiling Insulation	8.4	0.2	.6	.5	1.3	1.5	1.9	2.5	.6	1.0	1.4	16.48
Wall Insulation	6.4	Q	.3	.4	.8	1.1	1.5	2.1	.4	.6	1.0	17.42

Characteristics of Housing Unit

Storm Windows as Percent of Total Windows

100 Percent	47.8	2.1	5.4	5.6	8.0	7.8	9.2	9.8	5.5	7.8	13.0	5.64
76 to 99 Percent	6.2	.3	.5	.5	1.3	1.1	.9	1.3	.7	.9	1.6	13.97
51 to 75 Percent	4.1	2	.3	.4	.7	.7	.9	.7	.6	.7	1.0	18.54
1 to 50 Percent	4.4	.3	.5	.6	.9	.7	.6	.8	.6	1.0	1.4	16.42
No Storm Windows	31.5	2.3	3.9	4.3	6.4	4.9	5.1	4.6	5.8	7.8	10.8	7.37

Storm Doors as Percent of Total Outside Doors

100 Percent	37.6	1.4	4.1	4.4	6.8	6.6	7.5	6.7	3.9	5.9	10.2	6.28
51 to 99 Percent	8.1	Q	.5	.5	1.3	1.3	1.6	2.8	.4	.7	1.4	16.03
1 to 50 Percent	13.9	.7	1.6	1.6	2.6	2.5	2.6	2.3	1.9	2.7	4.0	9.67
No Storm Doors	34.3	2.9	4.6	4.8	6.7	4.8	5.0	5.5	6.9	8.9	12.3	6.64

Energy Efficient Means of Cooling Housing Unit (more than one may apply)

Large Tree(s) that Shade the Roof	37.5	1.8	3.8	4.4	6.8	6.3	6.8	7.6	4.5	6.5	10.5	6.45
Large Tree(s) that Shade the Windows	39.8	1.9	4.0	4.4	7.0	6.7	7.6	8.1	4.7	6.7	10.9	5.93
Shutters or Awnings	13.4	.5	1.6	1.7	2.5	1.9	2.5	2.6	1.4	2.2	3.9	11.55
Blinds or Insulated Thermal Drapes	52.5	2.1	4.4	5.8	9.3	9.2	10.2	11.4	5.4	7.7	12.7	6.01
Reflective Film on Windows	4.8	Q	.3	.4	.7	.6	1.4	1.2	.3	.6	.8	17.89
None of Above	20.3	1.8	3.3	3.0	4.1	2.9	2.8	2.4	4.4	5.7	8.0	8.89

See footnotes at end of table.

**Table 49. Conservation by Family Income,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent			
	RSE Column Factors:	0.419	1.939	1.336	1.113	0.934	0.934	0.952	0.956	1.235	1.045	0.808	
Characteristics of Housing Unit													
Total Single-Family Units and Mobile Homes Only	69.6	2.6	7.0	7.6	12.3	11.4	13.6	14.9	8.1	11.7	18.6	4.95	
Have Caulking													
No	20.3	1.3	2.9	2.9	4.3	3.2	2.9	2.7	3.9	5.1	7.6	9.16	
Yes	46.8	1.2	3.8	4.4	7.3	7.9	10.4	11.9	3.8	6.0	10.2	6.64	
Don't Know	2.5	Q	.3	.3	.7	.4	.3	.3	.4	.6	.8	23.13	
Have Weather Stripping													
No	26.0	1.3	3.3	3.6	5.5	4.0	4.5	3.7	4.1	5.9	9.2	7.97	
Yes	41.9	1.2	3.5	3.8	6.4	7.1	8.8	11.1	3.6	5.4	8.9	6.75	
Don't Know	1.7	Q	.2	.2	.5	.3	.3	Q	.3	.4	.5	24.60	
Have Roof or Ceiling Insulation													
No	7.0	.6	1.2	1.0	1.4	1.1	1.0	.8	1.5	2.2	3.1	13.83	
Yes	55.8	1.7	5.0	5.3	9.2	9.3	11.7	13.5	5.2	7.8	12.9	5.84	
All Insulated	45.8	1.4	4.0	4.3	7.5	7.6	9.9	11.1	4.0	6.0	10.2	6.55	
Part Insulated	5.6	Q	.4	.6	.9	.8	1.3	1.5	.5	.8	1.4	14.45	
Very Little Insulated	.7	Q	Q	Q	Q	Q	Q	Q	.2	Q	.2	39.73	
Amount Unknown/Not Reported	3.7	Q	.4	.5	.6	.8	.5	.8	.6	.8	1.1	20.55	
Don't Know	6.8	.4	.9	1.3	1.7	1.0	.9	.6	1.4	1.7	2.7	14.64	
Floor Insulation													
No Basement/Crawlspace	17.3	.4	1.5	1.7	3.1	2.5	4.0	4.1	1.6	2.5	4.1	12.25	
Basement/Crawlspace	52.3	2.3	5.5	6.0	9.2	8.9	9.6	10.8	6.5	9.2	14.6	5.74	
Heated	19.4	.5	1.3	1.7	3.1	3.6	4.1	5.1	1.3	2.0	3.8	10.84	
None or Part Heated	32.9	1.8	4.3	4.2	6.1	5.3	5.5	5.7	5.2	7.2	10.7	7.02	
Floor Not Insulated	19.5	1.2	2.6	2.7	3.5	3.1	2.8	3.5	3.3	4.5	6.7	8.42	
Floor Insulated	9.5	.4	1.2	1.0	1.6	1.5	2.1	1.8	1.3	1.9	2.8	13.69	
All Parts Insulated	7.3	.4	1.1	.8	1.2	1.1	1.4	1.3	1.2	1.6	2.4	15.40	
Some Parts Insulated	2.2	Q	Q	.2	.4	.4	.6	.5	.2	.3	.4	25.23	
Don't Know	3.9	.2	.5	.6	.9	.7	.6	.4	.6	.8	1.3	18.32	
Have Wall Insulation													
No	10.9	.8	1.7	1.4	2.1	1.6	1.5	1.9	2.1	3.0	4.2	11.08	
Yes	46.3	1.3	4.0	4.6	7.4	7.8	9.9	11.2	4.2	6.4	10.6	6.48	
All Walls	37.8	1.1	3.2	3.7	6.0	6.3	8.2	9.3	3.4	4.9	8.5	7.33	
Some Walls	8.4	.2	.7	1.0	1.4	1.5	1.7	1.9	.8	1.5	2.2	12.66	
Don't Know	12.4	.6	1.3	1.6	2.8	2.0	2.2	1.8	1.8	2.3	3.8	10.61	

See footnotes at end of table.

**Table 49. Conservation by Family Income,
Million U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors	
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent				
		RSE Column Factors:	0.419	1.939	1.336	1.113	0.934	0.934	0.952	0.956	1.235	1.045	0.808	
Characteristics of Housing Unit														
Have Insulation Around:														
Heating and/or Cooling Ducts														
No	40.8	2.0	5.3	5.2	7.4	6.5	6.9	7.4	6.3	8.7	13.4	6.5 ¹		
Yes	22.6	.4	1.2	1.8	3.3	3.9	5.5	6.4	1.3	2.3	4.0	9.97		
Don't Know	6.2	.2	.5	.6	1.6	1.0	1.3	1.1	.5	.7	1.3	17.85		
Hot Water Pipes														
No	39.5	1.7	4.5	4.2	7.1	6.6	6.9	8.6	5.2	7.1	11.2	6.22		
Yes	23.7	.7	1.9	2.7	3.9	3.8	5.5	5.3	2.1	3.5	5.7	8.87		
Don't Know	6.4	.3	.6	.7	1.3	1.0	1.3	1.1	.9	1.2	1.8	15.66		
Water Heater														
No	47.2	1.8	4.9	4.9	7.9	7.8	9.2	10.6	5.8	8.0	12.6	5.84		
Yes	19.5	.6	1.9	2.3	3.6	3.1	4.0	4.0	1.9	3.1	5.0	9.93		
Don't Know	2.9	.2	.3	.4	.8	.6	.4	.3	.4	.6	.9	21.49		

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

NC = No cases in sample.

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

-- = Data not applicable.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

**Table 50. Conservation by Family Income,
Percent of U.S. Households, 1990**

Conservation-Related Items	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent			
	RSE Column Factors	0.467	1.872	1.283	1.129	0.955	0.966	0.980	0.919	1.179	1.003	0.803	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Perceptions of Householders													
Plan to Live in Home													
Less than 1 Year	8.7	14.9	8.0	10.0	10.2	7.6	7.4	6.9	11.2	10.0	9.8	11.29	
1 to 2 Years	13.0	11.2	9.4	16.5	13.9	14.0	14.5	10.2	13.6	12.6	11.4	10.03	
3 to 5 Years	10.0	10.1	3.8	6.0	10.6	10.0	12.5	13.6	8.3	7.8	7.7	11.85	
6 to 10 Years	6.6	Q	2.3	3.0	5.1	7.4	7.2	12.6	4.0	3.7	3.6	17.97	
More than 10 Years	10.6	Q	3.2	5.2	8.2	11.6	14.5	19.2	4.2	4.9	5.4	14.13	
Rest of My Life	38.7	41.0	57.5	47.1	36.1	37.4	34.5	28.5	41.2	44.9	46.7	5.32	
Don't Know	12.5	18.2	15.8	12.2	15.9	12.0	9.4	8.9	17.5	16.1	15.4	10.06	
Winter Temperature Inside Housing Unit													
Prefer Usual Temperature	80.7	80.8	78.8	82.9	79.9	81.5	82.9	78.1	77.0	77.4	78.8	2.04	
Prefer Warmer Temperature	15.7	16.9	19.0	13.8	15.3	14.9	13.7	17.7	19.8	19.5	17.7	8.67	
Prefer Cooler Temperature	2.9	Q	Q	2.5	3.6	2.6	3.0	3.7	2.6	2.6	2.6	23.93	
Adequacy of Insulation													
Well Insulated	36.6	31.5	35.8	34.0	30.8	34.6	42.4	42.3	31.5	32.5	33.5	5.87	
Adequately Insulated	39.9	33.1	33.1	38.0	43.7	41.5	40.0	41.9	33.4	33.9	34.9	4.86	
Poorly Insulated	20.4	29.2	25.2	23.2	22.0	21.3	15.9	14.8	29.2	28.3	26.6	7.32	
Don't Know	3.2	6.2	5.9	4.8	3.5	2.6	1.8	Q	6.0	5.3	5.0	19.37	
Reasons Unit Poorly Insulated (more than one may apply)													
Wall Insulation Inadequate	14.1	18.8	16.7	17.1	15.4	14.0	11.6	10.5	20.4	19.6	18.3	9.01	
Windows Leaky	13.5	21.1	15.1	13.3	16.4	14.7	11.0	8.9	19.7	18.9	16.9	9.46	
Doors Not Tight	12.2	19.5	14.8	13.6	15.3	13.4	9.1	6.3	18.9	18.3	16.5	9.54	
Ceiling Insulation													
Inadequate	11.4	14.0	15.0	11.5	12.0	10.5	10.5	9.1	16.7	16.2	14.4	9.48	
Caulking Inadequate	9.0	18.1	11.1	9.6	11.4	8.4	7.3	4.5	15.7	14.9	12.3	11.22	
Don't Know4	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	47.63	
Main Space-Heating Equipment Replaced in Past 3 Years (single-family units and mobile homes only)													
No	89.3	83.5	90.1	89.1	89.7	90.1	90.0	88.3	88.6	89.4	89.7	1.61	
Yes	10.7	16.5	9.9	10.9	10.3	9.9	10.0	11.7	11.4	10.6	10.3	12.79	
High Efficiency	8.2	7.7	6.0	8.0	7.4	7.6	8.5	10.2	5.7	5.8	6.3	15.49	
Not High Efficiency	1.5	Q	Q	Q	2.3	Q	Q	Q	4.3	3.3	2.6	30.25	
Don't Know	1.1	Q	Q	Q	Q	Q	Q	Q	Q	1.5	1.4	36.07	

See footnotes at end of table.

**Table 50. Conservation by Family Income,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors	
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent				
	RSE Column Factors	0.467	1.872	1.283	1.129	0.955	0.966	0.980	0.919	1.179	1.003	0.803		
Behavior of Householders														
Participation in Demand-Side Management Programs (more than one may apply)														
No/Don't Know	95.1	97.6	97.3	95.3	95.3	95.1	94.9	92.9	96.6	96.7	96.4	1.20		
Yes	4.9	Q	2.7	4.7	4.7	4.9	5.1	7.1	3.4	3.3	3.6	19.56		
Rebate	1.3	Q	Q	Q	Q	Q	1.2	1.7	1.8	1.3	1.0	32.54		
Load Control	1.7	Q	NC	Q	2.3	Q	2.2	3.6	Q	Q	Q	.7	34.15	
Energy Audit	1.2	NC	Q	1.9	1.2	1.4	Q	1.5	Q	Q	Q	1.0	33.90	
Conservation	1.4	Q	Q	Q	1.4	1.5	1.3	2.2	Q	Q	Q	1.1	33.29	
Other1	NC	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	56.66	
Winter Daytime Temperature														
Lower When No One Home														
No	45.8	51.7	50.6	44.4	45.7	44.7	45.5	43.3	50.1	48.6	48.4	4.34		
Yes	54.2	48.3	49.4	55.6	54.3	55.3	54.5	56.7	49.9	51.4	51.6	3.87		
Lower During Sleeping Hours														
No	48.2	56.9	49.0	48.7	48.4	50.4	47.5	43.2	53.6	51.6	50.5	3.74		
Yes	51.8	43.1	51.0	51.3	51.6	49.6	52.5	56.8	46.4	48.4	49.5	3.71		
Amount of Food Cooked in Microwave														
Most or All														
Most or All	6.9	4.5	5.2	8.1	7.6	6.5	7.9	6.6	4.3	4.9	5.1	5.96		
About Half	16.1	8.9	8.6	13.2	14.6	19.5	18.7	20.9	8.7	9.2	9.7	9.38		
Some or Very Little	34.4	18.8	25.9	26.6	33.2	36.0	40.3	43.5	22.3	24.1	27.2	6.03		
Only for Snacks or Defrosting	21.4	17.6	22.7	19.1	21.4	21.7	24.0	20.5	20.6	21.9	21.6	7.24		
Don't Have or Use a Microwave	21.1	50.0	37.3	33.0	29.3	16.0	9.0	8.5	44.0	39.5	36.2	6.62		
Fluorescent Lamp Used More than 12 Hours														
No														
No	90.6	94.0	93.9	93.1	92.8	90.2	88.2	86.4	93.3	92.7	93.4	1.27		
Yes	9.4	6.0	6.1	6.9	7.2	9.8	11.8	13.6	6.7	7.3	6.6	13.94		
Tuneup of Main Heating System in the Past 12 Months (single-family units and mobile homes only)														
No														
No	59.9	72.8	66.9	64.9	60.6	58.5	57.7	54.1	71.4	71.8	66.9	3.81		
Yes	37.7	24.0	31.2	29.8	35.8	38.9	41.6	44.3	25.0	25.1	29.6	7.47		
Don't Know	2.4	Q	1.9	5.2	3.7	2.6	Q	1.6	3.5	3.1	3.5	26.37		

See footnotes at end of table.

**Table 50. Conservation by Family Income,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items		Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors		
			Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent					
	RSE Column Factors	0.467	1.872	1.283	1.129	0.955	0.966	0.980	0.919	1.179	1.003	0.803				
Behavior of Householders																
Conservation Features Added in Past 3 Years (single-family units and mobile homes only) (more than one may apply)																
Automatic Setback or Clock Thermostat	8.5	Q	4.0	3.5	5.5	6.1	11.2	16.5	3.0	3.4	4.5	20.03				
Heat Pump	1.8	Q		Q	Q	Q	2.6	2.2	Q	Q	Q	30.09				
Wood-Burning Stove	3.8	Q	5.8	3.3	3.8	4.7	4.1	2.5	6.6	5.6	4.8	23.67				
Roof or Ceiling Insulation	12.1	7.8	8.3	6.1	10.6	13.0	13.8	16.9	7.2	8.7	7.5	15.27				
Wall Insulation	9.1	Q	4.7	5.5	6.6	9.9	11.0	14.2	4.7	4.9	5.2	16.07				
Characteristics of Housing Unit																
Storm Windows as Percent of Total Windows																
100 Percent	51.0	39.4	50.9	48.8	45.9	51.3	54.8	56.9	41.6	43.0	46.7	4.40				
76 to 99 Percent	6.6	6.6	4.9	4.8	7.7	7.5	5.6	7.6	5.2	5.2	5.8	13.42				
51 to 75 Percent	4.3	4.5	2.5	3.9	4.2	4.7	5.4	4.3	4.2	3.8	3.6	18.47				
1 to 50 Percent	4.6	5.0	4.9	5.0	5.1	4.6	3.6	4.6	4.6	5.4	5.1	16.02				
No Storm Windows	33.5	44.4	36.7	37.4	37.0	31.8	30.5	26.6	44.4	42.6	38.8	5.85				
Storm Doors as Percent of Total Outside Doors																
100 Percent	40.0	27.5	38.2	39.0	39.1	43.1	45.0	39.1	29.7	32.4	36.5	5.19				
51 to 99 Percent	8.6	Q	4.2	4.6	7.3	8.7	9.6	16.2	3.4	3.9	5.2	15.32				
1 to 50 Percent	14.8	13.4	14.9	14.1	15.0	16.5	15.7	13.1	14.7	14.8	14.2	9.03				
No Storm Doors	36.5	56.3	42.7	42.3	38.5	31.7	29.6	31.7	52.3	48.9	44.1	5.14				
Energy Efficient Means of Cooling Housing Unit (more than one may apply)																
Large Tree(s) that Shade the Roof	39.9	34.0	35.3	38.6	39.3	41.2	40.8	44.2	34.5	35.9	37.7	5.42				
Large Tree(s) that Shade the Windows	42.4	37.2	37.3	38.6	40.3	43.9	45.5	47.2	35.7	37.0	39.0	4.99				
Shutters or Awnings	14.3	10.1	15.2	15.3	14.1	12.6	15.2	15.1	10.6	12.2	13.8	10.95				
Blinds or Insulated Thermal Drapes	55.8	40.0	41.1	51.2	53.6	60.2	60.7	66.3	41.1	42.4	45.5	4.37				
Reflective Film on Windows	5.1	Q	2.8	3.4	4.2	4.2	8.5	7.1	2.1	3.1	2.8	17.84				
None of Above	21.6	33.8	31.3	26.5	23.3	19.1	17.0	13.7	33.7	31.3	28.8	7.88				

See footnotes at end of table.

**Table 50. Conservation by Family Income,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items	Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent			
	RSE Column Factors	0.467	1.872	1.283	1.129	0.955	0.966	0.980	0.919	1.179	1.003	0.803	
Characteristics of Housing Unit													
Total Single-Family Units and Mobile Homes Only	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Have Caulking													
No	29.1	50.5	41.5	38.3	34.7	27.6	21.6	18.2	47.7	43.7	41.0	7.40	
Yes	67.3	44.1	54.2	57.6	59.3	68.8	76.5	79.6	46.9	51.1	54.7	4.38	
Don't Know	3.5	Q	4.2	4.0	5.9	3.6	1.9	2.2	5.4	5.2	4.2	23.16	
Have Weather Stripping													
No	37.3	50.8	47.0	47.7	44.2	35.3	33.3	24.6	51.0	50.2	49.2	5.84	
Yes	60.2	45.7	49.8	49.2	52.0	62.0	64.8	74.4	44.9	46.2	48.0	4.61	
Don't Know	2.5	Q	3.1	3.2	3.7	2.7	1.9	Q	4.1	3.6	2.8	24.50	
Have Roof or Ceiling Insulation													
No	10.0	21.1	16.5	13.2	11.7	9.4	7.2	5.1	18.1	18.7	16.6	13.08	
Yes	80.1	63.9	71.2	69.7	74.3	81.7	86.0	90.7	64.3	66.4	69.1	2.87	
All Insulated	65.8	51.2	57.9	56.0	61.0	66.7	72.6	74.2	48.7	51.6	54.6	3.82	
Part Insulated	8.1	Q	5.7	7.5	7.7	7.1	9.2	9.9	6.6	6.6	7.3	14.21	
Very Little Insulated	1.0	Q	Q	Q	Q	Q	Q	1.3	Q	1.8	1.3	38.62	
Amount Unknown/Not Reported	5.3	Q	5.5	6.1	4.7	6.9	4.0	5.3	7.1	6.5	5.9	20.13	
Don't Know	9.8	15.1	12.3	17.1	14.0	8.9	6.8	4.2	17.6	14.9	14.3	13.61	
Floor Insulation													
No Basement/Crawlspace	24.9	14.3	21.1	22.0	25.3	21.9	29.5	27.6	19.8	21.2	21.8	1.085	
Basement/Crawlspace	75.1	85.7	78.9	78.0	74.7	78.1	70.5	72.4	80.2	78.8	78.2	3.13	
Heated	27.9	17.1	17.9	22.5	25.3	31.8	30.4	34.1	16.5	17.0	20.5	9.72	
None or Part Heated	47.3	68.6	61.0	55.5	49.4	46.4	40.2	38.3	63.7	61.8	57.7	5.07	
Floor Not Insulated	28.0	45.8	37.0	35.1	28.5	27.5	20.6	23.7	40.4	38.2	35.7	7.34	
Floor Insulated	13.7	14.8	17.2	12.5	13.3	13.1	15.2	12.0	16.5	16.4	15.0	12.49	
All Parts Insulated	10.5	14.2	15.4	10.1	9.8	9.8	10.6	8.6	14.3	13.9	12.8	14.31	
Some Parts Insulated	3.2	Q	Q	2.4	3.4	3.3	4.6	3.3	2.2	2.5	2.2	24.43	
Don't Know	5.6	8.0	6.7	7.9	7.7	5.8	4.4	2.6	6.8	7.2	6.9	17.78	
Have Wall Insulation													
No	15.7	29.8	24.3	18.2	16.8	14.1	10.8	12.6	26.3	25.7	22.6	10.18	
Yes	66.5	47.8	56.8	60.8	60.3	68.4	72.8	75.3	51.9	54.7	57.0	3.70	
All Walls	54.4	40.6	46.1	48.2	48.7	55.0	60.3	62.6	41.8	42.1	45.5	4.78	
Some Walls	12.1	7.2	10.7	12.6	11.6	13.4	12.4	12.7	10.1	12.6	11.6	12.21	
Don't Know	17.8	22.4	18.9	21.0	22.9	17.5	16.4	12.1	21.8	19.6	20.3	9.52	

See footnotes at end of table.

**Table 50. Conservation by Family Income,
Percent of U.S. Households, 1990 (Continued)**

Conservation-Related Items		Total	1990 Family Income								Below Poverty Line		Eligible for Federal Assistance ¹	RSE Row Factors	
			Less than \$5,000	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$24,999	\$25,000 to \$34,999	\$35,000 to \$49,999	\$50,000 or More	100 Percent	125 Percent				
	RSE Column Factors	Total	0.467	1.872	1.283	1.129	0.955	0.966	0.980	0.919	1.179	1.003	0.803		
Characteristics of Housing Unit															
Have Insulation Around:															
Heating and/or Cooling Ducts															
No	58.7	77.1	76.1	68.1	60.3	57.1	50.5	49.7	77.3	74.1	71.9	3.76			
Yes	32.4	16.3	16.9	23.9	27.1	34.5	40.1	42.7	16.5	19.6	21.3	8.64			
Don't Know	8.9	6.6	6.9	7.9	12.6	8.5	9.4	7.6	6.3	6.2	6.8	17.66			
Hot Water Pipes															
No	56.8	63.6	64.1	55.1	57.8	57.3	50.6	57.3	63.6	60.3	59.9	4.13			
Yes	34.1	26.0	26.7	35.7	31.4	33.6	40.1	35.2	25.4	29.8	30.4	7.06			
Don't Know	9.2	10.4	9.2	9.2	10.8	9.1	9.3	7.5	11.0	9.9	9.7	14.80			
Water Heater															
No	67.8	68.7	69.7	64.0	64.1	68.2	67.9	71.3	71.3	68.5	67.9	3.60			
Yes	28.0	23.8	26.5	30.4	29.4	26.9	29.4	26.6	23.2	26.4	27.0	8.18			
Don't Know	4.2	7.5	3.7	5.6	6.6	4.8	2.7	2.1	. 5.5	5.1	5.1	20.72			

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

NC = No cases in sample.

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. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 51. Indoor Winter Temperatures by Climate Zone and Floorspace, Million U.S. Households, 1990

Housing Unit Characteristics	Total	1990 Heating Degree-Days (HDD) by Heated Floorspace									RSE Row Factors	
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD				
		Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet		
RSE Column Factors:	0.329	1.355	1.271	1.222	1.312	1.210	1.256	0.802	0.749	1.204		
Total	94.0	5.9	9.0	7.1	8.1	9.8	9.0	16.5	20.3	8.2	7.63	
Daytime Winter Temperature When Someone Is at Home												
Heat Is Turned On	88.5	5.6	8.8	7.1	7.5	9.5	9.0	13.7	19.4	8.0	7.84	
63 Degrees or Less	2.9	.2	.2	.2	.5	.2	.2	.6	.5	Q	21.98	
64 to 66 Degrees	7.0	.5	.8	.8	.8	1.0	.7	1.1	1.1	.4	16.98	
67 to 69 Degrees	20.3	1.4	2.2	2.3	1.4	2.7	2.8	1.8	3.5	2.2	11.29	
70 Degrees	26.0	1.7	2.8	1.9	2.6	3.1	2.6	3.5	5.3	2.6	11.08	
71 to 73 Degrees	14.4	.8	1.6	1.3	.9	1.4	1.6	2.1	3.4	1.2	12.29	
74 Degrees or More	17.9	1.0	1.2	.5	1.2	1.2	1.1	4.5	5.7	1.4	13.19	
Heat Turned Off	1.5	Q	Q	NC	Q	Q	NC	1.0	.4	Q	36.00	
Unknown/No Answer	4.0	.3	Q	Q	.6	.3	Q	1.8	.5	Q	25.70	
Daytime Winter Temperature When No One Is at Home												
Heat Is Turned On	75.2	5.3	8.5	7.0	6.6	9.1	8.9	9.1	14.1	6.8	8.26	
63 Degrees or Less	17.4	1.4	2.1	2.1	1.5	2.5	2.1	1.9	2.8	1.1	11.15	
64 to 66 Degrees	15.1	1.1	2.1	1.7	1.5	1.8	1.8	1.6	2.5	1.1	12.56	
67 to 69 Degrees	14.2	1.0	1.8	1.1	1.1	1.8	2.1	1.1	2.5	1.8	13.86	
70 Degrees	13.8	1.0	1.4	1.0	1.5	1.7	1.5	1.8	2.4	1.4	13.28	
71 or 73 Degrees	7.2	.3	.8	.7	.4	.8	.9	1.2	1.5	.7	17.77	
74 Degrees or More	7.5	.5	.4	.2	.6	.6	.5	1.6	2.4	.7	17.46	
Heat Turned Off	15.0	.3	.3	Q	.9	.5	Q	5.8	5.9	1.2	16.31	
Unknown/No Answer	3.8	.4	.2	Q	.7	.3	Q	1.6	.4	Q	25.67	
Nighttime Winter Temperature (sleeping hours)												
Heat Is Turned On	80.6	5.4	8.6	7.0	6.9	9.3	8.9	11.2	16.2	7.1	8.03	
63 Degrees or Less	14.8	1.1	1.9	1.6	1.2	2.0	2.1	1.5	2.5	1.0	12.57	
64 to 66 Degrees	17.0	1.1	2.2	2.1	1.5	2.4	2.0	1.6	2.7	1.4	11.84	
67 to 69 Degrees	17.3	1.2	1.9	1.5	1.5	2.2	2.0	1.7	3.4	2.0	12.43	
70 Degrees	15.5	1.1	1.5	1.0	1.6	1.5	1.7	2.4	3.2	1.4	12.02	
71 to 73 Degrees	7.3	.4	.7	.5	.5	.6	.7	1.3	1.9	.6	17.23	
74 Degrees or More	8.7	.5	.5	.4	.6	.5	.4	2.7	2.5	.6	17.44	
Heat Turned Off	9.6	.2	.2	Q	.6	.2	Q	3.7	3.7	1.0	19.38	
Unknown/No Answer	3.8	.3	Q	Q	.7	.3	Q	1.6	.5	Q	26.55	

NC = No cases in sample.

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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 52. Indoor Winter Temperatures by Climate Zone and Floorspace, Percent of U.S. Households, 1990

Houseing Unit Characteristics	Total	1990 Heating Degree-Days (HDD) by Heated Floorspace									RSE Row Factors	
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD				
		Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet		
RSE Column Factors:	0.389	1.305	1.145	1.126	1.330	1.059	1.154	0.939	0.873	1.147		
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00	
Daytime Winter Temperature When Someone Is at Home												
Heat Is Turned On	94.2	94.3	97.9	99.4	91.9	96.8	99.8	83.0	95.4	97.8	1.58	
63 Degrees or Less	3.1	3.6	2.2	2.9	6.4	2.1	2.7	3.9	2.5	Q	21.68	
64 to 66 Degrees	7.5	7.7	9.1	11.0	9.9	9.7	7.3	6.7	5.2	4.6	15.37	
67 to 69 Degrees	21.6	23.7	24.7	32.4	17.5	27.4	30.9	11.1	17.1	26.9	8.52	
70 Degrees	27.7	29.2	30.8	26.8	31.9	31.1	29.0	21.2	25.9	31.8	7.65	
71 to 73 Degrees	15.3	13.4	18.1	18.7	11.3	14.6	17.8	12.7	16.6	15.1	10.01	
74 Degrees or More	19.0	16.9	12.9	7.6	15.0	12.0	12.1	27.5	28.1	17.3	11.12	
Heat Turned Off	1.6	Q	Q	NC	Q	Q	NC	5.9	1.9	Q	30.82	
Unknown/No Answer	4.2	5.5	Q	Q	7.9	2.9	Q	11.1	2.7	Q	23.24	
Daytime Winter Temperature When No One Is at Home												
Heat Is Turned On	80.0	89.1	94.7	97.8	80.5	92.3	98.3	55.3	69.2	82.9	2.34	
63 Degrees or Less	18.6	23.7	23.3	30.1	18.0	25.0	23.8	11.6	13.6	13.2	9.08	
64 to 66 Degrees	16.0	18.1	23.2	24.5	18.5	17.9	19.4	9.6	12.1	13.8	10.27	
67 to 69 Degrees	15.1	16.8	19.7	16.2	13.8	18.1	22.8	6.4	12.3	21.6	11.29	
70 Degrees	14.6	16.9	15.1	14.6	18.2	17.5	17.2	10.8	12.0	17.2	10.32	
71 or 73 Degrees	7.7	4.8	8.6	10.3	5.0	7.8	9.8	7.0	7.4	8.8	15.94	
74 Degrees or More	8.0	8.8	4.8	2.3	7.1	6.0	5.3	9.8	12.0	8.4	15.83	
Heat Turned Off	16.0	4.5	3.5	Q	10.7	4.6	Q	35.2	28.9	15.1	15.23	
Unknown/No Answer	4.0	6.3	1.9	Q	8.8	3.1	Q	9.5	1.9	Q	23.57	
Nighttime Winter Temperature (sleeping hours)												
Heat Is Turned On	85.7	91.4	95.9	98.5	84.2	94.7	99.2	67.8	79.7	86.2	2.23	
63 Degrees or Less	15.8	18.3	20.9	22.2	14.6	20.5	23.1	9.0	12.4	12.3	10.20	
64 to 66 Degrees	18.1	18.8	24.1	29.1	18.9	24.5	21.9	9.8	13.2	17.2	9.76	
67 to 69 Degrees	18.4	20.1	20.6	20.7	18.2	22.9	22.3	10.3	16.7	24.1	9.57	
70 Degrees	16.5	18.9	16.4	14.2	19.9	15.5	19.1	14.6	15.7	17.0	9.23	
71 to 73 Degrees	7.7	6.4	8.2	7.2	5.8	6.2	7.9	7.9	9.4	7.9	15.03	
74 Degrees or More	9.3	8.9	5.6	5.0	6.8	5.2	5.0	16.2	12.3	7.7	15.91	
Heat Turned Off	10.3	3.6	2.5	Q	6.8	2.3	Q	22.3	18.0	11.9	18.39	
Unknown/No Answer	4.0	5.1	Q	Q	8.9	3.0	Q	9.9	2.3	Q	23.27	

NC = No cases in sample.

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. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 53. Setback Temperature Behavior in U.S. Households with Winter Temperature of 65 Degrees or Higher, 1990

Housing Unit and Household Characteristics	Total Households (million)	Average Winter Temperature (degree)	Total ¹	Percent of Households						RSE Row Factors	
				Setback Temperature Behavior							
				Nighttime			When Not at Home				
	Total	Decrease	Same	Off	Decrease	Same	Off				
RSE Column Factors	1.006	0.050	3333	1.088	1.205	3.614	1.210	1.246	2.756		
Total	85.2	70.8	100.0	47.1	41.8	8.6	43.6	41.4	14.3	1.80	
Housing Unit Characteristics											
Census Region and Division											
Northeast	17.6	69.8	100.0	58.9	38.4	Q	50.9	46.8	1.2	3.17	
New England	4.0	69.1	100.0	62.9	33.3	Q	62.6	34.5	Q	4.79	
Middle Atlantic	13.6	70.0	100.0	57.8	39.9	Q	47.5	50.4	Q	3.02	
Midwest	21.7	70.7	100.0	48.5	48.5	Q	50.2	48.0	1.3	3.22	
East North Central	15.5	70.5	100.0	47.0	49.9	Q	50.3	47.7	Q	3.37	
West North Central	6.2	71.1	100.0	52.2	44.9	Q	50.0	48.8	Q	5.65	
South	29.9	71.9	100.0	41.1	46.6	10.0	38.6	42.3	18.2	3.43	
South Atlantic	15.1	71.4	100.0	38.9	50.1	7.9	36.8	44.2	17.8	4.92	
East South Central	6.1	72.1	100.0	48.4	43.0	7.1	40.1	47.0	12.0	6.03	
West South Central	8.7	72.5	100.0	39.8	43.1	15.6	40.6	35.8	23.2	6.83	
West	16.0	70.2	100.0	43.4	27.4	26.0	36.1	24.5	39.1	3.83	
Mountain	4.6	70.7	100.0	57.9	31.5	6.2	47.5	39.1	13.4	5.83	
Pacific	11.4	70.0	100.0	37.6	25.8	33.9	31.5	18.7	49.4	5.03	
Urban Status											
Urban	65.4	70.6	100.0	45.2	42.9	9.2	41.9	41.9	15.4	1.94	
Central City	26.2	70.9	100.0	44.8	43.3	10.1	38.1	45.2	15.9	2.93	
Suburban	39.3	70.4	100.0	45.4	42.7	8.5	44.4	39.7	15.1	2.22	
Rural	19.8	71.5	100.0	53.6	38.1	6.6	49.3	39.6	10.6	4.12	
Climate Zone											
Under 2,000 CDD and--											
Over 7,000 HDD	9.6	70.3	100.0	58.5	38.6	Q	58.4	40.1	Q	5.05	
5,500 to 7,000 HDD	24.5	70.0	100.0	51.4	44.7	1.4	51.9	44.3	3.2	4.26	
4,000 to 5,499 HDD	19.8	70.8	100.0	54.1	40.1	3.5	46.3	47.3	5.8	5.73	
Under 4,000 HDD	16.2	70.8	100.0	37.5	37.7	21.5	30.8	34.3	33.8	5.78	
2,000 CDD or More and --											
Under 4,000 HDD	15.1	72.6	100.0	34.2	45.8	17.7	31.2	37.1	31.0	4.50	
Heated Floorspace Category (square feet)											
Fewer than 600	5.5	71.0	100.0	37.2	45.5	12.7	32.9	41.3	24.6	7.12	
600 to 999	19.8	71.2	100.0	39.8	46.3	10.6	40.0	39.8	19.1	3.97	
1,000 to 1,599	24.6	71.0	100.0	47.2	40.2	10.1	42.8	39.6	16.8	3.38	
1,600 to 1,999	12.0	70.8	100.0	52.1	38.1	8.5	45.3	41.6	13.1	4.23	
2,000 to 2,399	8.7	70.3	100.0	52.1	38.3	6.4	43.7	45.9	9.4	4.83	
2,400 to 2,999	7.4	70.4	100.0	55.0	40.8	2.2	53.5	42.3	3.9	5.80	
3,000 or More	7.2	69.9	100.0	52.1	43.5	3.7	51.2	44.6	3.3	6.40	
Ownership of Unit											
Owned	58.7	70.7	100.0	50.0	40.1	8.2	45.6	42.1	11.9	2.15	
Rented	26.5	71.2	100.0	40.7	45.6	9.3	39.2	39.7	19.6	3.62	

See footnotes at end of table.

Table 53. Setback Temperature Behavior in U.S. Households with Winter Temperature of 65 Degrees or Higher, 1990 (Continued)

Housing Unit and Household Characteristics	Total Households (million)	Average Winter Temperature (degree)	Total ¹	Percent of Households						RSE Row Factors	
				Setback Temperature Behavior							
				Nighttime			When Not at Home				
	Decrease	Same	Off	Decrease	Same	Off	Decrease	Same	Off		
RSE Column Factors	1.006	0.050	3333	1.088	1.205	3.614	1.210	1.246	2.756		
Housing Unit Characteristics											
Type and Ownership of Housing Unit											
Single-Family	60.0	70.7	100.0	49.4	40.1	8.3	45.4	40.1	13.8	2.33	
Owned	50.6	70.6	100.0	50.8	39.5	8.1	45.9	41.8	11.8	2.42	
Rented	9.4	71.1	100.0	42.2	43.2	9.8	42.5	31.2	24.4	5.65	
Multifamily (2 to 4 units)	8.8	70.7	100.0	44.9	47.1	5.2	43.2	44.8	10.8	5.69	
Owned	2.4	70.4	100.0	41.1	54.5	Q	40.8	51.4	Q	8.21	
Rented	6.4	70.9	100.0	46.3	44.3	6.0	44.1	42.3	11.9	6.30	
Multifamily (5 or more units)	11.5	71.3	100.0	36.4	48.7	10.8	31.9	48.2	18.9	5.83	
Owned	1.5	70.5	100.0	41.0	44.4	Q	28.8	58.2	12.4	14.17	
Rented	9.9	71.5	100.0	35.8	49.4	10.9	32.4	46.6	19.9	6.31	
Mobile Home	5.0	70.9	100.0	47.6	37.4	11.6	49.9	34.3	15.6	8.56	
Owned	4.2	71.0	100.0	49.0	37.1	11.8	51.0	34.5	14.3	9.43	
Rented8	70.6	100.0	40.2	38.7	Q	44.3	33.5	22.2	16.63	
Year of Construction											
1939 or Before	19.3	70.5	100.0	51.9	39.4	6.1	44.9	45.1	9.5	3.83	
1940 to 1949	6.2	70.9	100.0	43.2	45.4	8.9	42.9	43.0	12.5	6.13	
1950 to 1959	12.2	70.8	100.0	50.5	36.2	10.6	42.9	41.6	14.3	4.74	
1960 to 1969	13.3	70.9	100.0	49.0	40.7	8.2	45.2	39.5	14.7	4.86	
1970 to 1979	19.4	70.8	100.0	45.9	42.4	9.0	45.2	38.0	16.5	3.70	
1980 to 1984	7.5	71.2	100.0	35.3	48.3	12.7	35.7	42.8	20.1	6.08	
1985 to 1987	4.8	71.4	100.0	42.8	48.7	7.2	38.4	42.3	18.6	8.73	
1988 to 1990 ²	2.6	70.4	100.0	46.5	47.5	Q	51.6	36.9	11.6	11.64	
Main Heating Fuel and Equipment											
Natural Gas	47.2	70.7	100.0	48.5	40.5	8.3	45.2	40.8	13.6	2.58	
Central Warm-Air Furnace	33.2	70.5	100.0	49.6	41.0	7.0	49.4	39.8	10.5	2.83	
Steam or Hot-Water System	7.6	70.5	100.0	51.3	45.3	Q	38.5	58.8	2.3	6.27	
Floor, Wall, or Pipeless Furnace	3.9	71.5	100.0	39.1	30.3	24.7	31.8	24.4	43.3	7.39	
Room Heater/Other	2.5	72.3	100.0	40.1	35.0	22.6	31.6	24.5	42.5	10.45	
Electricity	19.3	71.3	100.0	38.7	48.1	10.8	38.2	41.2	19.5	4.17	
Built-In Electric Units	5.4	69.9	100.0	44.5	43.0	11.0	43.7	41.2	14.0	7.42	
Central Warm-Air Furnace	7.1	72.2	100.0	37.2	50.4	10.1	36.1	39.3	24.1	7.35	
Heat Pump	6.2	71.5	100.0	36.2	52.4	7.9	37.2	45.6	15.6	7.52	
Other6	70.1	100.0	30.7	Q	45.6	Q	Q	53.4	13.62	
Fuel Oil	9.6	70.0	100.0	56.5	39.7	Q	48.0	48.0	3.0	5.87	
Steam or Hot-Water System	5.1	69.7	100.0	53.4	42.7	Q	40.2	56.7	Q	6.31	
Central Warm-Air Furnace	4.1	70.2	100.0	61.3	34.9	Q	58.9	37.6	Q	8.65	
Other3	72.2	100.0	Q	Q	NC	Q	Q	Q	27.14	
Wood	3.6	72.5	100.0	57.0	32.0	8.8	43.3	38.1	16.7	9.08	
Heating Stove	2.7	72.4	100.0	58.9	31.3	7.8	44.0	37.7	16.3	10.62	
Other9	72.8	100.0	51.1	34.3	Q	41.2	39.4	Q	18.67	
LPG	4.3	71.0	100.0	38.7	43.5	16.2	40.8	40.0	18.5	8.49	
Central Warm-Air Furnace	2.6	71.1	100.0	44.3	44.0	10.4	48.0	40.6	11.4	10.53	
Room Heater	1.1	71.1	100.0	24.2	44.8	27.6	21.9	42.7	34.1	16.06	
Other6	70.1	100.0	41.0	38.9	Q	44.6	Q	Q	28.06	
Kerosene	1.0	70.2	100.0	45.2	39.3	Q	38.4	27.0	32.7	15.29	
Other3	70.4	100.0	81.2	Q	Q	Q	Q	NC	22.24	

See footnotes at end of table.

Table 53. Setback Temperature Behavior in U.S. Households with Winter Temperature of 65 Degrees or Higher, 1990 (Continued)

Housing Unit and Household Characteristics	Total Households (inmillion)	Average Winter Temperature (degree)	Total ¹	Percent of Households						RSE Row Factor ²	
				Setback Temperature Behavior							
				Nighttime			When Not at Home				
RSE Column Factors	1.006	0.050	3333	1.088	1.205	3.614	1.210	1.246	2.756		
Household Characteristics											
Daytime Temperature When Someone is at Home											
65 to 66 Degrees	6.6	65.1	100.0	35.5	45.9	11.4	39.5	41.8	16.9	6.37	
67 to 68 Degrees	20.3	68.0	100.0	46.1	44.7	6.1	47.7	41.9	9.8	3.48	
70 Degrees	26.0	70.0	100.0	46.8	41.0	9.8	42.3	41.4	15.8	5.53	
71 to 73 Degrees	14.4	72.0	100.0	52.6	40.7	6.4	44.4	44.3	10.8	4.23	
74 Degrees or More	17.9	76.3	100.0	48.7	39.1	10.3	41.7	38.1	19.1	3.48	
Winter Temperature Inside Housing Unit											
Prefer Usual Temperature	69.8	70.9	100.0	46.5	42.4	8.8	42.9	42.0	14.4	2.63	
Prefer Warmer Temperature	13.1	70.1	100.0	51.6	37.4	7.7	48.6	36.3	13.8	3.17	
Prefer Cooler Temperature	2.4	72.2	100.0	40.8	48.2	Q	36.2	49.6	14.2	10.53	
1990 Family Income Category											
Less than \$5,000	4.2	71.3	100.0	35.8	44.9	15.4	35.8	41.6	21.6	7.82	
\$5,000 to \$9,999	9.3	71.4	100.0	45.5	40.4	12.6	37.7	43.3	17.8	5.12	
\$10,000 to \$14,999	10.1	71.4	100.0	46.7	41.4	8.8	45.3	38.4	15.1	5.00	
\$15,000 to \$19,999	7.6	71.1	100.0	48.4	39.1	10.2	38.6	41.4	19.3	5.30	
\$20,000 to \$24,999	8.0	71.0	100.0	45.3	42.5	8.8	43.5	39.4	15.8	5.13	
\$25,000 to \$34,999	14.1	70.7	100.0	45.1	45.2	7.4	45.1	41.0	13.3	3.93	
\$35,000 to \$49,999	15.6	70.6	100.0	48.7	42.0	6.2	45.0	43.2	11.6	4.09	
\$50,000 to \$74,999	10.1	70.2	100.0	53.8	38.5	5.8	50.2	40.1	9.1	4.73	
\$75,000 or More	6.3	70.0	100.0	48.3	42.1	8.1	43.7	43.8	12.3	3.19	
Below Poverty Line											
100 Percent	11.0	71.4	100.0	40.5	42.7	13.8	36.2	40.9	21.5	4.82	
125 Percent	15.3	71.5	100.0	42.6	41.4	13.3	38.1	40.0	20.8	4.11	
Eligible for Federal Assistance³	23.9	71.4	100.0	44.2	41.1	11.9	39.0	40.8	19.0	3.43	
Payment Method for Utilities											
All Paid by Household	73.3	70.8	100.0	48.1	41.2	8.5	45.4	39.5	14.6	1.35	
Some Paid, Some in Rent	7.1	71.2	100.0	42.2	44.8	8.1	32.4	52.2	13.6	7.46	
All Included in Rent	2.8	71.7	100.0	35.6	51.6	7.2	27.3	59.5	9.4	10.98	
Other Method	2.0	71.0	100.0	45.1	41.2	12.3	40.0	46.1	13.9	9.85	
Age of Householder											
Under 25 Years	4.9	71.2	100.0	30.5	52.4	7.1	37.6	41.6	18.6	6.94	
25 to 34 Years	19.3	70.7	100.0	39.7	51.1	5.4	43.4	39.7	16.7	3.53	
35 to 44 Years	18.3	70.3	100.0	49.1	41.0	7.8	46.3	39.1	14.2	3.67	
45 to 59 Years	18.2	70.8	100.0	52.7	38.0	8.2	44.5	41.1	13.4	3.56	
60 to 64 Years	5.9	70.6	100.0	51.0	34.7	12.7	41.1	44.7	13.2	6.12	
65 to 69 Years	5.6	70.8	100.0	53.7	36.8	8.0	50.3	41.1	8.3	6.29	
70 to 79 Years	9.2	71.4	100.0	47.9	36.8	13.9	40.6	43.9	15.4	5.03	
80 or Over	3.9	72.2	100.0	51.8	33.5	13.0	36.4	50.5	12.0	7.30	
Race of Householder											
White	74.2	70.6	100.0	48.1	41.6	8.0	45.2	41.6	12.4	2.02	
Black	9.1	72.3	100.0	42.3	42.9	10.9	33.4	41.5	23.9	6.34	
Other	1.9	70.9	100.0	32.6	46.3	17.5	29.6	29.4	40.2	8.43	
Householder of Hispanic Descent											
Yes	4.5	71.4	100.0	33.6	46.2	15.0	32.1	41.1	26.4	3.86	
No	80.7	70.8	100.0	47.9	41.6	8.2	44.3	41.4	13.6	1.30	

See footnotes at end of table.

Table 53. Setback Temperature Behavior in U.S. Households with Winter Temperature of 65 Degrees or Higher, 1990 (Continued)

Housing Unit and Household Characteristics	Total Households (million)	Average Winter Temperature (degree)	Total ¹	Percent of Households						RSE Row Factors	
				Setback Temperature Behavior							
				Nighttime			When Not at Home				
				Decrease	Same	Off	Decrease	Same	Off		
RSE Column Factors	1.006	0.050	3333	1.088	1.205	3.614	1.210	1.246	2.756		
Household Characteristics											
Education of Householder											
8 Years or Fewer	7.3	71.9	100.0	45.1	40.1	13.8	33.4	46.2	20.4	5.70	
9 to 12 Years	39.8	71.1	100.0	46.3	42.9	8.0	43.5	42.1	13.2	2.66	
13 to 16 Years	29.0	70.4	100.0	45.9	43.8	7.6	45.5	40.2	13.9	3.11	
17 Years or More	9.1	70.2	100.0	55.9	32.1	10.0	46.4	37.7	15.5	5.14	
Employment of Householder											
Unemployed	31.7	71.2	100.0	48.0	38.4	11.2	39.2	45.7	14.6	3.10	
Full Time	46.3	70.6	100.0	46.1	44.7	6.6	45.9	38.8	14.4	2.46	
Part Time	7.3	70.6	100.0	50.0	38.2	9.2	47.9	38.5	12.5	5.73	
Sex of Householder											
Male	42.3	70.7	100.0	45.6	44.3	7.7	42.5	43.1	14.2	2.53	
Female	42.9	70.9	100.0	48.6	39.4	9.4	44.7	39.7	14.4	2.63	
Household Size											
1 Person	20.4	70.9	100.0	45.5	40.8	11.7	42.7	39.7	16.9	3.22	
2 Persons	28.4	70.9	100.0	49.7	40.0	9.1	46.1	40.6	12.6	2.93	
3 Persons	14.4	70.8	100.0	44.5	46.5	5.4	41.9	44.9	12.2	3.74	
4 Persons	13.0	70.3	100.0	46.4	43.5	6.0	43.7	41.0	14.8	4.50	
5 Persons	6.1	71.0	100.0	47.8	39.8	8.8	44.6	40.1	15.0	5.89	
6 or More Persons	3.0	71.4	100.0	47.1	40.1	8.0	32.6	46.1	19.3	9.02	

¹ Percentages may not sum to 100 since a few households did not know the setback temperature or increased the temperature instead of using a setback temperature.

² Does not include all new construction for 1990.

³ Below 150 percent of poverty line or 60 percent of median State income.

NC = No cases in sample.

-- = 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. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 54. Total Equipped and Used U.S. Household Air Conditioning, 1990

Housing Unit and Household Characteristics	Total Households (millions)	Cooled Floorspace (square feet)	Number of Cooling Degree-Days		Air Conditioner Use in Summer 1990 (percent of households) ¹					RSE Row Factors	
			1990	Normal	Total	Not at All	Only a Few Times	Quite a Bit	All Summer		
	RSE Column Factors:	0.920	0.595	0.553	0.556	0505	3.130	1.022	1.539	1.208	
Total	63.7	1,324	1,589	1,436	100.0	5.0	37.1	21.9	35.4	3.06	
Type of Air Conditioning											
Central Air Conditioning											
Total	36.6	1,719	1,790	1,609	100.0	3.4	26.4	22.8	46.7	4.27	
Electricity	36.2	1,723	1,796	1,615	100.0	3.3	26.4	22.8	46.9	4.24	
Gas ²	.4	1,248	1,149	1,052	100.0	Q	Q	Q	27.4	31.12	
Room Air Conditioners ³											
Total	27.1	790	1,318	1,201	100.0	7.2	51.6	20.8	20.0	4.50	
One	17.4	651	1,224	1,119	100.0	9.3	55.3	18.9	15.9	5.33	
Two	6.9	927	1,475	1,339	100.0	4.4	46.5	23.1	25.9	8.15	
Three or More	2.8	1,321	1,510	1,369	100.0	Q	41.1	26.6	30.8	9.87	
Electric Air Conditioning	63.3	1,324	1,592	1,438	100.0	5.0	37.2	22.0	35.4	3.05	
Census Region and Division											
Northeast	10.7	1,152	850	751	100.0	6.1	58.0	20.7	15.1	5.69	
New England	2.2	1,001	672	515	100.0	7.5	61.6	21.5	9.5	9.42	
Middle Atlantic	8.5	1,191	896	812	100.0	5.7	57.1	20.5	16.6	6.44	
Midwest	15.9	1,458	904	859	100.0	5.6	52.5	23.1	18.4	5.33	
East North Central	11.5	1,436	794	761	100.0	6.9	55.8	22.9	14.2	7.31	
West North Central	5.5	1,503	1,134	1,063	100.0	2.9	45.5	23.6	27.2	7.04	
South	28.0	1,348	2,280	2,070	100.0	3.7	18.6	20.4	56.9	4.55	
South Atlantic	14.3	1,321	2,255	1,982	100.0	3.7	23.6	20.9	51.6	7.16	
East South Central	5.4	1,441	1,814	1,672	100.0	4.2	13.7	21.1	59.9	8.41	
West South Central	8.2	1,333	2,632	2,485	100.0	3.3	13.1	18.9	64.2	7.23	
West	7.7	1,186	1,636	1,370	100.0	6.8	42.4	26.9	22.8	7.37	
Mountain	2.0	1,154	2,413	2,037	100.0	4.9	24.9	29.5	39.3	14.97	
Pacific	5.6	1,197	1,357	1,131	100.0	7.5	48.7	26.0	16.8	8.17	
Urban Status											
Urban	50.3	1,339	1,638	1,457	100.0	5.0	37.6	22.0	34.8	3.46	
Central City	18.9	1,130	1,747	1,548	100.0	4.2	37.3	22.2	35.3	5.01	
Suburban	31.4	1,465	1,572	1,402	100.0	5.5	37.7	21.9	34.5	4.34	
Rural	13.1	1,268	1,414	1,364	100.0	4.7	35.7	21.6	37.6	6.12	
Cooling Degree-Days (CDD)-1990											
2,000 or More	17.7	1,296	2,951	2,642	100.0	3.2	15.5	17.8	63.0	6.59	
1,000 to 1,999	22.0	1,357	1,428	1,294	100.0	3.9	33.6	26.4	35.2	5.31	
500 to 999	21.3	1,335	768	709	100.0	7.3	56.2	21.0	15.2	4.86	
Fewer than 500	2.4	1,131	394	370	100.0	7.1	59.8	20.7	12.5	12.61	
Year of Construction											
1939 or Before	10.7	1,059	1,202	1,102	100.0	5.1	55.9	19.6	19.0	6.84	
1940 to 1949	4.2	1,082	1,471	1,344	100.0	7.5	41.0	25.2	26.1	8.70	
1950 to 1959	8.7	1,384	1,476	1,331	100.0	5.4	38.5	21.7	34.1	6.56	
1960 to 1969	10.9	1,290	1,722	1,578	100.0	5.5	34.9	22.4	36.4	7.91	
1970 to 1979	16.2	1,351	1,657	1,503	100.0	4.6	32.0	23.4	39.7	5.64	
1980 to 1984	6.3	1,376	1,908	1,679	100.0	4.8	31.7	21.0	41.5	8.73	
1985 to 1987	4.3	1,521	1,918	1,668	100.0	Q	21.2	22.8	53.4	13.77	
1988 to 1990 ⁴	2.0	2,355	1,494	1,349	100.0	Q	28.9	16.4	50.0	18.21	
Number of Rooms Usually Air Conditioned⁵											
One	6.6	297	1,168	1,045	100.0	13.4	61.1	14.0	10.5	8.06	
Two	6.9	540	1,363	1,253	100.0	6.4	58.7	18.6	16.3	7.29	
Three	8.4	759	1,545	1,404	100.0	4.9	46.3	22.1	25.8	7.90	
Four	10.4	1,073	1,682	1,514	100.0	3.5	31.2	25.7	38.9	6.49	
Five or More	30.9	1,959	1,719	1,549	100.0	3.2	26.9	23.2	46.4	4.42	

See footnotes at end of table.

Table 54. Total Equipped and Used U.S. Household Air Conditioning, 1990 (Continued)

Housing Unit and Household Characteristics	Total Households (millions)	Cooled Floorspace (square feet)	Number of Cooling Degree-Days		Air Conditioner Use in Summer 1990 (percent of households) ¹					RSE Row Factors	
			1990	Normal	Total	Not at All	Only a Few Times	Quite a Bit	All Summer		
	RSE Column Factors:	0.920	0.595	0.553	0.556	0505	3.130	1.022	1.539	1.208	
Electric Air Conditioning											
Other Cooling Equipment Used (more than one may apply)											
Evaporative Cooler	1.0	1,089	2,272	2,001	100.0	Q	44.4	27.0	22.6	13.56	
Whole House Fan	7.5	1,809	1,517	1,389	100.0	4.4	34.2	24.9	35.6	7.95	
Window or Ceiling Fan	34.5	1,464	1,739	1,573	100.0	3.8	34.1	21.8	39.9	4.33	
Portable Fan	34.8	1,215	1,538	1,395	100.0	6.0	41.1	23.5	28.8	4.08	
Exhaust Fan	40.0	1,477	1,621	1,459	100.0	4.4	34.2	21.5	39.4	3.89	
Helps to Keep House Cool (more than one may apply)											
Tree Shade	30.3	1,458	1,602	1,456	100.0	4.6	38.0	21.4	35.6	3.87	
Shutters or Awnings	9.4	1,415	1,582	1,421	100.0	4.1	42.4	20.5	32.4	7.10	
Blinds or Insulated Drapes	38.0	1,447	1,611	1,453	100.0	4.0	35.9	22.1	37.7	3.80	
Reflective Film on Windows	3.9	1,533	2,010	1,787	100.0	3.7	31.8	18.1	46.4	10.44	
1990 Family Income Category											
Less than \$5,000	2.5	740	1,950	1,788	100.0	5.3	43.8	17.0	31.8	12.73	
\$5,000 to \$9,999	6.0	824	1,646	1,498	100.0	6.9	43.1	18.1	31.7	7.69	
\$10,000 to \$14,999	7.1	918	1,572	1,443	100.0	8.7	45.1	20.6	25.0	7.24	
\$15,000 to \$19,999	5.2	1,080	1,708	1,561	100.0	2.1	36.8	22.4	37.8	9.29	
\$20,000 to \$24,999	6.0	1,134	1,604	1,450	100.0	5.0	43.2	21.8	29.7	7.30	
\$25,000 to \$34,999	10.3	1,238	1,555	1,412	100.0	4.9	36.8	21.6	35.7	6.10	
\$35,000 to \$49,999	12.6	1,403	1,645	1,468	100.0	3.8	31.2	20.9	43.9	5.92	
\$50,000 to \$74,999	8.1	1,788	1,492	1,346	100.0	4.9	33.6	25.0	36.5	7.53	
\$75,000 or More	5.7	2,362	1,375	1,200	100.0	3.5	31.2	28.2	36.8	9.30	
Below Poverty Line											
100 Percent	6.4	782	1,843	1,684	100.0	5.8	43.1	19.7	30.5	7.58	
125 Percent	9.3	825	1,804	1,650	100.0	6.4	42.7	18.1	31.7	6.53	
Eligible for Federal Assistance⁶	15.3	892	1,703	1,557	100.0	6.6	43.7	18.4	30.6	4.76	
Electric Central Air Conditioning	36.2	1,723	1,796	1,615	100.0	3.3	26.4	22.8	46.9	4.24	
Census Region and Division											
Northeast	3.2	2,055	871	792	100.0	5.0	37.2	27.4	30.4	7.98	
New England4	1,941	773	627	100.0	Q	48.3	26.4	19.7	13.94	
Middle Atlantic	2.8	2,071	885	816	100.0	4.9	35.6	27.5	32.0	8.84	
Midwest	9.2	2,006	948	901	100.0	2.6	43.2	27.8	25.8	7.57	
East North Central	5.8	2,044	800	764	100.0	2.6	49.0	28.8	19.3	11.07	
West North Central	3.3	1,940	1,209	1,142	100.0	2.7	33.0	26.1	37.3	7.55	
South	18.9	1,589	2,348	2,118	100.0	2.8	13.9	17.6	65.2	6.14	
South Atlantic	10.1	1,536	2,354	2,055	100.0	3.2	17.9	20.0	58.5	9.24	
East South Central	3.4	1,777	1,839	1,683	100.0	2.9	9.4	18.6	68.8	10.79	
West South Central	5.4	1,572	2,653	2,507	100.0	2.1	9.1	12.4	75.5	8.58	
West	5.0	1,504	1,850	1,542	100.0	5.1	36.3	30.6	27.0	7.44	
Mountain	1.3	1,395	2,924	2,456	100.0	Q	17.9	29.2	46.9	11.46	
Pacific	3.7	1,544	1,458	1,208	100.0	5.6	43.0	31.1	19.8	8.87	
Cooling Degree-Days (CDD)-1990											
2,000 or More	12.9	1,478	2,990	2,660	100.0	3.1	12.0	15.1	69.1	8.32	
1,000 to 1,999	12.7	1,753	1,460	1,318	100.0	3.0	23.6	28.1	44.7	6.27	
500 to 999	9.8	1,997	781	730	100.0	3.6	47.4	25.0	23.8	6.98	
Fewer than 5009	1,858	367	355	100.0	Q	47.0	36.2	Q	15.76	

See footnotes at end of table.

Table 54. Total Equipped and Used U.S. Household Air Conditioning, 1990 (Continued)

Housing Unit and Household Characteristics	Total Households (millions)	Cooled Floorspace (square feet)	Number of Cooling Degree-Days		Air Conditioner Use in Summer 1990 (percent of households) ¹					RSE Row Factors	
			1990	Normal	Total	Not at All	Only a Few Times	Quite a Bit	All Summer		
	RSE Column Factors:	0.920	0.595	0.553	0.556	0505	3.130	1.022	1.539	1.208	
Electric Central Air Conditioning											
Year of Construction											
1939 or Before	2.0	1,992	1,268	1,160	100.0	Q	41.5	23.5	29.0	12.38	
1940 to 1949	1.3	1,761	1,557	1,413	100.0	Q	18.5	32.1	46.7	12.87	
1950 to 1959	4.1	1,926	1,554	1,404	100.0	2.4	27.2	23.1	47.3	8.99	
1960 to 1969	6.3	1,722	2,013	1,850	100.0	4.9	21.8	21.9	50.5	10.13	
1970 to 1979	11.8	1,592	1,768	1,603	100.0	3.3	28.7	24.1	43.6	7.12	
1980 to 1984	4.9	1,560	2,048	1,786	100.0	2.9	26.8	20.8	48.0	9.52	
1985 to 1987	4.0	1,577	1,952	1,695	100.0	Q	20.4	22.3	55.2	15.26	
1988 to 1990 ⁴	1.9	2,532	1,544	1,391	100.0	Q	26.8	16.5	54.4	18.94	
Number of Rooms Usually Air Conditioned⁵											
One or Two9	531	2,326	2,105	100.0	Q	24.3	30.7	37.6	17.16	
Three	3.4	742	1,984	1,786	100.0	Q	38.2	19.0	37.1	14.35	
Four	6.0	1,041	1,830	1,645	100.0	2.0	24.8	24.4	47.7	9.41	
Five or More	25.9	2,053	1,748	1,570	100.0	3.4	25.4	22.8	48.3	4.80	
Other Cooling Equipment Used (more than one may apply)											
Evaporative Cooler5	1,510	2,669	2,323	100.0	10.5	26.2	30.1	33.2	15.59	
Whole House Fan	4.8	2,227	1,510	1,393	100.0	4.7	24.7	26.2	44.0	8.96	
Window or Ceiling Fan	20.2	1,894	1,964	1,768	100.0	3.1	22.4	22.0	52.2	5.66	
Portable Fan	16.6	1,703	1,805	1,627	100.0	3.9	28.2	26.4	40.6	6.18	
Exhaust Fan	26.6	1,784	1,828	1,640	100.0	3.1	25.0	21.3	50.0	4.99	
Helps to Keep House Cool (more than one may apply)											
Tree Shade	16.6	1,952	1,815	1,641	100.0	3.4	24.8	23.0	48.3	5.00	
Shutters or Awnings	5.2	1,845	1,784	1,598	100.0	3.5	31.1	21.0	43.4	9.28	
Blinds or Insulated Drapes	23.9	1,796	1,816	1,631	100.0	2.7	26.1	23.2	47.4	4.85	
Reflective Film on Windows	2.7	1,810	2,217	1,972	100.0	3.4	25.2	17.3	54.1	12.85	
Central Air Conditioner Age (excludes systems for more than one housing unit)											
Less than 2 Years	3.8	2,120	1,734	1,575	100.0	2.6	27.4	16.5	53.5	9.61	
2 to 4 Years	6.5	1,983	1,675	1,485	100.0	2.9	26.3	23.7	46.9	9.14	
5 to 9 Years	8.7	1,611	1,881	1,665	100.0	3.4	23.4	25.5	47.3	7.96	
10 to 19 Years	10.4	1,707	1,730	1,570	100.0	2.7	27.7	23.5	46.0	6.81	
20 Years or More	2.8	1,853	1,874	1,722	100.0	5.9	23.9	21.9	48.2	11.53	
Don't Know	3.5	1,179	2,028	1,832	100.0	4.5	31.2	19.2	41.8	12.45	
1990 Family Income Category											
Less than \$5,000	1.0	1,017	2,083	1,916	100.0	Q	37.3	Q	41.3	20.65	
\$5,000 to \$9,999	2.0	1,191	1,916	1,737	100.0	Q	30.1	17.3	46.5	13.18	
\$10,000 to \$14,999	3.0	1,233	1,820	1,652	100.0	4.6	36.1	21.6	37.4	11.53	
\$15,000 to \$19,999	2.8	1,392	1,868	1,710	100.0	Q	30.3	19.7	45.8	11.92	
\$20,000 to \$24,999	3.2	1,397	1,807	1,629	100.0	Q	34.7	21.5	42.3	9.77	
\$25,000 to \$34,999	5.9	1,517	1,861	1,682	100.0	2.9	24.5	22.9	48.9	8.54	
\$35,000 to \$49,999	8.3	1,717	1,887	1,683	100.0	2.9	21.1	22.3	53.7	7.87	
\$50,000 to \$74,999	5.9	2,055	1,683	1,519	100.0	4.8	23.7	25.1	46.4	8.40	
\$75,000 or More	4.3	2,754	1,500	1,306	100.0	2.9	23.7	28.8	44.1	10.43	
Below Poverty Line											
100 Percent	2.2	1,133	2,085	1,872	100.0	Q	36.7	17.7	39.3	13.53	
125 Percent	3.3	1,162	2,091	1,893	100.0	5.5	32.2	17.9	42.9	11.21	

See footnotes at end of table.

Table 54. Total Equipped and Used U.S. Household Air Conditioning, 1990 (Continued)

Housing Unit and Household Characteristics	Total Households (millions)	Cooled Floorspace (square feet)	Number of Cooling Degree-Days		Air Conditioner Use in Summer 1990 (percent of households) ¹					RSE Row Factors	
			1990	Normal	Total	Not at All	Only a Few Times	Quite a Bit	All Summer		
	RSE Column Factors:	0.920	0.595	0.553	0.556	0505	3.130	1.022	1.539	1.208	
Electric Central Air Conditioning											
Eligible for Federal Assistance ⁶	5.8	1,249	1,985	1,802	100.0	5.5	30.6	17.5	45.4	7.85	
Pays for Electricity for Central Air Conditioning											
Yes	35.1	1,748	1,794	1,612	100.0	3.4	26.5	22.8	46.9	4.27	
No	1.1	935	1,869	1,725	100.0	NC	23.6	25.2	46.6	21.04	
Room Air Conditioners ³	27.1	790	1,318	1,201	100.0	7.2	51.6	20.8	20.0	4.50	
Census Region and Division											
Northeast	7.6	776	841	734	100.0	6.5	66.6	17.9	8.7	6.91	
New England	1.8	793	649	490	100.0	7.9	64.5	20.4	7.2	11.66	
Middle Atlantic	5.8	771	901	811	100.0	6.0	67.3	17.2	9.2	7.73	
Midwest	7.7	810	850	808	100.0	9.2	63.5	17.5	9.7	7.13	
East North Central	5.6	805	788	758	100.0	11.4	62.9	16.8	9.0	9.17	
West North Central	2.1	822	1,015	940	100.0	3.4	65.2	19.3	11.7	10.29	
South	9.1	846	2,139	1,969	100.0	5.4	28.3	26.1	39.6	6.84	
South Atlantic	4.2	802	2,016	1,805	100.0	4.8	37.2	23.0	35.0	10.51	
East South Central	2.1	894	1,773	1,654	100.0	6.3	20.8	25.2	45.2	10.04	
West South Central	2.8	875	2,591	2,442	100.0	5.6	20.7	31.3	42.5	12.94	
West	2.6	580	1,230	1,046	100.0	9.9	53.8	20.0	14.7	13.13	
Mountain7	682	1,411	1,215	100.0	Q	38.5	30.1	24.6	26.01	
Pacific	2.0	545	1,166	986	100.0	11.0	59.2	16.5	11.3	16.14	
Cooling Degree-Days (CDD)-1990											
2,000 or More	4.7	798	2,843	2,591	100.0	3.5	25.2	25.0	46.3	8.97	
1,000 to 1,999	9.3	815	1,385	1,261	100.0	5.2	47.5	24.0	22.4	6.87	
500 to 999	11.6	778	758	690	100.0	10.4	63.7	17.7	8.1	5.17	
Fewer than 500	1.5	704	411	380	100.0	7.2	67.3	11.5	14.0	16.14	
Year of Construction											
1939 or Before	8.7	842	1,187	1,088	100.0	5.2	59.3	18.6	16.7	7.37	
1940 to 1949	2.8	765	1,432	1,312	100.0	9.8	51.5	22.1	16.6	10.98	
1950 to 1959	4.5	892	1,404	1,264	100.0	8.2	48.8	20.5	22.0	9.02	
1960 to 1969	4.7	713	1,334	1,214	100.0	6.2	52.6	23.0	17.5	9.75	
1970 to 1979	4.4	704	1,362	1,237	100.0	8.1	40.8	21.6	29.4	9.17	
1980 to 1984	1.4	752	1,433	1,316	100.0	11.0	48.4	Q	19.2	23.95	
1985 to 19873	795	1,473	1,322	100.0	Q	31.7	Q	Q	32.84	
1988 to 1990 ⁴2	559	993	919	100.0	Q	50.2	Q	Q	36.83	
Number of Rooms Usually Air Conditioned⁵											
One	6.5	297	1,125	1,010	100.0	13.3	62.3	12.9	10.5	7.88	
Two	6.1	536	1,261	1,158	100.0	6.6	62.5	17.8	13.1	7.64	
Three	5.0	771	1,247	1,146	100.0	5.9	51.8	24.0	18.2	8.21	
Four	4.4	1,116	1,480	1,333	100.0	5.5	40.1	27.5	26.7	9.15	
Five or More	5.0	1,477	1,570	1,442	100.0	2.1	34.8	25.5	36.8	9.41	
Other Cooling Equipment Used (more than one may apply)											
Evaporative Cooler5	665	1,894	1,694	100.0	NC	63.1	24.4	12.5	23.45	
Whole House Fan	2.7	1,084	1,528	1,381	100.0	3.9	50.6	22.7	21.0	13.64	
Window or Ceiling Fan	14.4	861	1,423	1,300	100.0	4.8	50.5	21.6	22.5	5.79	
Portable Fan	18.1	766	1,293	1,183	100.0	7.8	53.0	20.8	18.0	5.05	
Exhaust Fan	13.4	866	1,210	1,098	100.0	7.1	52.5	22.0	18.2	5.92	

See footnotes at end of table.

Table 54. Total Equipped and Used U.S. Household Air Conditioning, 1990 (Continued)

Housing Unit and Household Characteristics	Total Households (millions)	Cooled Floorspace (square feet)	Number of Cooling Degree-Days		Air Conditioner Use in Summer 1990 (percent of households) ¹					RSE Row Factors	
			1990	Normal	Total	Not at All	Only a Few Times	Quite a Bit	All Summer		
	RSE Column Factors:	0.920	0.595	0.553	0.556	0505	3.130	1.022	1.539	1.208	
Room Air Conditioners³											
Helps to Keep House Cool (more than one may apply)											
Tree Shade	13.7	858	1,344	1,231	100.0	6.1	54.2	19.4	20.2	5.54	
Shutters or Awnings	4.1	868	1,325	1,197	100.0	4.9	56.7	19.9	18.5	9.58	
Blinds or Insulated Drapes	14.1	857	1,263	1,151	100.0	6.1	52.4	20.1	21.3	5.82	
Reflective Film on Windows	1.2	928	1,555	1,384	100.0	Q	46.2	19.8	29.5	17.29	
Age of Most-Used Room Air Conditioner											
Less than 2 Years	3.0	772	1,263	1,148	100.0	8.2	47.8	20.0	22.6	9.38	
2 to 4 Years	5.7	784	1,317	1,190	100.0	3.9	55.1	20.6	20.3	8.07	
5 to 9 Years	7.4	795	1,404	1,281	100.0	4.1	53.5	19.1	23.2	7.84	
10 to 19 Years	6.5	852	1,320	1,211	100.0	7.9	49.7	24.0	18.2	7.94	
20 Years or More	1.7	881	1,262	1,125	100.0	9.1	56.4	19.3	15.2	15.83	
Don't Know	2.7	606	1,175	1,084	100.0	18.6	45.1	19.5	14.7	10.66	
Size of Most-Used Room Air Conditioner											
Small	7.6	520	1,146	1,039	100.0	9.3	61.5	15.3	14.0	6.73	
Medium	12.4	803	1,278	1,158	100.0	6.7	54.3	19.9	18.2	5.95	
Large	6.4	1,103	1,618	1,492	100.0	5.3	35.5	28.1	31.1	8.03	
Don't Know6	614	1,124	1,023	100.0	Q	44.9	28.6	14.2	21.61	
1990 Family Income Category											
Less than \$5,000	1.5	553	1,860	1,702	100.0	7.5	48.2	18.3	25.4	14.48	
\$5,000 to \$9,999	4.0	641	1,511	1,379	100.0	7.5	49.6	18.4	24.3	8.93	
\$10,000 to \$14,999	4.1	690	1,393	1,293	100.0	11.7	51.6	20.0	16.3	9.39	
\$15,000 to \$19,999	2.4	726	1,529	1,392	100.0	Q	44.4	25.3	28.8	13.42	
\$20,000 to \$24,999	2.9	843	1,380	1,253	100.0	9.5	52.5	22.2	15.7	10.24	
\$25,000 to \$34,999	4.4	866	1,147	1,052	100.0	7.4	53.4	19.8	18.0	9.34	
\$35,000 to \$49,999	4.3	797	1,177	1,053	100.0	5.6	50.8	18.3	25.0	9.42	
\$50,000 to \$74,999	2.2	1,071	978	881	100.0	5.3	60.2	24.7	9.8	12.03	
\$75,000 or More	1.3	1,077	966	852	100.0	Q	55.7	26.1	12.8	13.10	
Below Poverty Line											
100 Percent	4.1	592	1,713	1,582	100.0	6.5	46.5	20.7	25.8	8.49	
125 Percent	5.9	635	1,643	1,514	100.0	7.0	48.6	18.3	25.5	7.42	
Eligible for Federal Assistance⁶											
Pays for Electricity for Air Conditioning											
Yes	25.9	803	1,319	1,203	100.0	7.5	52.0	20.7	19.4	4.57	
No	1.2	516	1,292	1,136	100.0	Q	43.6	22.9	31.4	17.05	

1 "Air Conditioner Use" refers to central air conditioner or (if the household has only room air conditioners) to the most-used room air conditioner. Numbers may not sum to total because an estimated 0.6 percent of households with air conditioning did not use it for some "other" reason, such as not living in their house last summer.

2 Gas includes LPG and natural gas.

3 An estimated 2.0 million households have a central air conditioner and one or more room air conditioners. These households are included only under central air conditioners and not included under room air conditioners.

4 Does not include all new construction for 1990.

5 Numbers may not sum to total because fewer than 0.1 million households with air-conditioning equipment usually cool no rooms.

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

NC = No cases in sample.

-- = 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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 55. Annual Heating Degree-Days per U.S. Household

Housing Unit Characteristics	Normal HDD	1990 Heating Degree-Days								RSE Row Factors	
		Total	Main Heating Fuel								
			Natural Gas	Fuel Oil	Kerosene	Electricity	Liquefied Petroleum Gas	Wood	Other/None		
RSE Column Factors:	0.355	0.397	0.468	0.634	2.446	1.100	1.593	1.110	5.022		
Total	4,529	3,887	4,028	4,950	3,865	2,955	3,867	4,893	1,674	4.01	
Census Region and Division											
Northeast	5,940	5,092	4,905	5,108	6,618	5,152	5,759	6,658	Q	3.53	
New England	6,544	5,715	5,220	5,949	7,267	5,362	Q	6,898	Q	3.08	
Middle Atlantic	5,753	4,898	4,848	4,741	6,268	5,058	Q	6,535	Q	4.77	
Midwest	6,510	5,706	5,670	6,353	Q	5,379	5,912	6,124	Q	4.32	
East North Central	6,535	5,697	5,613	6,276	Q	5,484	6,114	6,388	Q	5.56	
West North Central	6,446	5,728	5,807	6,603	NC	4,983	5,488	5,293	Q	4.32	
South	2,883	2,252	2,513	3,125	2,444	1,791	2,186	2,858	2,071	8.09	
South Atlantic	2,888	2,194	2,904	3,094	2,306	1,606	1,791	2,857	Q	12.06	
East South Central	3,563	2,780	2,734	Q	Q	2,749	2,617	3,041	Q	9.55	
West South Central	2,404	1,990	2,104	NC	NC	1,571	2,452	Q	NC	17.35	
West	3,516	3,254	2,950	4,644	Q	3,723	4,180	5,199	375	9.34	
Mountain	4,679	4,340	4,648	Q	NC	2,470	5,324	6,382	NC	13.20	
Pacific	3,129	2,892	2,264	Q	Q	4,028	3,643	4,973	375	6.77	
Urban Status											
Urban	4,386	3,735	3,943	4,822	3,084	2,712	3,482	4,756	2,317	4.93	
Central City	4,288	3,637	3,902	4,644	Q	2,667	Q	4,111	Q	5.98	
Suburban	4,454	3,802	3,976	4,909	3,378	2,743	3,686	4,847	3,032	5.73	
Rural	5,021	4,414	4,455	5,369	4,566	3,978	4,203	4,981	1,284	7.60	
Secondary Heating											
Yes	4,563	3,930	3,927	4,964	3,460	3,056	3,989	4,692	4,396	4.51	
No	4,503	3,855	4,096	4,938	4,577	2,891	3,742	5,585	756	4.81	
Year of Construction											
1939 or Before	5,337	4,618	4,521	5,047	2,633	4,335	4,502	5,576	2,102	5.31	
1940 to 1949	4,787	4,113	4,014	4,859	Q	3,236	4,586	5,681	Q	11.10	
1950 to 1959	4,491	3,851	3,810	4,662	Q	3,313	3,381	3,963	Q	7.06	
1960 to 1969	4,131	3,520	3,545	4,702	Q	2,668	3,493	4,511	Q	9.46	
1970 to 1979	4,315	3,722	3,966	5,242	4,944	3,103	3,203	4,646	Q	6.89	
1980 to 1984	3,865	3,309	3,772	Q	Q	2,638	4,242	4,814	Q	12.58	
1985 to 1987	3,830	3,177	4,397	Q	Q	2,430	3,586	4,539	Q	18.71	
1988 to 1990 ¹	4,777	4,047	4,457	Q	Q	3,095	4,384	Q	Q	14.65	

¹ Does not include all new construction for 1990.

NC = No cases in sample.

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. • HDD = Heating degree-days. Normal HDD are the annual heating degree-days averaged over 30 years from 1951 to 1980.

• 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 1990 Residential Energy Consumption Survey (For specific titles of forms, see Appendix D).

Table 56. Annual Cooling Degree-Days for U.S. Households with Electric Air Conditioning

Housing Unit Characteristics	Number of Households (millions)			Cooling Degree-Days, 1990			Normal Cooling Degree-Days			RSE Row Factors	
	Type of Air Conditioning ¹			Type of Air Conditioning ¹			Type of Air Conditioning ¹				
	Total	Central	Room	Total	Central	Room	Total	Central	Room		
RSE Column Factors:	0.980	1.472	1.830	0.717	0.876	1.003	0.702	0.858	0.999		
Total	63.3	36.2	27.1	1,592	1,796	1,318	1,438	1,615	1,201	2.72	
Census Region and Division											
Northeast	10.7	3.2	7.6	850	871	841	751	792	734	2.73	
New England	2.2	.4	1.8	672	773	649	515	627	490	6.33	
Middle Atlantic	8.5	2.8	5.8	896	885	901	812	816	811	2.94	
Midwest	16.9	9.2	7.7	903	948	850	858	901	808	4.02	
East North Central	11.5	5.8	5.6	794	800	788	761	764	758	5.56	
West North Central	5.5	3.3	2.1	1,133	1,209	1,015	1,063	1,142	940	5.20	
South	28.0	18.9	9.1	2,280	2,348	2,139	2,070	2,118	1,969	3.46	
South Atlantic	14.3	10.1	4.2	2,255	2,354	2,016	1,982	2,055	1,805	6.33	
East South Central	5.4	3.4	2.1	1,814	1,839	1,773	1,672	1,683	1,654	6.17	
West South Central	8.2	5.4	2.8	2,632	2,653	2,591	2,485	2,507	2,442	4.07	
West	7.7	5.0	2.6	1,636	1,850	1,230	1,370	1,542	1,046	6.49	
Mountain	2.0	1.3	.7	2,413	2,924	1,411	2,037	2,456	1,215	3.44	
Pacific	5.6	3.7	2.0	1,357	1,458	1,166	1,131	1,208	986	7.70	
Urban Status											
Urban	50.3	30.4	19.9	1,638	1,849	1,315	1,457	1,643	1,172	3.12	
Central City	18.9	10.3	8.6	1,747	2,018	1,424	1,548	1,787	1,262	4.25	
Suburban	31.4	20.1	11.3	1,572	1,762	1,232	1,402	1,570	1,103	4.13	
Rural	13.1	5.8	7.2	1,414	1,524	1,325	1,364	1,467	1,280	5.22	
Year of Construction											
1939 or Before	10.7	2.0	8.7	1,202	1,268	1,187	1,102	1,160	1,088	5.71	
1940 to 1949	4.2	1.3	2.8	1,471	1,557	1,432	1,344	1,413	1,312	7.59	
1950 to 1959	8.7	4.1	4.5	1,476	1,554	1,404	1,331	1,404	1,264	4.94	
1960 to 1969	10.9	6.3	4.7	1,722	2,013	1,334	1,578	1,850	1,214	6.63	
1970 to 1979	16.2	11.8	4.4	1,657	1,768	1,362	1,503	1,603	1,237	5.61	
1980 to 1984	6.3	4.9	1.4	1,908	2,048	1,433	1,679	1,786	1,316	8.67	
1985 to 1987	4.3	4.0	.3	1,918	1,952	1,473	1,668	1,695	1,322	16.55	
1988 to 1990 ²	2.0	1.9	.2	1,494	1,544	993	1,349	1,391	919	14.81	

¹ An estimated 2.0 million households have a central air conditioner and one or more room air conditioners. These households are included only under central air conditioners and not included under room air conditioners. Only electric central air conditioners are included here.

² Does not include all new construction for 1990.

Notes: • To obtain the Relative Standard Error (RSE) percentage for any table cell, multiply the corresponding column and row factors. • Because of rounding, data may not sum to totals. • Normal Cooling Degree-Days are the annual cooling degree-days averaged over 30 years from 1951 to 1980.

• 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 1990 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Appendix A

How the Survey Was Conducted



Appendix A

How the Survey was Conducted

Introduction

The Residential Energy Consumption Survey (RECS) was designed by the Energy Information Administration (EIA) to provide information concerning energy consumption within the residential sector. The RECS is conducted in two major parts: the Household Survey and the Energy Suppliers Survey. The Household Survey collects information concerning the housing unit through personal interviews with a representative national sample of households. Copies of the data collection forms for the Household Survey and the adjunct Rental Agent Survey are reproduced in Appendix D, "Survey Forms." In the Energy Suppliers Survey, data concerning actual energy consumption are obtained from household billing records maintained by the fuel 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 from the Household Survey. A later report, "Household Energy Consumption and Expenditures 1990," will present the results of the Energy Suppliers Survey.

This appendix contains sections providing detailed information for the Sample Design, Household Survey and its adjunct Rental Agent Survey, Confidentiality of the Data, Data Preparation for the Report, Public Use Data File Preparation, and special data collection for the Administration for Children and Families.

Sample Design

The universe for the RECS includes all housing units occupied as a primary residence in the 50 States and the District of Columbia. The sample of households used as the basis for the 1990 estimates was selected by using a probability sampling design developed especially for the RECS. The current sample design was used for the first time for the 1980 RECS and was revised prior to the 1984 survey to reflect population figures from the 1980 Decennial Census; this revised design was then used for the 1984, 1987, and 1990 RECS. The sample for the 1993 RECS will be redesigned to reflect population figures from the 1990 Decennial Census.

Multistage Area Probability Sample

In the sample design used for the 1990 RECS, the total land area of the 50 States and the District of Columbia was divided into 1,799 Primary Sampling Units (PSU's) on the basis of Metropolitan Statistical Areas (MSA's), county and independent city boundary lines, and population characteristics.²¹ Three principal

²¹Boundary definitions for counties, independent cities, and equivalent units were generally those used by the Census of Population and Housing, 1980, for the revised design. There were 3,135 such units in the 1980 Census. Prior to 1983, MSA's were referred to as Standard Metropolitan Statistical Areas. Additional detail on RECS sample design can be found in "The 1990 RECS Sample Design Procedures Manual," prepared by the Response Analysis Corporation.

sources of information were used to update the data base used for sample revisions: population estimates, MSA definitions, and principal heating fuel (See text table below).

Data Components	Source of New Data Used in 1990 RECS Sample Design
Population estimates for countries and equivalent units	1980 Census of Population
Metropolitan Statistical Area (MSA) definitions	OMB definitions published June 27, 1983
Main space-heating fuel	1980 Census of Housing

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

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

A number of intermediate probability sampling stages producing successively finer geographic detail, preceded the final selection of RECS households in the 1990 sample.

- *Minor Civil Divisions* (MCD) such as cities, towns, and other Census units were selected within each PSU. Within the MCD's, Secondary Sampling Units consisting of Census tracts, block groups, or enumeration districts (ED's) were selected. In the RECS design, 1,516 units are selected at this secondary level (tracts or ED's). These tracts and ED's continue in the RECS sample for a number of surveys. Rough field counts in tracts and ED's form the basis for selection of listing segments of 25 or more housing units, with well-defined geographic boundaries.
- A *listing segment* is selected from each tract or ED. Detailed field listings are created for selected segments by field workers who visit the area and identify each housing unit by street address, apartment number, or other obvious features.
- A *penultimate cluster* of 25 or fewer housing units is selected from each listing segment. The ultimate cluster to be contacted for interviews (averaging about five housing units for the 1990 RECS) is systematically selected from the penultimate cluster, and these housing units constitute the assignments given to interviewers.

Longitudinal Sample Design

A plan for rotation of sample units, first used in the 1982 RECS, was continued in 1990. The primary objective of this rotation plan (or longitudinal sample design) was to observe changes in a sample of the same housing units over the period between two RECS data-collection cycles. To accomplish this objective in an efficient way and to set the stage for continuity in the RECS series, systematic random procedures were used to divide the total set of 1,516 tracts and ED's into four subsamples, designated in Table A1 as C, D, E, and F.

Primary Sampling Units

(PSU): Larger metropolitan areas or groups of counties containing small cities and rural areas. The United States was divided into PSU's from which a sample of PSU's were selected.



Minor Civil Divisions

(MCD): Cities, towns, townships, other civil divisions and Census County Divisions. The sampled PSU's were divided into MCD's. One or more MCD was selected from each sampled PSU.



Secondary Sampling Units

(SSU): Block Groups, Enumeration Districts, and/or Census Tracts. The sampled MCD's were divided into SSU's. One or more SSU was selected from each sampled MCD.



Segments

Neighborhoods of housing units. The sampled SSU's were divided into segments. One segment was selected from each sampled SSU. A list was prepared of all housing units in each sampled segment.



Ultimate Clusters

Groups of housing units. An ultimate cluster of approximately 5 housing units was selected from the list of housing units for each sampled segment. The housing units in the ultimate clusters were selected to be used for the RECS.

Source: Energy Information Administration, Office of Energy Markets and End Use, the 1990 Residential Energy Consumption Survey.

Table A1. Overview of Sample Operations for the 1982, 1984, 1987, and 1990 RECS

Rotation Group	1982	1984	1987	1990
* C	R	S ^a	R	N
D	R	N ^a	R	S
E	S	R	N ^a	R
F	N	R	S ^a	R

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

R = Housing units return from preceding survey.

S = Selected housing units from the same penultimate clusters that had been used in the preceding survey.

N = Selected new listing segments.

Source: Energy Information Administration, Office of Energy Markets and End Use, the 1982, 1984, 1987, and 1990 Residential Energy Consumption Surveys.

In the 1990 RECS, Groups E and F were the returning rotation groups in which procedures were designed to interview a sample of the same housing units that had been in the sample in the preceding 1987 RECS. Groups C and D constitute the new rotation groups in which housing units were included in the RECS sample for the first time in 1990. Procedures for updating the sample for new construction and for other changes in the housing unit stock were incorporated in sampling operations so that each rotation group, as well as the total RECS sample, is a probability sample of the population covered by the survey.

Returning Rotation Groups E and F

The general plan for these sample units (758 out of the total of 1,516) was to conduct interviews in the same housing units that had been contacted 3 years earlier. These would include housing units that had been vacant, noninterviews (refusals, not-at-homes, etc.), and completed units.

Before contacting households for the 1990 RECS, interviewers made visits to sample segments in mid-1990 to check the 1987 housing unit listings for missed units and to update listings for new construction, demolition, and conversion of structures from one use to another. Newly constructed or converted units, and those missed in the 1987 listings, were sampled at the 1990 RECS sampling rate.

Rotation Groups C and D

In each of the 758 sample units (in the Census tract or ED level) of these rotation groups, the first step was to perform a new construction update procedure. This would be based on a canvass, primarily by telephone, of local sources of information, such as building-permit-issuing agencies, zoning boards, and tax offices. The objective was to determine whether significant new construction--defined as groups of 25 or more housing units--had occurred within the tracts or ED's since 1984. In the canvass, significant new construction was found in Census tracts and ED's in 197 of the 758 units. New field counts were made and new segments were selected based on the new measures of size.

In Census tracts and ED's in which significant new construction (clusters of 25 or more new housing units) was not found, procedures diverged in Rotation Groups C and D. In Rotation Group D, 1987 RECS housing unit listings were checked and updated (for such things as missed units, new construction) before the start of field contacts for interviews. This step in Rotation Group D was identical to the listing checks carried out for Rotation Groups E and F. However, housing units for the 1990 RECS sample were selected from among those *not* selected in the earlier RECS. In Rotation Group C, a new listing segment was selected for the 1990 RECS.

Household Survey

Data Collection Procedures

Interviewers used Form EIA-457A, "Household Questionnaire," to conduct the personal interviews at the sampled housing unit. The original sample consisted of 6,757 units, of which some 150 either were not used for dwelling purposes or were not habitable (Table A2). Of the 6,607 habitable housing units, 182 were ineligible for this study due to a current vacancy or seasonal occupancy (the units were not the primary

Table A2. Interviews Completed by Stage In the 1990 RECS

	Personal Interviews Attempted			Status After Third Wave	Contact Using the Mail Questionnaire	Final Status
	First Wave	Second Wave	Third Wave			
Total Listed Units	6,757	1,847	1,173	6,757	1,081	6,757
Out of Scope Units						
Business, Other	34	0	0	34	-	34
Not Habitable	37	0	0	37	-	37
Nonhousing Unit	79	0	0	79	-	79
Subtotal Out of Scope	150	0	0	150	-	150
Housing Units	6,607	1,847	1,173	6,607	1,081	6,607
Ineligible Units						
Vacant	475	33	8	516	-	516
Seasonal Vacant	175	7	0	182	-	182
Subtotal Ineligible	650	40	8	698	-	698
Eligible Units (or yet to be contacted)	5,957	1,807	1,165	5,909	1,081	5,909
Not Completed—Personal Interview						
No One home	840	348	58	224	-	224
Eligible Respondent Not Home	44	16	5	15	-	15
Refused	781	435	57	^a 717	-	717
Illness	26	12	2	18	-	18
Language Barrier	37	8	1	19	-	19
Wrong Respondent or Unit	25	6	1	12	-	12
Not Contacted ^b	79	348	957	61	-	61
Other	15	0	0	15	-	15
Subtotal Not Completed (Personal Interview)	1,847	1,173	1,081	1,081	-	1,081
Not Completed—Mail Questionnaire						
Unusable Address	-	-	-	-	21	21
Postal Return	-	-	-	-	62	62
Returned Blank	-	-	-	-	23	23
Returned Unusable	-	-	-	-	6	6
Not Returned	-	-	-	-	641	641
Other Not Mailed	-	-	-	-	61	61
Subtotal Not Completed (Mailed Questionnaires)	-	-	-	-	814	814
Total Interviews Completed	4,110	634	84	4,828	267	5,095

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

^bIncludes households that moved after initial contact.

-- Data not applicable.

Source: Energy Information Administration, Office of Energy Markets and End Use, the 1990 Residential Energy Consumption Survey (RECS)—RECS Public Use Data File and unreleased data.

residence for the occupants). Personal interviews were conducted at 4,828 of the 5,909 eligible units, for a response rate of 81.7 percent. A shortened version of the household questionnaire (Form EIA-457B, "Household Mail Questionnaire") was sent to households where a personal interview was not completed. Mail questionnaires were sent to 1,031 of the 1,081 households that had not participated in personal interviews. Fifty households adamantly refused further contact or could not be reached by mail, and, therefore, were not included in the mail followup. Completed questionnaires were returned by 267 of these households, or 25.9 percent of those mailed. Of the total eligible households, responses were received from 86.2 percent (or 5,095 households).

Data Collection Dates

Approximately three-quarters of the personal interviews were completed in September and October 1990 and 99 percent were completed by the end of December 1990. In a few sample locations with low response rates, interviewing continued until January 1991. Most of the 267 completed mail questionnaires were received in January and February 1991. In keeping with past practice in the RECS survey, November was regarded as the rough midpoint for data-collection activity. Thus, November 1990 was the date for determining the independent estimates of the size of the universe of households used in the ratio estimation of survey results.

The Interview

The average personal interview lasted 62 minutes, with 82 percent of the interviews lasting between 30 and 75 minutes. The interview with the householder (or spouse) covered structural features of the house related to energy, such as: insulation, doors, windows, the heating and cooling systems (with the fuels used in these systems), use of wood fuel, energy conservation improvements, household appliances, household vehicles, receipt of government assistance for the cost of heating, and demographic data on household members.

At the end of the interview, respondents were asked to sign an authorization form allowing the interviewing contractor to obtain records of energy consumption from the housing unit's energy supplier(s). At this time, the interviewer also measured the dimensions of the housing unit. (See "Estimates of Housing Unit Size" in this appendix.)

The Interviewers

A total of 279 interviewers completed one or more personal interviews for this study. One hundred and two interviewers (36 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.

Interviewer training was conducted by video cassette and guided self-study programs. This was a departure from previous RECS, which used a combination of in-person training, written materials, and telephone training. The training for interviewers covered general interviewing techniques, background of the Residential Energy Consumption Surveys, a question-by-question review of the household questionnaire, ways to measure the respondents' homes, the accurate recording of the Vehicle Identification Number (VIN), and the administrative requirements, (the schedule for returning completed questionnaires and procedures for submitting time and travel forms).

Interviewers were paid a fixed amount for their interview training time. All interviewers were required to complete two practice interviews (one before training and one after), training exercises during the training video, and a final quiz on the questionnaire after the training video had been completed. The practice interview, completed after the training, was carefully reviewed by the interviewer's supervisor. Extensive

feedback was provided to the interviewer on this practice interview and, on the next one to five interviews completed by the interviewer.

The interviewer kept their video cassettes for review during the survey. In addition, there was a written, 132-page manual, *Instructions for Interviewers, 1990 Residential Energy Consumption Survey*.

Interviewers were paid on an hourly basis for their work on RECS, which included time for home study, review of completed interviews, actual interviewing time, and travel to and from sampled housing units. Interviewers were also reimbursed at standard mileage rates for use of personal vehicles and other travel expenses. Interviewers working in locations believed to present a hazard to their safety were compensated for the use of an escort. Each interviewer conducted an average of 17 interviews. Twenty-six interviewers each completed fewer than six interviews; the average for this group of 26 interviewers was 3.0 completed interviews. Seven interviewers completed 50 or more interviews; the average for this group of interviewers was 66.0 completed interviews. Twenty percent of the personal interviews were verified by telephone or mail to ensure that interviews were conducted as intended.

Rental-Agent Survey

The Rental-Agent Survey is an adjunct to the Household Survey to verify information from household respondents in rental units on fuels and main space-heating equipment used. Telephone interviews were carried out using Form EIA-457C, "Rental Agent Questionnaire," with rental agents and landlords of RECS households living in multiunit dwellings whose occupants did not directly pay to utility companies or fuel suppliers for one or more household fuels.

The interviews with rental agents or their representatives were conducted in the spring of 1991. Altogether, 281 rental agents were interviewed. These interviews covered 550 households in 513 buildings. The 550 households were 85.1 percent of the total of 646 households living in multiunit buildings who had one or more fuels included in their rent.

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

The rental agent was deemed the more knowledgeable person about landlord payments for the fuel, the use of the fuel as the main space-heating, water-heating, or air-conditioning fuel, and the main space-heating equipment. The respondent was generally considered the more knowledgeable person for the definition of supplemental heating fuel, as the supplemental heating fuel was more likely to be under the household's control, even in multiunit dwellings.

Minimizing Nonresponse

In an effort to maximize the validity of the survey data, a multiwave, multicontact approach was employed. Before the initial contacts, a letter was sent to each household with a street address. The letter from the Director of the Office of Energy Markets and End Use, briefly described the purposes and stressed the importance of the survey. Beginning in September 1990, interviewers made up to seven or more callbacks at different times of the day, throughout the week, in an effort to minimize the number of uncontacted households. The interviewers also queried neighbors regarding the most opportune times to contact the prospective respondent. By the end of the first wave, 150 addresses were found to be nonresidential and an additional 650 were found to be ineligible (Table A2). Some 4,110 personal interviews were completed, leaving 1,847 nonrespondents in this wave.

A second wave was initiated in an effort to contact households that were not available during the first wave and to attempt to convince selected first-wave refusals to reconsider. A new set of letters preceded the renewed effort and, in most cases, the sampled housing units were assigned to a different interviewer. Again, up to seven or more attempts were made to contact the prospective respondents. At the end of this wave, an additional 40 addresses were found to be ineligible. As a result of the second wave, an additional 634 interviews were completed, leaving 1,173 nonrespondents.

A third wave was initiated in an effort to reach nonrespondents in a number of locations that had low completion rates. Eight addresses were found to be ineligible and an additional 84 personal interviews were completed in the third wave.

In a final attempt to reduce nonresponse, an abbreviated version of the questionnaire (adapted for self-administration) was mailed to most of the remaining nonrespondents. As a result of this effort, 267 additional households responded. After three waves of personal interview attempts and the mailed questionnaire, 814 households or 13.8 percent of all eligible housing units had not responded.

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

- Approximately 82 percent of the households were contacted and agreed to be interviewed personally. An additional 5 percent of the sampled households completed and returned mailed questionnaires.
- Of the 5,095 responses, 81.0 percent were obtained during the first wave of contacts; 12.4 percent were obtained during the second wave; and 1.6 percent resulted from third-wave contacts. Some 5.2 percent were responses to the mailed questionnaire.
- Of all households that participated in the personal interviews, 31.3 percent required only one visit in the first wave and 75.8 percent were completed with no more than two first-wave callbacks.
- A total of 216 personal interviews were completed in the second and third waves with respondents who had previously refused to participate, representing 4.5 percent of all completed personal interviews. In addition, of the 267 mailed questionnaires that were completed and returned, 169 were from households that previously refused to participate.

Response Rates and Household Characteristics

This section of the report compares various response and nonresponse rates across Census region, location type, and housing structure type (Table A3). Several patterns are clear. First, personal interviews enjoyed the most success in the South Region (84.9 percent), in rural areas (87.2 percent), and among residents of buildings with two to four units (83.2 percent). Conversely, the interviewers had their lowest success rates in the Northeast Region (77.5 percent), urban areas (central city) (79.0 percent), and in buildings with five or more residential units (77.4 percent). When looking at the categories comprising these groupings, it is important to remember that their characteristics are not necessarily independent. Rather, they are very likely to overlap: for example, large apartment buildings are concentrated in urban areas.

The total response-rate patterns, with regard to highest and lowest rates, generally are not affected by adding the mailed-questionnaire responses; however, the overall range from highest to lowest decreases by one to two percentage points. The response to the mail questionnaire tended to be higher in areas where the refusal rate to the personal interview was the highest.

Table A3. Response Rates in the 1990 RECS by Region, Urban Status, Type of Structure, and Rotation Groups
 (Percentage of Eligible Housing Units)

Housing Characteristic	Response Rates ^a			Personal Interview Nonresponse Rates	
	Personal Interviews	Mall Questionnaires	Total Responses	Refusals	Unable to Contact
Total	81.7	4.5	86.2	12.1	6.2
Census Region					
Northeast	77.5	5.9	83.4	13.8	8.7
Midwest	83.1	4.3	87.4	11.8	5.1
South	84.9	3.1	88.0	10.3	4.8
West	80.4	5.1	85.6	13.0	6.6
Urban Status					
Urban (Central City)	79.0	4.9	83.8	12.3	8.7
Suburban	80.6	5.2	85.9	13.7	5.7
Rural	87.2	2.8	89.9	9.3	3.5
Structure Type					
Single-Family or Mobile Home	82.3	4.4	86.7	12.8	4.9
Buildings with Two to Four Units	83.2	3.5	86.7	8.0	8.8
Buildings with Five or More Units	77.4	6.0	83.4	11.7	10.9
Sample Rotation Group					
Returning Rotation Group	79.4	4.5	83.9	13.9	6.7
New Rotation Group	84.0	4.5	88.5	10.4	5.6

^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, the 1990 Residential Energy Consumption Survey (RECS), RECS Public Use Data File and unreleased data.

Overall response rates are approximately 5 percent higher for new rotation groups (households not contacted for an earlier RECS) than for returning rotation groups. Conversely, refusal rates are approximately 4 percent higher for the returning rotation groups that had been contacted in an earlier RECS or companion survey, Residential Transportation Energy Consumption Survey (RTECS). These findings replicate results for earlier RECS.

Data Editing

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

The contractor attempted to resolve inconsistencies or ambiguities in the data internally, by reference to other parts of the questionnaire. When these efforts failed to resolve an important problem, particularly those involving heating fuels or heating equipment and/or relationships between questionnaire responses, the contractor made a followup contact with the rental agent or a telephone contact with a member of the household in question. Telephone contacts with a household member were completed with approximately 4 percent of households during the course of data editing for this survey.

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 entire population of households. The universe includes all households in the 50 States and the District of Columbia, including households on military installations. At the midpoint of this RECS, November 1990, the universe was estimated to contain 93,991,000 households, based on the Current Population Survey (CPS) estimates of the population.

There are two major types of nonresponse--for an entire sampled household (unit nonresponse), or for a particular item of interest from a responding household (item nonresponse). The next two sections provide details on the procedures followed for each type of imputation. A third section deals with a special category of item nonresponse--the size of housing units in square feet.

Adjustments for Unit Nonresponse

Weight adjustment was the method used to reduce unit nonresponse bias in the survey statistics. Weights were calculated for each sample household. The household weight reflected the selection probability for that household and additional adjustments. These adjustments included correcting for potential biases arising from the failure to list all housing units in the sample area and to contact all sample housing units. Contacts were not successful with 13.8 percent of the eligible units.

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

The failure to list all housing units in the field-listing task is a common problem in surveys of this type. The result is an undercount of housing units in the sample area and, hence, an underestimate of the number of households in the universe. The undercount in the 1990 RECS was in the range of 8 to 10 percent. This problem is treated in two ways in the RECS. One treatment occurs during the interviewing process. The second treatment occurs in the estimation process. During the interviewing stage, unlisted housing units or households are discovered by querying the household where interviews are conducted to determine if other households are present in the unit. In addition, the interviewer is instructed to conduct an interview at all housing units contained in the geographical area between the interviewed household and the next listed address. This method reduces the number of missed households, but does not completely eliminate the noncoverage problem.

The noncoverage problem is also treated by using ratio estimation to adjust selected estimates of household counts to official population values. Ratio adjustment took place in four stages for the 1990 RECS.

First Stage. The first stage adjustment was computed from information for PSU's in NSR strata only. A separate factor was created for each of 20 cells (four Census regions classified by five space-heating fuel

categories). The implementation of this factor reduced somewhat the amount of variance caused by the sampling of PSU's. The first-stage adjustment for Cell "c" is given by:

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

Where N_c is the total number of households (1980 Census population) in Cell c for all PSU's in RECS NSR strata (including those PSU's not selected for RECS). M_c is an estimate of N_c obtained from the 1980 Census data for the NSR PSU's that were selected for the 1990 RECS. In particular, M_c is given by the sum (over all NSR PSU's selected for RECS) of the product of the PSU sampling weight and the number of households in Cell c (1980 Census population) for the PSU.

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

Second Stage. The second-stage factor adjusted the weights (after the nonresponse adjustment and the first-stage adjustment) from the survey so that the sum of the weights in the twelve categories shown in Table A4 will equal the CPS estimates for the population in the twelve categories. The second-stage adjustment for Category k is given by:

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

Where H_k is the CPS estimate of the number of households in Category k, and G_k is the sum of the RECS households weights before the second-stage ratio adjustment (after nonresponse adjustment and the first-stage adjustment) over all households in Category k. H_k is based on a linear extrapolation of values for each of the twelve cells, using CPS estimates for March 1990 and March 1991 to develop November 1990 estimates.

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

Table A4. Population Estimates Used as Controls in Ratio Estimates in the 1990 RECS

Census Region	Thousand Households			
	Urban		Rural	Total
	Central City	Suburban		
Northeast	6,470	10,485	2,268	19,223
Midwest	6,873	9,648	6,543	23,069
South	9,417	13,627	9,252	32,296
West	7,080	9,262	3,061	19,403
Total United States	29,845	43,022	21,124	93,991

Note: See "Glossary" for definition of urban, suburban, and rural.

Source: Estimates derived from the March 1989 and March 1990 Current Population Surveys, U.S. Bureau of the Census.

Third Stage. The third stage in the weight adjustments was similar to the second stage. The only difference was that instead of the twelve categories used in the second stage, the following three categories were used:

1. One-person households, male householder,
2. One-person households, female householder,
3. All other households.

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

Fourth Stage. The fourth and final stage in the weight adjustments was exactly like the second stage. The final household weights will (for each of the categories in Table A4) sum to the control totals shown in that table.

Adjustments for Item Nonresponse

Item nonresponse occurs when respondents do not know the answer or refuse to answer a question or when an interviewer does not ask a question or does not record an answer. Imputations were made for nonresponse on about two-thirds of the items for which some nonresponse occurs, including most items to be used for making national estimates. Items for which national estimates are made, but for which imputations were not made, include questions on the presence, type, and amount of attic and floor insulation; indoor temperatures; and the presence of wall insulation. For these items, no variables existed where correlations with the missing item were strong enough upon which to base an imputation procedure.

"Hot-deck" imputation was the method used most frequently (Table A5). 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.

Table A5. Imputation Methods Used for the 1990 RECS Households Questionnaire

Imputation Method	Questionnaire Items Impacted	
	Number	Item
Not Imputed	139	32
Imputed	290	68
Hot-Deck	179	42
Random	54	13
Deductive	34	8
Allocation	23	5
Total*	429	100

*Excludes 74 items for which missing values, if any, are determined by explicit editing rules in the initial stages of questionnaire editing.

Source: Energy Information Administration, Office of Energy Markets and End Use, the 1990 Residential Energy Consumption Survey (RECS). RECS Public Use Data File.

Less frequently used imputation methods included regression estimates, random selection from the known values of a variable, and deductive and allocation procedures. Regression procedures were used to impute the total square footage of the housing unit when actual measurements were missing. Discussion of the regression

procedure and other imputations involved in the square footage estimates is found in the following section, "Estimates of Housing Unit Size."

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 storm windows is conditional on total number of windows).

Deductive procedures were used primarily for missing information on fuels used for specific purposes and methods of payment for fuel uses. The amount of missing data on these items was generally quite small; other available information in the questionnaire, or from related data sources (utility bills and rental agent survey), provided reasonably conclusive assignments for the missing data.

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

Annual family income headed the list of items most frequently imputed (Table A6). The amount of item imputations for the 267 households receiving mailed questionnaires was considerable since the mailed questionnaire contained only a small subset of questions from the household interview. For the mailed questionnaire, a modified hot-deck imputation method was used. A hot-deck matrix was created for both mailed questionnaire and personal-interview households using Census region, type of housing unit structure, space-heating fuel, hot-water fuel, and presence and type of air conditioning. Whenever possible, a donor personal-interview household was chosen for each mailed-questionnaire household from the same cell of the hot-deck matrix. For 99 percent of the mailed questionnaires, donors matched on all hot-deck variables.

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

Estimates of Housing Unit Size

Interviewers for the 1990 RECS were given a retractable 50-foot metal tape measure to ascertain the dimensions of housing units. The instructions were to measure the "area enclosed from the weather." This included garages attached to the house, attics either heated or finished, and basements enclosed from the weather (see "Floorspace" in "Glossary" for further definition). Interviewers indicated on a rough-drawn diagram of the floor plan which areas were heated and unheated and recorded the dimensions of the heated areas and the unheated areas. This finer breakdown into heated and unheated areas more closely measures the floorspace of the housing unit that places the demand on the heating system and, therefore, is the figure that may prove to be more useful in analyzing residential energy consumption. All measurements were rounded to the nearest foot by the interviewer or in the editing process. Interviewers were given an option of measuring the home from the inside, taking into account the thickness of inside walls, or from the outside.

Interviewers attempted to measure the size of all 4,828 housing units where personal interviews were conducted. In 4,674 cases, usable measurements were acquired or were available from data collected during

Table A6. Items Most Frequently Imputed in the 1990 RECS

Imputed Item	Cases Imputed	Percentage of Total Sample ^a (4,828)	Method of Imputing	Question Number on Questionnaire
Annual Family Income	693	14	Hot-deck	K-10
Number of Storm Doors	484	10	Random	N-2
Water Heater in Heated Area Status	281	6	Hot-deck	C-7
Availability of Natural Gas	279	6	Hot-deck	B-1
Household Able to Heat with Auxiliary Fuel	274	6	Hot-deck	B-8
Water Heater Size	269	6	Hot-deck	C-6
Water Heater Age	253	5	Hot-deck	C-5
Government Help Weatherizing	243	5	Hot-deck	L-6
Main Fuel Same as in November 1987	234	5	Hot-deck	B-3
Amount of Heat From Main Fuel	188	4	Hot-deck	B-7
Lower Rent Due to Government Aid	178	4	Hot-deck	L-13
Have Basement Insulation	159	3	Hot-deck	M-10
Household on Budget Plan	158	3	Hot-deck	I-1
Year House was Built	156	3	Hot-deck	A-6
Square Feet of Housing Unit	154	3	(b)	-
Type of Foundation	136	3	Hot-deck	P-11
Housing Project Status	117	2	Hot-deck	L-12
Number of Fluorescent Lights	108	2	Random	E-7
Number of Floodlights	107	2	Random	E-6
Year-Round Use of First Refrigerator	101	2	Hot-deck	F-7
Age of Central Air Conditioner	88	2	Hot-deck	D-7
Race of Householder	82	2	Hot-deck	K-7
Age of Other Household Members	80	2	Allocation	K-3
Basement or Crawl Space Heated	65	1	Hot-deck	P-12
Age of Householder	55	1	Allocation	K-3
Number of Rooms Cooled	55	1	Random	D-2
Marital Status of Householder	52	1	Hot-deck	K-6
Percent of Basement Insulated	50	1	Hot-deck	M-11

^aMailed questionnaires are not included in the percentage. To account for these, add five percentage points to the percentage points given.

^bSee section "Estimates of Housing Unit Size."

-- Data not available.

Source: Energy Information Administration, Office of Energy Markets and End Use, the 1990 Residential Energy Consumption Survey (RECS). RECS Public Use Data File.

the 1990 RECS. In 154 cases, the measurements either were not usable or were not made. Although most cases contained the basic information, some imputations were required to produce a final set of 3-square footage amounts for each housing unit:

HOME AREA = total square footage of floorspace enclosed from the weather

HEATED = total square footage of heated floorspace

UNHEATED = HOME AREA - HEATED = total square footage of unheated floorspace

Equation 3 indicates that the scale factor varies by the floorspace of the first floor, the total floorspace, and the type of dwelling. In particular, the scale factor is reduced when the dwelling is a mobile home and when the dwelling is a single-family attached home. The scale factor increases as the floorspace of the remaining floors increases.

These scale factors, which increased the inside measurements, ranged from 1.001 to 1.245. Ninety-five percent of the scale factors were under 1.087. If the equation resulted in a scale factor of less than 1.0, the scale factor was set equal to 1.001. There was no upper bound placed on the scale factor.

Equation 3 was developed in the following manner: Regression prediction equations were developed independently for homes measured from the inside and homes measured from the outside. Both equations were used to generate estimates of floorspace for homes measured from the inside. The relationship between the ratio of predicted "outside" to "inside" floorspace, the actual inside floorspace for the first floor, the actual inside total floorspace for these homes, and the housing type were used in fitting the regression Equation 3 for the scale factor.

Treatment of Housing Units with Some Missing Data. The 767 cases lacking information as to whether the measurements were inside or outside, or a combination of inside and outside, were treated as though measurements were outside. This was because average predictions based on regression equations using homes measured outside matched average totals for this group very closely, while predictions based on regression equations using homes measured inside were seriously biased on the low side.

The 42 cases lacking information on the ratio of heated to unheated space borrowed that ratio from housing units with complete data, on a PSU-by-PSU basis. For most of these cases, information was also lacking as to whether the measurements were inside or outside, and measurements were again assumed to be outside. In 3 of these 42 cases, the measurements were known to be inside measurements and scale factors were used to increase the floorspace estimates.

For the 78 cases with missing basement dimensions, the basement floorspace was imputed by using a simple regression based on the floorspace of the first floor. The heated and unheated areas were determined or imputed and then added to known totals for the remaining floors. In 15 of these 78 cases, the measurements for the remaining floors were known to be inside measurements and scale factors were used to increase the floorspace estimates.

There were 69 cases in which the ratio of heated to unheated space for the basement was unknown. This ratio was imputed by using an appropriate empirical distribution of heated to unheated ratios. Three such distributions were used: one for single-family homes with basements only; one for homes with a basement plus crawl space and/or slab; and one for basements of homes in buildings with two to four units. In 10 of these 69 cases, the measurements were known to be inside measurements and scale factors were used to increase the floorspace estimates.

Treatment of Housing Units with No Usable Measurements. A regression equation was used for the 154 cases with no usable data. After HOME AREA had been imputed by using the regression equation, the ratio of heated to unheated space was imputed using the same procedures described above for housing units for which that ratio was missing.

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

Confidentiality of Information

The 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 contractor for verification purposes only. The household records that are placed on the public use data file are masked for further confidentiality protection.

Public Use Data File Preparation

Housing Characteristics 1990 was produced with data from the January 1992 survey data file. These data come from the Household Survey and the adjunct Rental Agent Survey. The Energy Suppliers Survey data will be added to later data files, which will be used to produce the second report from the 1990 RECS survey. Following the publication of the statistical reports for the RECS, a final data file will be prepared for release to the public containing both the housing characteristics and energy supplier data for the RECS. Measures such as the removal of geographic identifiers, except Census Region and Census Division are taken to mask the data to insure that the identity of the individual respondents is kept confidential.

The public use data file is released to the public through the National Technical Information Service (NTIS). (See Appendix F for information on how to order this data file from NTIS and the Government Printing Office.) The file is available both on magnetic tape for use with a main frame computer and on floppy diskettes to use with personal computers.

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 1990 RECS most of this information was in Section L of the Household Questionnaire (Form EIA-457A). Unlike past surveys, the ACF did not fund an "oversampling" of low-income households for the 1990 RECS.

In Section L of the Household Questionnaire, respondents with annual incomes under \$35,000 were asked a series of questions about the receipt of home energy assistance and lack of heat during October 1989 through September 1990. The data were updated for the period from October 1990 to July 1991, through a telephone survey in August 1991.

Appendix B

Quality of the Data

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

Appendix B

Quality of the Data

All the statistics published in this report are estimates of population values, such as the number of occupied housing units that are heated by natural gas. These estimates are based on observations from a randomly chosen subset of the entire population of occupied housing units. As a result, the estimates can differ from the true population values.

The differences between the estimated values and the actual population values are of two types, sampling errors and nonsampling errors. Nonsampling errors are also known as systematic errors, or biases.

Sampling error is the random difference between a survey estimate and a population value that 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 1990 RECS. Therefore, the sampling error is nonzero and unknown for the particular sample chosen. However, the sample design permits sampling errors to be estimated. The section, "Estimation of Standard Errors," describes how the sampling error is estimated and presented for statistics given in this report.

The sections, "Completeness of Data" and "Quality of Specific Data Items," describe some of the sources of nonsampling error and how the survey is designed and conducted to minimize such errors.

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 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).

The section, "Completeness of Data," describes the nonsampling errors that occur for the first reason in the list above.

The section, "Quality of Specific Data Items," 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.)

Most unit nonresponse is caused by a respondent's refusing to cooperate or being unavailable. Item nonresponse results when the respondents do not know, or, less frequently, refuse to give the answer to a particular question.

Unlike the sampling error, the magnitude of the nonsampling error cannot be estimated from the sample data. For this reason, avoiding biases and systematic errors at the outset is a primary objective of all stages of survey design and field procedures. The wording and format of survey questionnaires, the procedures used to select and train interviewers, and the quality control built into the data collection, receipt, and processing operations were all designed to minimize these sources of error. For a discussion of these procedures, see Appendix A,

"How the Survey Was Conducted." In addition, response adjustments and ratio estimations were incorporated into the survey estimator to help reduce both sampling and nonsampling error. These procedures also are discussed in Appendix A, "How the Survey Was Conducted."

Nonsampling Error

Completeness of Data: Noncovered Housing Units

Data are not collected for the following two types of housing units:

- **Vacant housing units.** These units may use energy for minimal heating for protection from the weather and minimal lighting for security. The American Housing Survey (AHS) conducted by the Bureau of the Census estimated that there were 6.4 million vacant, year-round housing units (that were not held for "occasional" use) in 1989.
- **Seasonal units or second homes for the owner's use.** The AHS estimates there were 2.7 million year-round homes held for "occasional" use and 2.9 million "seasonal" units in 1989.

These two types of units are not included in the RECS survey primarily because of the difficulty in acquiring data and limitations in the availability of funds for the RECS. The RECS data are collected by interviewing an occupant of the housing unit. By definition, a vacant housing unit is not occupied at the time RECS field workers attempt to interview the occupants of the unit. Hence, for vacant units, someone other than the occupants would need to be contacted. For many vacant units, this would add substantially to the cost of acquiring data for the unit. By definition, second homes are housing units that are not the primary residence of the occupants. Hence, for many second homes, the occupants may be living somewhere else at the time the interviewers are in the neighborhood of these second homes. As a result, contacting and interviewing the occupants of second homes may be costly and difficult.

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

Quality of Specific Data Items

New Homes

The total number of new homes estimated to have been built from 1988 through 1990 is 2.8 million homes (Table 31). For this period of time, RECS underrepresents the number of homes, primarily because of under coverage of homes built in 1990. The RECS data show that 1.3 million occupied housing units were built in 1988, 1.2 million in 1989, and 0.4 million in 1990. New construction statistics for new privately-owned housing units (single-family and multifamily) and mobile home placements show a 7 to 8 percent decline per year from 1988 to 1990.²² This rate of decline suggests that a more accurate figure for RECS for 1990 would be 1.1 million occupied housing units. This means that RECS covered only about one-third of the new homes built in 1990.

²²U.S. Bureau of the Census, *Current Construction Reports--Series C25, Characteristics of New Housing: 1990* (Washington, D.C.: U.S. Department of Commerce, 1991).

Poverty

The United States Bureau of the Census provides a threshold of poverty, which is based on family income and the number of household members (Table B1). Households with incomes below the poverty threshold are defined as "Below 100 Percent of Poverty." Households with income below 125 percent of the poverty threshold are defined as "Below 125 Percent of Poverty."

Because the RECS income data were collected using categories of income, an exact match of Census thresholds could not be made. An additional source of error in the determination of poverty status is the nonsampling error in the reported income.

Table B1. Definition of Poverty, 1990 RECS

Number of Persons Per Family	Below 100 Percent of Poverty		Below 125 Percent of Poverty	
	1990 RECS Income Range Less Than ^a	Census Threshold ^b	1990 RECS Income Range Less Than ^a	125 Percent Threshold ^b
1 and-- respondent is 64 or Younger	7,500	6,800	9,000	8,500
respondent is 65 or Older	6,000	6,268	7,500	7,835
2 and-- householder is 64 or Younger	9,000	8,794	11,000	10,992
householder is 65 or Older	7,500	7,905	10,000	9,881
3	10,000	10,419	12,500	13,024
4	14,000	13,359	17,500	16,699
5	15,000	15,792	20,000	19,740
6	17,500	17,839	22,500	22,299
7	20,000	20,241	25,000	25,301
8	22,500	22,582	27,500	28,228
9 or More	27,500	26,848	32,500	33,560

^aThe income category that contained the Census threshold was taken as the upper limit in defining poverty when the Census threshold was equal to or above the midpoint of the income category. For example, since the threshold of \$6,268 was not above the midpoint of the category \$6,000 to \$7,499, the next lower income category was used.

^bData from Census Bureau (see Source).

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms ELA-457 A and B of the 1990 Residential Energy Consumption Survey (RECS); RECS Public Use Data File; U.S. Bureau of the Census, *Poverty in the United States (Current Population Reports, Series P-60, Number 175, 1990)*, Table A2, p.195.

Indoor Temperatures

The questionnaire asked respondents for indoor temperatures during sleeping hours and during the day when the home was occupied and unoccupied. The questionnaire did not ask for temperatures on a specific day, the implication was that typical temperatures during the winter were being requested. The self-reported temperatures, especially for some respondents, are impressions of typical temperatures and may not represent

actual temperatures, or the averages of actual temperatures in the home. Studies do show that quite often self-reported temperature settings were significantly lower than observed settings.²³

Factors likely to make self-reported temperatures unreliable indicators of the actual temperatures include the following: respondents may not check temperatures or thermostat settings on a regular basis or may not have thermostats that are marked with degree settings; temperatures may differ from thermostat settings in cases where the thermostats may need to be recalibrated; and self-reported temperature settings may reflect the opinion of the respondent as to what the "correct" or "expected" temperature should be.

Gas Central Air Conditioning

Some respondents incorrectly report that they have gas air conditioners when in reality they have electric air conditioners. The majority of the households claiming to have natural gas or LPG central air conditioning may actually have electric systems. Three possible explanations for these errors are as follows: (1) Respondents may have confused Freon with the fuel running the compressor; (2) The housing unit is in apartment buildings and the occupants do not know the fuel used in the central air-conditioning system; and (3) Households with gas central forced-air heating systems and electric central air-conditioning systems may have thought they were both gas systems. This may be especially true if one thermostat controls both systems. In the 1990 RECS, an estimated 1.3 million households initially reported that they had gas air conditioners; but after checking back with the respondents, checking with the rental agents, or looking for a pattern in the natural gas utility bills that indicates increased usage during periods of demand for air conditioning, the estimated number of households that use gas air conditioners was reduced to 0.4 million. This estimate may still be too high.

Trends in Heated Square Footage

Trend analysis included in this report shows an increase in the average heated floorspace from 1,499 square feet in 1980 to 1,569 square feet in 1990. A review of housing unit measurement procedures from 1980 and 1990 showed that the definition of heated square footage and the actual measurement recording procedures were consistent for the two surveys.

In both surveys, interviewers were instructed to measure "all parts of the respondent's household that are enclosed from the weather, including attached garages, basements, and attics (if heated or finished)." In both surveys, an area was considered to be heated if it was "a comfortable place to sit, work, or play during the winter months."

In both surveys, interviewers were equipped with a 50-foot tape measure, were asked to mark the measurements for each floor on a separate diagram, and were asked to shade those areas that were unheated. The format of the pages for recording measurements were somewhat different for the two surveys. In addition, a greater number of interviewer instructions were included in the questionnaire for the 1990 interview.

Estimation of Sampling Error

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.

²³For further discussion on setback behavior see Paul D. Luyben, "Prompting Thermostat Setting Behavior," *Environment and Behavior*, Vol. 14, No. 1, (January 1982), pp. 113-128.

For a given population parameter Y that is estimated by the survey statistic \bar{Y}' , the relative standard error of \bar{Y}' , $RSE_{\bar{Y}'}$, is given by:

$$RSE_{\bar{Y}'} = \left(\frac{S_{\bar{Y}'}}{\bar{Y}'} \right) \times 100 . \quad (1)$$

Thus the standard error of \bar{Y}' , is given by:

$$S_{\bar{Y}'} = \left(\frac{RSE_{\bar{Y}'}}{100} \right) \times \bar{Y}' . \quad (2)$$

This section provides an explanation and example of the procedures used to calculate approximate RSE's for each statistic shown in Tables 11 through 56 in the "Detailed Tables" section. This section also includes a discussion of the derivation of the procedures used to calculate the approximate RSE's and explanations of the procedures used to calculate the RSE for percentages and for ratios.

For some surveys, a convenient algebraic formula for computing variances can be obtained. However, the RECS used a multistage area sample design of such complexity (see Appendix A, "How the Survey Was Conducted") that it is virtually impossible to construct an exact algebraic expression for estimating variances. 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 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 using the differences between the value of the statistic calculated using the full sample and the values of the statistic calculated using each of the half samples.

The half samples are determined by first collapsing the 129 strata used in the sample design into 85 "super" strata to achieve a pairing of the sampling strata. The observations in each of the "super" strata were divided into two sets to form a pair, where each set in the pair contained approximately one-half of the observations in the "super" strata. The 85 "super" strata can be divided into the following groups:

- Forty-four of the "super" strata consisted of two nonself-representing Primary Sampling Units (PSU) belonging to the same Census Divisions, with the observations from one PSU constituting one set in the pair and the observations from the other PSU constituting the other set.
- Thirty-two of the "super" strata consisted of single large metropolitan areas that came into the sample with certainty. The pairs for these "super" strata were formed by dividing the Secondary Sampling Units (SSU) selected for the PSU's into two groups. The observations in one of the groups of SSU's constitute one set in the pair. The observations in the other group of SSU's constitute the other set. There was no between-PSU component of variance for self-representing PSU's.
- The nine remaining "super" strata consisted of a single nonself-representing PSU that was treated as a self-representing PSU. These nine unmatched nonself-representing PSU's were not matched due to a desire to: (1) match PSU's with other PSU's that are in the same Census Division, (2) match PSU's consisting of MSA's with PSU's consisting of other MSA's, (3) match PSU's consisting of non-MSA counties with other non-MSA PSU's, and (4) treat Alaska and Hawaii as two separate and unique strata.

Half-sample replication involved repeatedly drawing pair members from the 85 "super" strata. Each replication was called a "half sample" because only one member of the pair within each of the 85 "super" strata was selected. For each half sample, the sampling weights were ratio adjusted upward. The result of the adjustment is that the sum of the weights for each of the 12 cells (four Census regions by three types of Metropolitan Statistical Area (MSA)) equals the appropriate control total. (See Appendix A, "How the Survey Was Conducted," Table A4). In this way, each half sample can produce unbiased survey statistics based on roughly one-half of the data. Using different combinations of members from the 85 pairs, it is possible to produce a total of $2^{85} = 3.9 \times 10^{25}$ unique half samples. Although desirable for good variance estimation, such an extremely large number of half samples would be computationally infeasible. However, the method of balanced half-sample replication allows a small number of half samples (approximately equal to the number of "super" strata) to produce estimates of variance that are identical to estimates based on all possible unique half-samples for linear survey statistics. The use of ratio adjustments in RECS means that even a statistic giving the number of households in a category is not a linear statistic. For nonlinear survey statistics, the variance estimate computed using the method of balanced half samples is approximately equal to the variance estimate computed using all possible half samples. With this balancing method, each half sample is constructed by using an orthogonal matrix to control the selection of pair members from the "super" strata. For the 1990 RECS, 128 balanced half samples were used in variance estimation.

The variances are estimated using the balanced half-sample replication method in the following way. Let \hat{Y}' be an estimate of the population characteristic Y (for example, total number of households in the West Census region whose main space-heating fuel is natural gas). Then, the estimated variance of \hat{Y}' is given by:

$$S_{\hat{Y}'}^2 = \left(\frac{1}{128} \right) \sum_{k=1}^{128} (\hat{Y}'_k - \hat{Y}')^2. \quad (3)$$

Where \hat{Y}'_k is the k^{th} half sample estimate of Y . The standard error of \hat{Y}' is given by:

$$S_{\hat{Y}'} = \sqrt{S_{\hat{Y}'}^2}. \quad (4)$$

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

Generalized Variances

For every estimate in this report, the RSE was computed by the balanced half-sample replication methods described above. This was the RSE 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 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:

$$\text{RSE}_{ij} = R_i \times C_j \quad (5)$$

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.

Derivation of Row and Column Factors

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

$$\log(\text{RSE}_{ij}) = m + a_i + b_j. \quad (6)$$

The least-squares estimates for this model are given by:

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

$$a_i = \overline{\log(\text{RSE}_i)} - \overline{\log(\text{RSE})} \quad (7)$$

$$b_j = \overline{\log(\text{RSE}_j)} - \overline{\log(\text{RSE})}$$

where $\overline{\log(\text{RSE})}$ is the mean of $\log(\text{RSE}_{ij})$ over all rows i and columns j , $\overline{\log(\text{RSE}_i)}$ is the mean over all columns j for a particular row i , and $\overline{\log(\text{RSE}_j)}$ is the mean over all rows i for a particular column j . The row and column RSE factors are then computed as

$$\begin{aligned} R_i &= \log^{-1}(m + a_i) \\ &= \log^{-1}(\overline{\log(\text{RSE}_i)}) \\ C_j &= \log^{-1}(b_j) \\ &= \log^{-1}(\overline{\log(\text{RSE}_j)} - \overline{\log(\text{RSE})}). \end{aligned} \quad (8)$$

The RSE row factor, R_i , is thus the geometric mean of the RSE's in row i , and the RSE column factor, C_j , is an adjustment factor with geometric mean equal to 1.0.

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 (an example is the first row of Table 11) have a row factor that was set to equal zero. Rows that only contain household counts that are close to control totals do not have a listed row factor. A footnote is given that tells the reader that the RSE's for all statistics in these rows are less than 1.0 percent. This occurs because the half-sample estimates for the RSE's for all statistics in the row are less than 1.0 percent. The row factors for these rows should be a positive number but the number will be small. An example is row 2 of Table 33. This row gives the number of households that have refrigerators by Census region and by MSA designation.

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

Determination of Relative Standard Error for Percentages Based on Household Counts

The following procedure can be used when the population of the numerator is a subset of the population of the denominator. Let X be an estimate of the number of households that have both characteristic C₁ and characteristic C₂. Let Z be an estimate of the number of households that have characteristic C₁ but do not have characteristic C₂. Set Y = X + Z. Then Y is an estimate of the number of households that have characteristic C₁. Set p = 100 X/Y. Then p is an estimate of the percentage of households that have characteristic C₂ among all households that have characteristic C₁. The RSE of p can be approximated using:

$$RSE(p) = \sqrt{[RSE(X)]^2 - [RSE(Y)]^2}. \quad (9)$$

The following example illustrates this equation. Among the 51.7 million households that used natural gas as their main space-heating fuel, 34.9 million or 68 percent used a central warm-air furnace as the main space-heating equipment (Table 19). The approximate RSE for 51.7 million households that use natural gas as their main space-heating fuel was 3.14 percent. The approximate RSE of the 34.9 million households that used a natural gas central warm-air furnace as their main space-heating equipment was 4.00 percent.

Using the above equation the RSE of the percent is:

$$\begin{aligned} RSE(p) &= \sqrt{4.00^2 - 3.14^2} \\ RSE(p) &= 2.48. \end{aligned} \quad (10)$$

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

Determination of the Relative Standard Error for Ratios

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

$$RSE\left(\frac{X}{Y}\right) = \sqrt{[RSE(X)]^2 + [RSE(Y)]^2} \quad (11)$$

The following example illustrates this equation. The number of households in the Midwest Census Region where the main space-heating fuel is natural gas was 16.5 million. The approximate RSE (as determined by the row-column method) was 6.14 percent (Table 19). The number in the Northeast Census Region where the main space-heating fuel is natural gas was 8.7 million households, with an approximate RSE of 5.27 percent. The ratio of these estimates shows that 1.90 times as many households in the Midwest use natural gas as their main space-heating fuel as in the Northeast. The RSE of this ratio is:

$$RSE\left(\frac{X}{Y}\right) = \sqrt{6.14^2 + 5.27^2} \quad (12)$$

$$RSE\left(\frac{X}{Y}\right) = 8.09.$$

The standard error of the ratio is:

$$1.90 \times (8.09/100) = 0.15$$

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

$$1.96 \times 0.15 = 0.29$$

The confidence interval for the ratio is 1.90 (\pm 0.29).

Determination of the Standard Error of the Difference Between Two Statistics

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

$$S_{x_1-x_2} = \sqrt{[S_{x_1}]^2 + [S_{x_2}]^2} \quad (13)$$

This procedure assumes the two statistics are not correlated. Using the above example, the standard error of the 16.5 million households in the Midwest that heat with natural gas is 1.01 million households (Table 19). (The RSE is 6.14 percent.) The standard error of the 8.7 million households in the Northeast that heat with natural gas is 0.46 million households. (The RSE is 5.27 percent.) The difference between the number of

households in the Midwest and the Northeast was 7.8 million households. The standard error of the difference is:

$$S_{x_1-x_2} = \sqrt{1.01^2 + 0.46^2}$$

(14)

$$S_{x_1-x_2} = 1.11.$$

If 1.96 times the standard error is greater than the difference between the statistics, the difference is not statistically significant. In this example, 1.96 times the standard error equals 2.18 million households, while the difference is 7.8 million households. Therefore, it can be said that there is a statistically significant difference between the number of households that heat with natural gas in the Midwest Census Regions and the number in the Northeast Census Region.

Data Interpretation

The 1990 RECS is a rich source of data for analysis of residential energy issues. In undertaking such analyses, it is important for data users to have a complete understanding of the RECS data and to clearly state analytic assumptions in reports. The following illustrates alternative approaches to the estimation of a statistic of interest.

Short-Term Petroleum Fuel-Switching: Estimates of Household Potential Under Different Assumptions

Estimates of the potential to switch away from petroleum to other energy sources have been undertaken in the past to analyze and mitigate the impact of supply disruptions in all sectors of the economy including the residential sector.²⁴ The supply of petroleum is not as predictable today as it has been in the past. The Middle East Gulf crisis of 1990-1991 was a prime example of a potential supply disruption that may occur at any time.

Recent studies using RECS data to identify one group of households with fuel switching capability have made an assumption based on the type of secondary space-heating equipment used by households. That assumption is that only households using built-in electric units or heating stoves as secondary equipment could rely on that equipment to heat the housing unit to the same level of comfort as the petroleum main space-heating fuel. The 1990 RECS tested this assumption by asking households whether they could switch to a secondary source of heat and still maintain a level of comfort comparable to that provided by the main space-heating equipment. This additional piece of data collected in the 1990 RECS is important information since the household's perception of comfort would be a major factor in a household's decision to switch to the secondary source of heat in a time of crisis.

Of the 7.7 million single-family and mobile homes using fuel oil as the main space-heating fuel (Table 23), approximately 1.7 million households used heating stoves or built-in electric units as secondary equipment. These households were assumed to be able to heat their home comfortably with this secondary equipment. However, when asked if this were true, only 0.8 million households replied that it was true (Table B2). Surprisingly, another 0.6 million households using a fireplace or other type of equipment reported that the

²⁴Recent studies include: (1) Energy Information Administration, *Estimates of Short-Term Petroleum Fuel-Switching Capability*, (DOE/EIA-0526) (Washington, D.C., May 1989) and (2) International Association of Energy Economics, "Estimates of Short-Term Petroleum Fuel-Switching Potential in Residential Households in the United States" in the *Proceedings of the 13th North American Conference* (November 1991).

secondary equipment they used could be relied on to heat their home comfortably. The net result is that about one-half of those assumed to be able to rely on their secondary space-heating equipment reported they could not rely on their equipment. And another group of about equal size, dismissed as not having fuel switching capability, reported they did have such capability.

This analysis points up the difficulty of inferring fuel-switching capability from knowledge of the heating equipment. RECS collects limited information about heating equipment. For example, RECS does not collect data on whether the fireplace has efficiency enhancements such as an outdoor air intake, glass doors, or forced-air circulation. Additional equipment information may still not be helpful since comfort tolerances probably differ among households with similar equipment.

This analysis demonstrates that the number of fuel-oil heated households with fuel-switching capability is 1.4 million households based on the household's perception and 1.7 million households based on an assumed effectiveness of their secondary space-heating equipment. This difference may be small considering the tentative conclusions that can be drawn about what people can do under hypothetical conditions. Of greater importance in considering the results from these two approaches to assessing fuel-switching capability is the fact that the mix of households is different. One half of the households (0.6 million households) with self-reported fuel-switching capability were not included in the analyses based on the presence of certain secondary space-heating equipment.

**Table B2. Secondary Space-Heating Equipment Used in U.S. Households with Fuel Oil-Switching Potential Under Different Assumptions, 1990
(Million Households)**

Secondary Space-Heating Equipment	Secondary Space-Heating Equipment Can Comfortably Heat the Home	
	Comfort Assumed Based on Presence of Secondary Space-Heating Equipment	Comfort Assumed Based on Respondent Report
Fuel Oil	1.7	1.4
Heating Stove	.4	.7
Built-in Electric Unit	.3	.1
Fireplace	NA	.5
Other	NA	.1

NA = Not Applicable.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, and C of the 1990 Residential Energy Consumption Survey (RECS). RECS Public Use Data File.

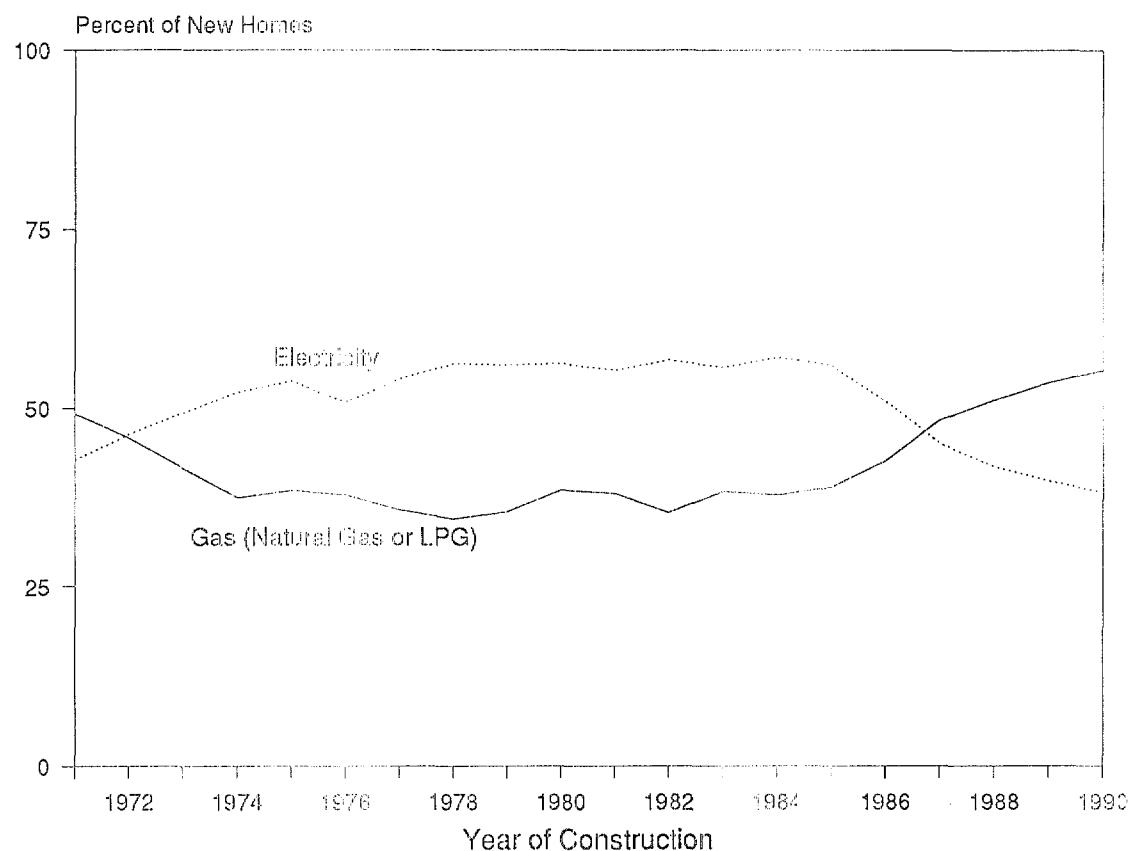
Data Comparison

The RECS is limited in its ability to detect small changes or trends due to (1) its relatively small sample size which leads to higher standard errors that can mask or confound small changes and (2) the fact that it is fielded only once every 3 years, which means that a trend can be as much as 3 years old before RECS identifies it. Therefore, other data series may be used to help augment the RECS data by providing more detailed estimates.

An example of such detail is the year-by-year history of the fuel chosen for new housing constructed from 1971 to 1990. This annual history shows the end of a 14-year dominance by electricity over gas (natural gas and LPG) as the main space-heating fuel in new single-family and multifamily homes (Figure B1). The annual data available from surveys of new housing indicate that the dominance of electricity began in 1973 and ended in 1987. Data not shown in Figure B1 indicate that for privately owned single-family units, the crossover point

was 1986. There was no crossover point for privately owned multifamily units that favored electric (53 percent in 1980) over gas heat (44 percent in 1990) throughout the period from 1971 to 1990.

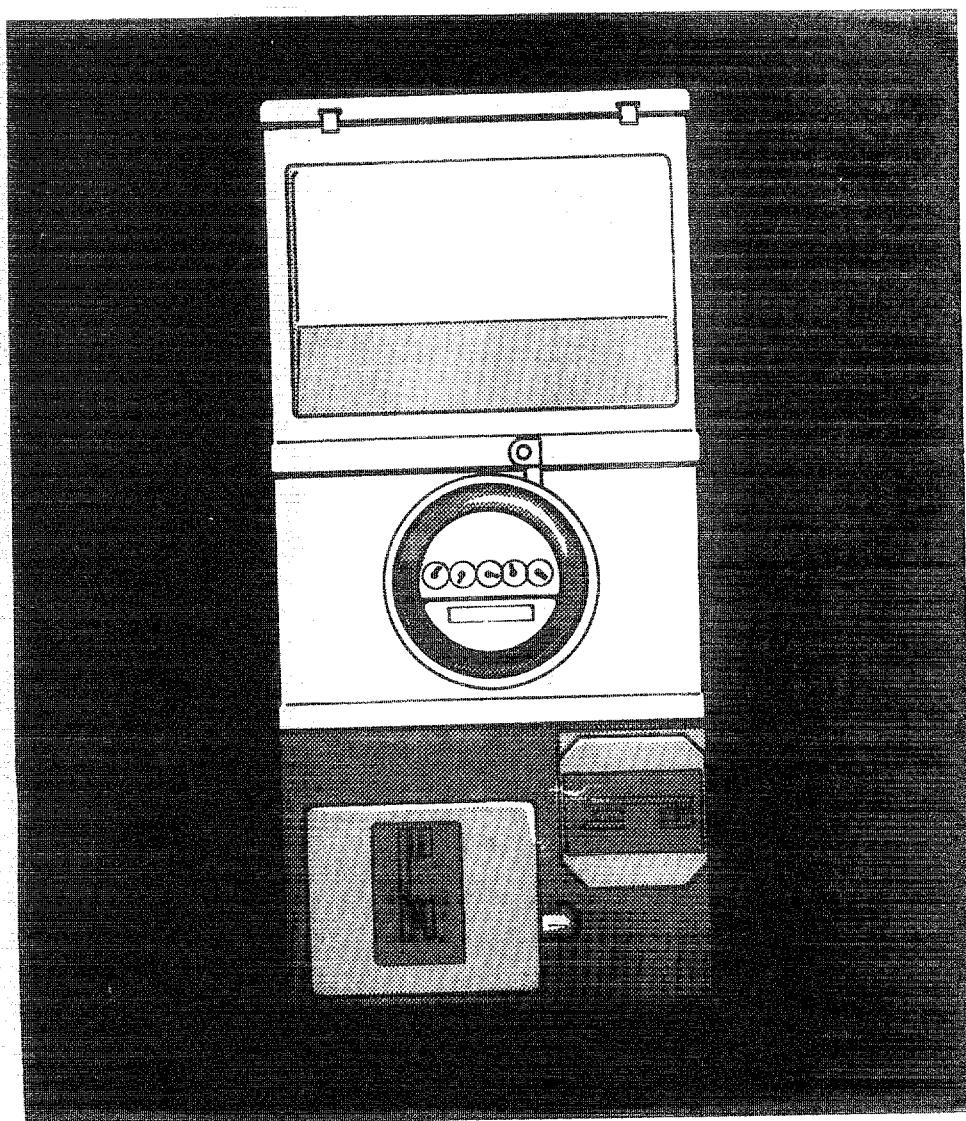
Figure B1. Main Space-Heating Fuel in U.S. Single-Family and Multifamily Homes Constructed from 1971 to 1990



Source: U.S. Department of Commerce, Bureau of the Census, *Current Construction Reports--Series C25, Characteristics of New Housing*, 1990 (Washington, D.C., 1991). See earlier volumes for 1971-1985 data.

Appendix C

RECS Coverage Related to EIA Supply Surveys



Appendix C

RECS Coverage Related to EIA Supply Surveys

Introduction

The primary purpose of the Residential Energy Consumption Survey (RECS) is to collect accurate data on energy consumption that can be displayed by detailed characteristics of the household and the housing unit. The data are collected by first contacting the household and then later contacting the energy supplier that supplies the household. RECS provides detailed information about the users and uses of energy and is conducted triennially.

The Energy Information Administration (EIA) also collects data annually on total energy supplied to each major sector via supply surveys of companies that sell or distribute electricity, fuel oil, kerosene, and natural gas to residential customers. There are differences in the statistical data collected by the RECS and the supply surveys which can be attributed largely to differences in the units that are covered and identified as being residential units. This discussion examines differences between the RECS and the supply surveys in their coverage of the residential sector.

Survey Coverage

RECS Coverage

The RECS is designed to cover all year-round, occupied, residential housing units that are primary residences. Included are multifamily units, mobile homes, farm homes, and single-family homes on and off military bases. The definition specifically excludes seasonal units, vacant units, and second homes. Because the RECS collects information about each sample unit, one can be explicit about which units are included in RECS and which are excluded. (See Appendix B section on Nonsampling Error.)

Electricity

Annual electricity sales data are currently collected on Form EIA-861, *Annual Electric Utility Report*, which is sent to all electric utilities in the United States. Utilities are requested to classify electricity sold as residential if "...supplied to private household establishments which consume energy primarily for space heating, water heating, air conditioning, etc.,...Apartment houses are included." Where use is mixed, the utility is requested to classify sales by principal use. Included within this definition of the residential sector are seasonal and vacant units (including second homes). RECS excludes these units. According to the American Housing Survey for 1987, there were 11.8 million (11 percent of all residential housing units) seasonal and vacant housing units.²⁵ At least one-third of these units use electricity for heat and many others probably use some amount of electricity for lights, air conditioning, and appliances.

Electricity sales to the seasonal and vacant units should make electricity supply estimates higher than RECS estimates. The supply estimate did exceed the RECS estimate by 5 percent in 1987 (Table C1). Partially offsetting sales to seasonal and vacant units is consumption by farm homes and military homes, which is included in RECS but may be classified as nonresidential consumption in estimates of supply. The 1987 RECS

²⁵U.S. Department of Commerce, Bureau of the Census, *American Housing Survey for the United States in 1989*, (H150/89), July 1991.

data identified 0.8 million farm households whose electricity bills covered both farm and household use. Under these mixed-use conditions, RECS data include only the estimated fuel for household purposes. RECS respondents are asked in broad categories how much of the electricity is used for household purposes. In the supply survey, respondents are requested to classify "mixed-use" accounts by predominant use.

**Table C1. Comparison of Residential Energy Consumption Estimates from the Consumption Survey and Supply Surveys, 1987
(Quadrillion Btu)**

Energy Source	Consumption Survey (RECS)	Supply Surveys	Difference (RECS- Supply Survey)	2 Standard Errors (RECS Sampling Error)
Electricity	2.76	2.90	.14	^a .12
Natural Gas	4.83	4.44	.39	^a .29
Fuel Oil and Kerosene	1.22	1.12	.10	.13
Liquefied Petroleum Gas ^b	0.32	0.42	.10	^a .06

^aStatistically significant at the 95 percent confidence level.

^bThe liquefied petroleum gas (LPG) data, presented for comparison with the RECS, are derived from estimates provided by the American Petroleum Institute.

Note: The data are shown for 1987, the latest year in which RECS consumption estimates are available. A second report, *Household Energy Consumption and Expenditures 1990*, to follow this report will contain consumption estimates for 1990.

Sources: Energy Information Administration. RECS data are from: *Household Energy Consumption and Expenditures 1987*, DOE/EIA-0321/1(87). Supply data are from: *State Energy Data Report, Consumption Estimates, 1980-1989*, DOE/EIA-0214(89).

Natural Gas

Supply data for natural gas are collected on Form EIA-176, *Annual Report of Natural and Supplemental Gas Supply and Disposition*. The form must be submitted by all gas pipeline companies and other plant operators that deliver gas directly to consumers. The form requests company respondents to classify as residential use, sales to "single and multifamily dwellings and apartments."

EIA supply data, like the electricity supply data, cover seasonal and vacant homes but RECS does not include these units. American Housing Survey estimates about a one-third of the seasonal or vacant units heat with natural gas. RECS data include the consumption of farm homes and homes on military installations. Where this use is mixed, gas utilities are instructed on Form EIA-176 to report according to predominant use. Mixed farm use of natural gas was not found to be significant, in an internal analysis of 1987 RECS data. Based upon the above analysis, one would expect EIA sales data to equal or exceed RECS data. The 1987 RECS estimate of natural gas consumption is 0.4 quadrillion Btu above EIA supply data (Table C1).

An EIA assessment²⁶ of RECS and the natural gas supply data system for the years 1978 to 1982 attempted to reconcile the fact that RECS natural gas consumption data were higher than the Form EIA-176 data. Twenty-two large utilities were called to determine if large apartments were being classified as commercial. About half said that they did classify large apartments as commercial. Master-metered apartments are generally thought to be the type of apartments that would be classified commercial instead of residential. RECS does not identify master-metered apartments; however, the 1987 RECS reports that 10 million households use natural gas for their main space-heat and do not pay directly for all of their gas utilities. These 10 million households used 0.8 quadrillion Btu of natural gas in 1987. If 50 percent of this consumption were classified by utilities as commercial instead of residential, this could account for the 0.4 quadrillion Btu in

²⁶Energy Information Administration, *An Assessment of the Quality of Selected EIA Data Series: Energy Consumption Data*, DOE-EIA-0292(85), April 1986, p. 71.

consumption that RECS exceeded EIA supply estimates. (See the conclusion section of this appendix for a discussion of a future analysis of data pertaining to sector classification by utilities.)

Fuel Oil and Kerosene

Petroleum sales are collected through a sample survey sent to fuel oil distributors. Fuel oil and kerosene sales are collected on Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*.²⁷ Seasonal and vacant homes are included in the definition of the residential sector. These units are not included in RECS. The American Housing Survey data estimated that about 2 percent (or 1.4 million) of the seasonal and vacant homes are heated by fuel oil or kerosene.

Unlike the electricity and natural gas supply surveys, Form EIA-821 specifically requests that respondent fuel oil dealers exclude apartments and farm homes from their residential sector data. The 1987 RECS estimated the number of multifamily units that heat with fuel oil or kerosene to be about 3.4 million. The RECS estimate of consumption of fuel oil and kerosene exceeds EIA supply data; however, the difference is not statistically significant.

Conclusion

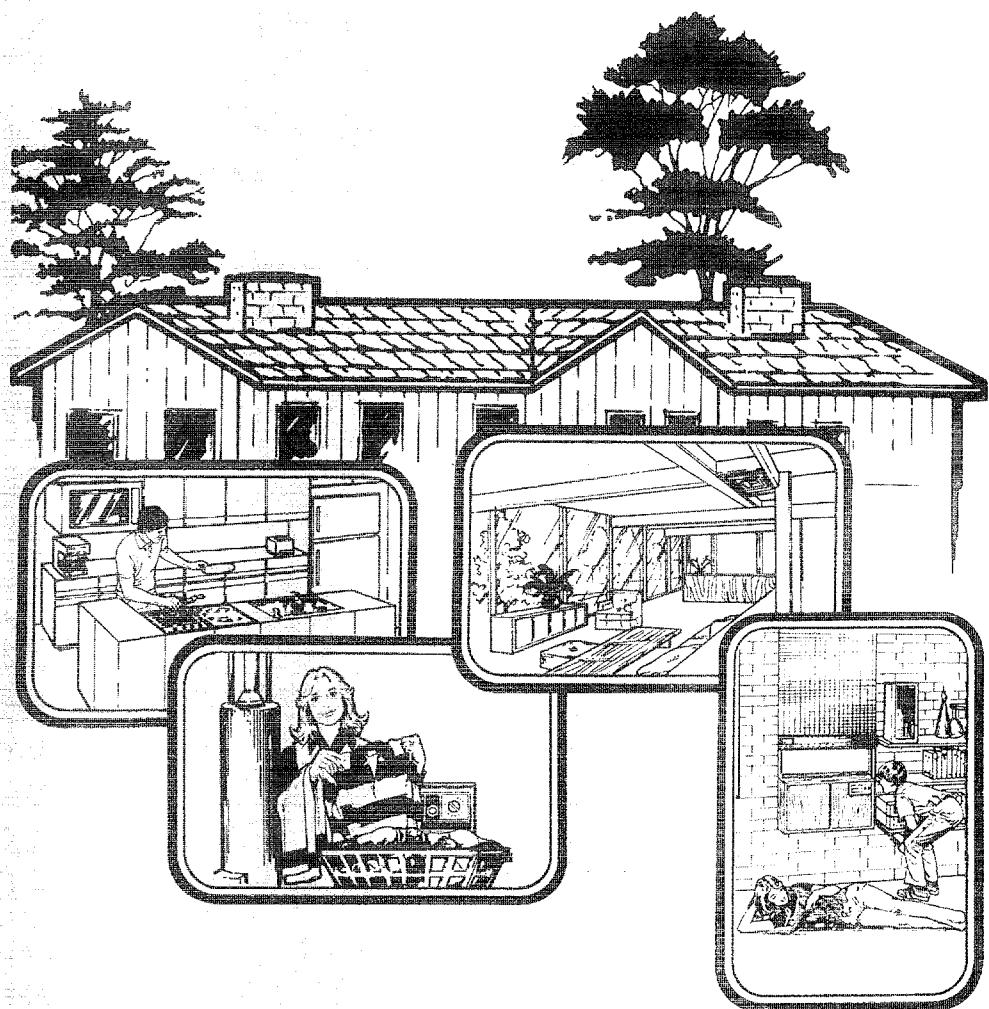
The RECS survey coverage (primary, occupied residences) is defined differently from the "residential sector" as used for EIA supply surveys. Differences in the estimates of residential consumption and supply are thought to be attributable largely to the resulting differences in coverage of residential units between the RECS and the supply surveys.

The 1990 RECS and the 1989 Commercial Buildings Energy Consumption Survey (CBECS) have collected some new data on the classification of residential and commercial accounts by utility companies. As part of the Energy Supplier Survey, RECS and CBECS have requested that suppliers provide the account classification code for the consumption data being requested. It is hoped that the analysis of the data will afford greater insight into the coverage differences.

²⁷The data collected on EIA-821 are published as collected and also in an adjusted form. The adjusted data ensure that total sales data equal published volume estimates of products supplied from EIA's *Petroleum Supply Annual*.

Appendix D

Survey Forms



Appendix D

Survey Forms

This appendix contains copies of the following data collection forms used in the 1990 Residential Energy Consumption Survey (RECS): Forms EIA-457A through C were used to produce this report, Forms EIA-457D through G were mailed to energy suppliers. The data will be reported in the second RECS report, "Household Energy Consumption and Expenditures 1990." (The original color of each form is indicated.)

- **EIA-457A** Household Questionnaire - white (include the Authorization Form - yellow and a vehicle data form - blue).
- **EIA-457B** Household Mail Questionnaire - white.
- **EIA-457C** Rental Agent Form - white.
- **EIA-457D** Liquefied Petroleum Gas Usage - blue.
- **EIA-457E** Electricity Usage - yellow.
- **EIA-457F** Utility Gas Usage - pink.
- **EIA-457G** Fuel Oil or Kerosene Usage - green.

1990 Residential Energy Consumption Survey

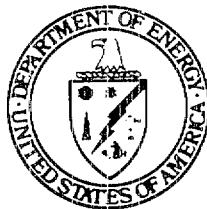
Form EIA-457A

Form EIA-457A (1990)

Form Approval:
OMB No.: 1905-0092
Expires: May 31, 1993

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

1990 Residential Energy Consumption Survey



Energy Information Administration
U.S. Department of Energy

Location #	111-116
Housing Unit #	117-118

1990 Residential Energy Consumption Survey
Form EIA-457A

Form EIA-457A (1990)

Section A: Housing Type

A-1. INTERVIEWER: CIRCLE TYPE OF BUILDING IN WHICH RESPONDENT LIVES.

- | | |
|---|--|
| 1 | MOBILE HOME OR TRAILER --> [A-3] |
| 2 | ONE-FAMILY DETACHED |
| 3 | ONE-FAMILY ATTACHED
(TOWNHOUSE, DUPLEX, OR ROWHOUSE) |
| 4 | HOUSE OR BUILDING WITH <u>2 TO 4</u>
APARTMENT UNITS --> [A-3] |
| 5 | HOUSE OR BUILDING WITH <u>5 OR MORE</u>
APARTMENT UNITS --> [A-3] |

**INTERVIEWER: MARK FOLDOUT PAGE FOR TYPE OF
BUILDING IN WHICH RESPONDENT LIVES.**

IF ONE-FAMILY, RECORD

A-2. INTERVIEWER: CIRCLE STYLE OF SINGLE-FAMILY HOME OR TOWNHOUSE BASED ON GENERAL APPEARANCE FROM OUTSIDE.

- | | |
|---|------------------------|
| 1 | ONE STORY |
| 2 | TWO STORY |
| 3 | THREE STORY |
| 4 | SPLIT-LEVEL |
| 5 | OTHER (SPECIFY: _____) |

A-3. I'll ask a few questions about your household first so that I can better understand your responses to the home energy use questions that come next.

First, does any other family or unrelated person share this (house/apartment) with you?

- | | |
|---|--------------|
| 1 | YES |
| 0 | NO --> [A-5] |

121

IF "YES" ON Q. A-3, ASK:

A-4. Does the additional family (or unrelated person) . . .

- | | |
|---|-------|
| a. Live and eat
separately from other
persons in the
apartment or
building? | 1 YES |
| | 0 NO |
| b. Have direct access
from outside the
building or through a
common hall? | 1 YES |
| | 0 NO |

122

123

**INTERVIEWER: IF THE ANSWERS IN A-4 ARE BOTH YES, THIS IS
CONSIDERED SEPARATE LIVING QUARTERS. MAKE SURE THAT THE
SPACE AND OCCUPANTS OF THE ADDITIONAL FAMILY ARE EXCLUDED
FROM THIS INTERVIEW. SEPARATE LIVING QUARTERS SHOULD BE
LISTED SEPARATELY ON YOUR HOUSING UNIT ADDRESS LIST. SEE
SAMPLING INSTRUCTIONS AS TO WHETHER AN ADDITIONAL INTERVIEW
SHOULD BE COMPLETED. IF NO ADDITIONAL INTERVIEW, BE SURE
THAT THE MEMBERS OF THE SECOND FAMILY ARE INCLUDED IN THE
LIST OF HOUSEHOLD MEMBERS IN Q. K-1.**

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

- A-5. Do you or members of your household own your home, or do you rent? 1 OWN (BUYING) 124
 2 RENT
 3 OCCUPIED WITHOUT PAYMENT OF RENT

INTERVIEWER: MARK FOLDOUT PAGE FOR DURATION

INTERVIEWER: IF RESPONDENT HAS TROUBLE REMEMBERING DATES, PROBE FOR:
 SEASON
 MAJOR LIFE EVENT
 MAJOR NEWS STORY OR POLITICAL EVENT HAPPENING AT THIS TIME.
 THEN, ASK FOR YEAR (AND MONTH) AGAIN.

- A-6. In what year was this (house/building) built? Just your estimate. 01 BEFORE 1940
 02 1940-1949
 03 1950-1959
 04 1960-1969
 05 1970-1979 125-126
 06 1980-1984
 07 1985-1986
 08 1987
 09 1988
 10 1989
 11 1990
 12 1991

- A-7. In what year did your family move into this (house/apartment)? 01 BEFORE 1940
 02 1940-1949
 03 1950-1959
 04 1960-1969
 05 1970-1979
 06 1980-1984
 07 1985-1986 ---> [A-9] 127-128
 08 1987
 09 1988
 10 1989
 11 1990
 12 1991

INTERVIEWER: MARK FOLD-OUT PAGE

IF "1987" OR LATER, ASK:

- A-8. In which month did you move in? (SPECIFY MONTH) 01 JAN 07 JUL
 02 FEB 08 AUG
 03 MAR 09 SEP 129-130
 04 APR 10 OCT
 05 MAY 11 NOV
 06 JUN 12 DEC

INTERVIEWER: MARK FOLDOUT PAGE

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

INTERVIEWER: HAND RESPONDENT EXHIBIT BOOK AND SAY: Throughout this interview I am going to ask you to refer to different exhibits in this booklet to help you better answer my questions.

- A-9. Please open the booklet to Exhibit 1. How much longer do you plan to live in this home?
- | | | |
|----|----------------------------------|------|
| 01 | LESS THAN 1 YEAR | |
| 02 | 1-2 YEARS | 131- |
| 03 | 3-5 YEARS | 132 |
| 04 | 6-10 YEARS | |
| 05 | MORE THAN 10 YEARS | |
| 06 | REST OF MY LIFE/AS LONG AS I CAN | |
| 96 | NOT SURE | |

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

Section B. Space Heating

B-1. Is gas from underground pipes (natural gas) available in this neighborhood?

1 YES	133
0 NO	
6 DON'T KNOW	

B-2. Please turn to Exhibit 2. What is the one main heating fuel used for heating your home?

01 GAS FROM UNDERGROUND PIPES SERVING YOUR NEIGHBORHOOD	
02 BOTTLED GAS (LPG OR PROPANE)	
03 FUEL OIL	
04 KEROSENE OR COAL OIL	
05 ELECTRICITY	134-
06 COAL OR COKE	135
07 WOOD	
08 SOLAR COLLECTORS	
21 OTHER (SPECIFY): _____	
00 NO FUELS USED --> [C-1]	
96 DON'T KNOW	

INTERVIEWER: CIRCLE ONLY ONE RESPONSE (IF TWO MAIN FUELS USED: THE MAIN ONE IS THE ONE THAT PROVIDES MOST OF THE HEAT FOR THE HOME.)

INTERVIEWER: MARK FOLD-OUT PAGE FOR MAIN HEATING FUEL

B-3. Thinking back to the winter three years ago --- about November of 1987 --- was the main heating fuel used to heat this (house/apartment) the same as it is now? (Even if you didn't live here then, make your best guess.)

1 YES --> [E-6]	136
0 NO	
5 HOUSE NOT BUILT IN 1987-->[B-6]	
6 DON'T KNOW --> [B-6]	

IF "NO" ON Q. B-3... ASK:

B-4. Looking at Exhibit 2 again, what was the main fuel used to heat this (house/apartment) in November of 1987?

01 GAS FROM UNDERGROUND PIPES SERVING YOUR NEIGHBORHOOD	
02 BOTTLED GAS (LPG OR PROPANE)	
03 FUEL OIL	
04 KEROSENE OR COAL OIL	
05 ELECTRICITY	137-
06 COAL OR COKE	138
07 WOOD	
08 SOLAR COLLECTORS	
21 OTHER (SPECIFY): _____	
00 NO FUELS USED	
96 DON'T KNOW	

B-5. In what month and year was the main heating fuel changed?

MONTH: []	139-140
YEAR: 08 1987	
09 1988	
10 1989	141-142
11 1990	
96 DON'T KNOW	

1990 Residential Energy Consumption Survey
Form EIA-457A

Form EIA-457A (1990)

SUPPLEMENTARY HEATING FUELS

B-6. Please look at Exhibit 2 again. You mentioned that your main heating fuel is (FUEL FROM Q. B-2). What other fuels are used to heat your home -- including those used to provide heat just occasionally? Don't forget to include fuels that run portable heaters if you use them.

- | | |
|---|------|
| 01 GAS FROM UNDERGROUND PIPES SERVING YOUR NEIGHBORHOOD | |
| 02 BOTTLED GAS (LPG OR PROPANE) | |
| 03 FUEL OIL | |
| 04 KEROSENE OR COAL OIL | 143- |
| 05 ELECTRICITY | 148 |
| 06 COAL OR COKE | |
| 07 WOOD | |
| 08 SOLAR COLLECTORS | |
| 21 OTHER (SPECIFY): _____ | |

00 NO OTHER FUELS USED --> [B-9]
 96 DON'T KNOW --> [B-9]

149-159:b

**INTERVIEWER: CIRCLE ALL
MENTIONED**

**IF ADDITIONAL FUELS MENTIONED
IN Q. B-6, ASK:**

B-7. Going back to your main heating fuel--(FUEL FROM Q. B-2)--does this fuel provide all or almost all of the heat for your home, about three-fourths, or closer to half of the heat for your home?

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

150

B-8. If your main space-heating fuel were not available, could you heat your home to the comfort level that you desire using (FUELS MENTIONED IN B-6)?

- | | |
|--------------|--|
| 1 YES | |
| 0 NO | |
| 6 DON'T KNOW | |

161

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

MAIN HEATING EQUIPMENT

B-9. Please look at Exhibit 3.
 What is the main heating equipment used with your main heating fuel?--that is (FUEL NAMED IN Q. B-2)?

INTERVIEWER: CIRCLE ONLY ONE

- | | |
|--|-------------|
| 01 HOT WATER PIPES RUNNING THROUGH A SLAB FLOOR (RADIANT HEATING) ---> [B-13] | |
| 02 STEAM OR HOT WATER SYSTEM WITH RADIATORS/CONVECTORS | |
| 03 CENTRAL WARM-AIR FURNACE WITH DUCTS TO INDIVIDUAL ROOMS (NOT HEAT PUMP) ---> [B-10] | |
| 04 HEAT PUMP --> [B-11] | |
| 05 BUILT-IN ELECTRIC UNITS (PERMANENTLY INSTALLED IN WALL, CEILING, OR BASEBOARD) | |
| 06 FLOOR, WALL, OR PIPELESS FURNACE | |
| 07 ROOM HEATER BURNING GAS, OIL, KEROSENE -- NOT PORTABLE | |
| 08 HEATING STOVE BURNING WOOD, COAL, COKE | |
| 09 FIREPLACE(S) | ---> [B-13] |
| 10 PORTABLE ELECTRIC HEATER(S) | |
| 11 PORTABLE KEROSENE HEATER(S) | |
| 12 COOKING STOVE, RANGE, OR OVEN (USED TO HEAT HOME AS WELL AS FOR COOKING) | 162- |
| 21 OTHER (SPECIFY): _____ | 163 |
| 96 DON'T KNOW EQUIPMENT | |

IF "CENTRAL WARM-AIR FURNACE"
 ("03" in B-9), ASK:

B-10. For the central warm-air furnace, is the warm air forced through the ducts by a fan?

- | | | |
|--------------|--|-----|
| 1 YES | | 164 |
| 0 NO | | |
| 6 DON'T KNOW | | |

IF "HEAT PUMP" ("04" IN B-9), ASK:

B-11. Is the heat pump a central system, or is it a window or wall unit?

- | | | |
|-----------------------------------|--|-----|
| 1 CENTRAL SYSTEM | | 165 |
| 2 WINDOW OR WALL UNIT ---> [B-13] | | |
| 3 OTHER (DESCRIBE): _____ | | |
| ---> [B-13] | | |

IF "CENTRAL SYSTEM" IN B-11, ASK:

B-12. Please look at Exhibit 4. What is the backup fuel used in the central heat pump system?

- | | |
|---|------|
| 01 GAS FROM UNDERGROUND PIPES SERVING YOUR NEIGHBORHOOD | |
| 02 BOTTLED GAS (LPG OR PROPANE) | |
| 03 FUEL OIL | |
| 04 KEROSENE OR COAL OIL | 166- |
| 05 ELECTRICITY | 167 |
| 06 COAL OR COKE | |
| 07 WOOD | |
| 08 SOLAR COLLECTORS | |
| 21 OTHER (SPECIFY): _____ | |
| 00 NO BACKUP FUEL | |
| 96 DON'T KNOW | |

1990 Residential Energy Consumption Survey
Form EIA-457A

Form EIA-457A (1990)

B-13. Please look at Exhibit 5. How old is your main heating equipment, just approximately?
 (INTERVIEWER: PROBE FOR BEST GUESS.)

- | | |
|----|--|
| 01 | LESS THAN 2 YEARS OLD |
| 02 | 2-4 YEARS OLD |
| 03 | 5-9 YEARS OLD |
| 04 | 10-19 YEARS OLD |
| 05 | 20 YEARS OLD OR OLDER |
| 06 | AS OLD AS THE HOUSE/ORIGINAL EQUIPMENT |
| 96 | DON'T KNOW |

168-
169

B-14. Does the main equipment for heating your home also heat one or more other apartments, condos, households, businesses, or farm buildings?

- | | |
|---|---|
| 1 | YES --> [B-17] |
| 0 | NO, HOME HEATING EQUIPMENT IS FOR RESPONDENT'S HOME ONLY. |
| | [IF HOMEOWNER] --> [B-15]; |
| | [IF NOT HOMEOWNER] --> [B-17] |
| 6 | DON'T KNOW --> [B-17] |

170

B-15. If your main heating equipment had to be replaced, would you replace it with one that uses the same fuel?

- | | |
|---|-----------------------|
| 1 | YES --> [B-17] |
| 0 | NO |
| 6 | DON'T KNOW --> [B-17] |

171

IF "NO" ON Q. B-15, ASK:

B-16. Please look at Exhibit 6. What new fuel would you choose?

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

172-
173

1990 Residential Energy Consumption Survey
Form EIA-457A

Form EIA-457A (1990)

SUPPLEMENTARY HEATING EQUIPMENT

207-208:02

B-17. Please look at Exhibit 7. What other kinds of equipment if any, are used to heat your home, including those that are used to heat your home just occasionally?

**INTERVIEWER: CIRCLE
ALL THAT APPLY**

- | | |
|---|------------|
| 01 HOT WATER PIPES RUNNING THROUGH A SLAB FLOOR (RADIANT HEATING) | --> [B-21] |
| 02 STEAM OR HOT WATER SYSTEM WITH RADIATORS/CONVECTORS | |
| 03 CENTRAL WARM-AIR FURNACE WITH DUCTS TO INDIVIDUAL ROOMS (NOT HEAT PUMP) --> [B-18] | |
| 04 HEAT PUMP --> [B-18] | |
| 05 BUILT-IN ELECTRIC UNITS (PERMANENTLY INSTALLED IN WALL, CEILING, OR BASEBOARD) | 210- |
| 06 FLOOR, WALL, OR PIPELESS FURNACE | 217 |
| 07 ROOM HEATER BURNING GAS, OIL, KEROSENE -- NOT PORTABLE | |
| 08 HEATING STOVE BURNING WOOD, COAL, COKE | |
| 09 FIREPLACE(S) | --> [B-21] |
| 10 PORTABLE ELECTRIC HEATER(S) | |
| 11 PORTABLE KEROSENE HEATER(S) | |
| 12 COOKING STOVE, RANGE, OR OVEN (USED TO HEAT HOME AS WELL AS FOR COOKING) | |
| 21 OTHER (SPECIFY): _____ | |
| 96 DON'T KNOW EQUIPMENT | 218- |
| 00 NO ADDITIONAL EQUIPMENT | 232:b |

IF "CENTRAL WARM AIR FURNACE" ("03" IN B-17), ASK:

- | | |
|--|--------------|
| B-18. For the central warm-air furnace, is the warm air forced through the ducts by a fan? | 1 YES |
| | 0 NO |
| | 6 DON'T KNOW |
| | 233 |

IF "HEAT PUMP" ("04" IN

B-17), ASK:

- | | |
|--|--------------------------------------|
| B-19. Is the heat pump a central system, or is it a window or wall unit? | 1 CENTRAL SYSTEM |
| | 2 WINDOW OR WALL UNIT --> [B-21] |
| | 3 OTHER (DESCRIBE): _____ --> [B-21] |
| | 234 |

IF "CENTRAL SYSTEM" IN B-19, ASK:

- | | |
|---|---------------------------------|
| B-20. Please look at Exhibit 8. What is the backup fuel used in the central heat pump system? | 01 GAS FROM UNDERGROUND PIPES |
| | 02 BOTTLED GAS (LPG OR PROPANE) |
| | 03 FUEL OIL |
| | 04 KEROSENE OR COAL OIL 235- |
| | 05 ELECTRICITY 236 |
| | 06 COAL OR COKE |
| | 07 WOOD |
| | 08 SOLAR COLLECTORS |
| | 21 OTHER (SPECIFY): _____ |
| | 00 NO BACKUP FUEL |
| | 96 DON'T KNOW |

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

WOOD

- B-21. We may have covered this before, but please tell me -- Has any wood been burned in your home in the past 12 months?
- | | |
|-----------------|-----|
| 1 YES | 237 |
| 0 NO --> [B-26] | |

IF "YES" ON Q. B-21, ASK:

- B-22. Where was the wood burned -- in a wood heating stove, in a fireplace, or in a fireplace insert? (CIRCLE ALL THAT APPLY.)
- | | |
|----------------------|-----|
| 1 WOOD HEATING STOVE | 238 |
| 2 FIREPLACE | 239 |
| 3 FIREPLACE INSERT | 240 |

- B-23. Please turn to Exhibit 9. This exhibit illustrates amounts of wood. Using the pictures as general reference points, please tell me approximately how much wood your household burned in the past 12 months.

- | | |
|--|-----|
| 1 A FEW LOGS OR SCRAPS | |
| 2 1/4 TO 1/3 OF A CORD | 241 |
| 3 ABOUT 1/2 CORD | |
| 4 MORE THAN 1/2 CORD BUT LESS THAN ONE FULL CORD | |
| 5 ONE CORD OR MORE | |

↓
WRITE IN
AMOUNT HERE: CORDS

242-244

INTERVIEWER: Q. B-23 -- PROBE FOR RESPONDENT'S BEST ESTIMATE OF NUMBER OF CORDS BURNED. RECORD ANSWER TO NEAREST CORD, OR CORD PLUS FRACTION, (FOR EXAMPLE: 1, 1½, 4, 10, 12, AND SO ON).

- B-24. Which of the following best describes how many hours per day or per week you use your fireplace/ woodstove during the heating season (winter)?

- | | |
|--|-----|
| 1 Almost continuously | 245 |
| 2 Not continuously, but average use exceeds 4 hours per day | |
| 3 Average between 1 and 4 hours per day | |
| 4 Average less than 1 hour per day but more than 1 hour per week | |
| 5 Average less than 1 hour per week | |

- B-25. Did you purchase any firewood for your home in the last 12 months?

- | | |
|-------|-----|
| 1 YES | 246 |
| 0 NO | |

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

TEMPERATURE

B-26. At what temperature do you usually keep your home in the wintertime...?

a. During the day, when someone is at home?

DEGREES	<input type="text"/>	247-
FAHRENHEIT:	<input type="text"/>	248

96 HEAT TURNED OFF

b. During the day, when no one is at home?

DEGREES	<input type="text"/>	249-
FAHRENHEIT:	<input type="text"/>	250

96 HEAT TURNED OFF

c. During sleeping hours?

DEGREES	<input type="text"/>	251-
FAHRENHEIT:	<input type="text"/>	252

96 HEAT TURNED OFF

INTERVIEWER: IF RESPONDENT KEEPS DIFFERENT SECTIONS OF THE HOUSE AT DIFFERENT TEMPERATURES, WE WANT TO KNOW THE TEMPERATURE IN THE PART OF THE HOUSE WHERE THE PEOPLE ARE. IF, FOR EXAMPLE, THE HEAT IS TURNED OFF UPSTAIRS DURING THE DAY BECAUSE THE FAMILY IS DOWNSTAIRS, WE WANT THE DOWNSTAIRS TEMPERATURE.

IF THE RESPONDENT DOESN'T KNOW TEMPERATURE, BUT DOES KNOW THERMOSTAT SETTING, RECORD THERMOSTAT SETTING. OTHERWISE, PROBE FOR BEST ESTIMATE.

B-27. Are the usual temperatures in your home during the winter the ones that you personally would prefer, or would you prefer it warmer or cooler?

1 TEMPERATURE PREFERRED --> [C-1]	254-
2 WOULD LIKE WARMER	253
3 WOULD LIKE COOLER	

IF "WARMER" OR "COOLER," ON Q. B-27, ASK:

B-28. Why can't you have your home the temperature you prefer? (CIRCLE ALL THAT APPLY.)

01 HEATING SYSTEM PROBLEM	254-
02 LANDLORD CONTROLS THE TEMPERATURE	259
03 DIFFERENCE OF OPINION IN FAMILY	
04 FUEL SHORTAGE	
05 HIGH COST OF FUEL	
06 POOR CONSTRUCTION	
96 NOT SURE	
21 OTHER (SPECIFY): _____	

1990 Residential Energy Consumption Survey
Form EIA-457A

Form EIA-457A (1990)

Section C. Water Heating

C-1. Do you have hot running water in your home? 1 YES ---> [C-3] 260
 0 NO

IF "NO," ON Q. C-1, ASK:

C-2. Do you have some way to heat water for washing or bathing? 1 YES 261
 0 NO ---> [D-1]

C-3. Please turn to Exhibit 10. Which fuel is used most for heating water for washing or bathing?

**INTERVIEWER: HEATING
 WATER USED FOR WASHING,
 BATHING, ETC., NOT FOR
 HEATING TEA, COFFEE.
 CIRCLE ONLY ONE.**

- | | |
|---|------|
| 01 GAS FROM UNDERGROUND PIPES SERVING YOUR NEIGHBORHOOD | 262- |
| 02 BOTTLED GAS (LPG OR PROPANE) | 263 |
| 03 FUEL OIL | |
| 04 KEROSENE OR COAL OIL | |
| 05 ELECTRICITY | |
| 06 COAL OR COKE | |
| 07 WOOD | |
| 08 SOLAR COLLECTORS | |
| 21 OTHER (SPECIFY): _____ | |
| 96 DON'T KNOW | |

C-4. Does the main equipment for heating water for your home also heat water for other buildings or housing units? 1 YES ---> [C-8]
 0 NO, HOT WATER EQUIPMENT IS FOR RESPONDENT'S HOME ONLY 264
 6 DON'T KNOW ---> [C-8]

IF "NO" ON Q. C-4, ASK:

C-5. Please turn to Exhibit 11. About how old is your water heater, just approximately?
 (INTERVIEWER: PROBE FOR BEST GUESS.)

- | | |
|---|------|
| 01 LESS THAN 2 YEARS | |
| 02 2-4 YEARS | |
| 03 5-9 YEARS | 265- |
| 04 10-19 YEARS | 266 |
| 05 20 YEARS OR MORE | |
| 06 AS OLD AS THE HOUSE/ORIGINAL EQUIPMENT | |
| 96 DON'T KNOW | |
| 00 NO SEPARATE WATER HEATER | |

C-6. Please turn to Exhibit 12. How large is your water heater tank?

- | | |
|------------------------------|-----|
| 1 SMALL (30 GALLONS OR LESS) | |
| 2 MEDIUM (31 TO 49 GALLONS) | |
| 3 LARGE (50 GALLONS OR MORE) | |
| 6 DON'T KNOW | 267 |

C-7. Is the water heater located in a place that is heated in the winter?

- | | |
|--------------|-----|
| 1 YES | |
| 0 NO | |
| 6 DON'T KNOW | 268 |

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

C-8. Please look at Exhibit 13. In addition to (FUEL FROM C-3), do you use any other fuel for heating water for washing or bathing?

1 YES
0 NO --> [DNE]

269

IF "YES" ON Q. C-8, ASK:

C-9. What is this additional fuel?

- 01 GAS FROM UNDERGROUND PIPES SERVING YOUR NEIGHBORHOOD
- 02 BOTTLED GAS (LPG OR PROPANE)
- 03 FUEL OIL
- 04 KEROSENE OR COAL OIL
- 05 ELECTRICITY
- 06 COAL OR COKE 270-
- 07 WOOD 271
- 08 SOLAR COLLECTORS
- 21 OTHER (SPECIFY): _____
- 96 DON'T KNOW

1990 Residential Energy Consumption Survey
Form EIA-457A

Form EIA-457A (1990)

Section D. Air Conditioning

307-308:03

D-1. Does your (house/apartment) have any air conditioning equipment (central and/or wall/window unit)?

1 YES 310
0 NO --> [D-13]

311-312

D-2. How many rooms are usually cooled by your air conditioning (central or window/wall units) during the times you use it?

NUMBER OF ROOMS: _____
95 OR ENTIRE HOUSE/APARTMENT

INTERVIEWER: SEE AIR-CONDITIONED ROOMS IN GLOSSARY

D-3. Does your (house/apartment) have central air conditioning equipment?

1 YES 313
0 NO --> [D-8]

IF "YES" ON Q. D-3, ASK:

D-4. What kind of fuel does it use -- gas from underground pipes, bottled gas, or electricity?

01 GAS FROM UNDERGROUND PIPES
02 BOTTLED GAS, LPG, OR PROPANE
05 ELECTRICITY 314-
96 DON'T KNOW 315

D-5. Please look at Exhibit 14. Which of the statements on this Exhibit best describes the way you used your central air conditioner(s) last summer?

0 DID NOT USE AT ALL
1 TURNED ON ONLY A FEW DAYS OR NIGHTS WHEN REALLY NEEDED
2 TURNED ON QUITE A BIT 316
3 TURNED ON JUST ABOUT ALL SUMMER
5 OTHER (SPECIFY): _____

D-6. Does the air conditioning equipment that cools your home also cool other apartments, condos, houses, businesses, or farm buildings?

1 YES, A/C COOLS ONE OR MORE OTHER APARTMENTS, HOUSES, OR BUSINESSES --> [D-8] 317
0 NO, A/C IS FOR RESPONDENT'S HOME ONLY
6 DON'T KNOW --> [D-8]

IF "NO" ON Q. D-6, ASK:

D-7. Please turn to Exhibit 15. About how old is your central air conditioning equipment?

01 LESS THAN 2 YEARS OLD
02 2-4 YEARS OLD
03 5-9 YEARS OLD
04 10-19 YEARS OLD 318-
05 20 YEARS OR OLDER 319
06 AS OLD AS THE HOUSE/ORIGINAL EQUIPMENT
96 DON'T KNOW

INTERVIEWER: SEE FOLDOUT PAGE. IF CENTRAL AIR CONDITIONING AND ONE-FAMILY HOME, SAY: "At the end of the interview, with your permission, I will want to look at the central air conditioning unit that is outside your home." REMEMBER TO RECORD IN Q. P-14.

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Form EIA-457A**

Form EIA-457A (1990)

D-8. Do you have any wall or window unit air conditioners?

1 YES
0 NO

320

IF "YES" ON Q. D-8, ASK:

D-9. How many do you have?

NUMBER OF
WINDOW/WALL
UNITS:

321-322

The next three questions are about the window or wall air conditioning unit that you use the most.

D-10. Please turn to Exhibit 16. How would you describe the size of your most used window/wall unit?

1 SMALL (8,999 BTU/HR OR LESS)
2 MEDIUM (9,000-16,999 BTU/HR) 323
3 LARGE (17,000 BTU/HR OR MORE)
6 DON'T KNOW

D-11. Please turn to Exhibit 17. About how old is your most used unit?

1 LESS THAN 2 YEARS
2 2-4 YEARS
3 5-9 YEARS 324
4 10-19 YEARS
5 20 YEARS OR OLDER
6 DON'T KNOW

D-12. Please look at Exhibit 18. Which of the statements on this exhibit best describes the way you used your most used unit last summer?

0 DID NOT USE AT ALL
1 TURNED ON ONLY A FEW DAYS OR NIGHTS WHEN REALLY NEEDED 325
2 TURNED ON QUITE A BIT
3 TURNED ON JUST ABOUT ALL SUMMER
5 OTHER (SPECIFY):

D-13. Please look at Exhibit 19.
As I read each item from the
list, tell me if you use it
here in your (house/
apartment).

**INTERVIEWER: READ AND
CIRCLE "YES" OR "NO" FOR
EACH ITEM**

a.	Evaporative Cooler (Swamp Cooler).....	1	0	6	326
b.	"Whole house" cooling fan (in the attic or the entrance to the attic).....	1	0	6	327
c.	Exhaust fan (INCLUDE BATHROOM, KITCHEN OR BASEMENT EXHAUST FANS HERE).....	1	0	6	328
d.	Window or ceiling fan.....	1	0	6	329
e.	Portable table or floor fan.....	1	0	6	330

D-14. Please look at Exhibit 20. Which of the following help to keep your home cool in the summer?

a. Large tree(s) that shade the roof.....1 0 6 331
b. Large tree(s) that shade the windows.....1 0 6 332
c. Shutters or awnings.....1 0 6 333
d. Blinds or insulated (thermal) drapes.....1 0 6 334
e. Reflective film on windows.....1 0 6 335

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

Section E. Cooking and Lighting

E-1. Now turn to Exhibit 21. What fuel is used most for cooking in your house/apartment?

- | | |
|---|------|
| 01 GAS FROM UNDERGROUND PIPES SERVING YOUR NEIGHBORHOOD | |
| 02 BOTTLED GAS (LPG OR PROPANE) | |
| 03 FUEL OIL | 336- |
| 04 KEROSENE OR COAL OIL | 337 |
| 05 ELECTRICITY | |
| 06 COAL OR COKE | |
| 07 WOOD | |
| 21 OTHER (SPECIFY): _____ | |
| 00 NO COOKING DONE --> [E-5] | |

E-2. Please look at Exhibit 22 and tell me which of these are used for cooking here in your (house/apartment):

INTERVIEWER: READ AND CIRCLE "YES" OR "NO" FOR EACH ITEM

INTERVIEWER: FOR STANDARD COMBINATION OVEN AND STOVETOP UNITS, RECORD BOTH AS "YES."

GAS

- | | | | |
|----------------------------------|-------|------|-----|
| a. Gas stovetop or burners?..... | 1 YES | 0 NO | 338 |
| b. Gas oven?..... | 1 YES | 0 NO | 339 |

ELECTRIC (CONVENTIONAL)

- | | | | |
|--|-------|------|-----|
| c. Electric stovetop or burners?.... | 1 YES | 0 NO | 340 |
| d. Electric oven (not microwave or toaster oven) | 1 YES | 0 NO | 341 |

OUTDOOR GRILLS

- | | | | |
|---|-------|------|-----|
| e. Gas grill that uses bottled gas, LPG, or propane?..... | 1 YES | 0 NO | 342 |
| f. Gas grill that uses gas from underground pipes?..... | 1 YES | 0 NO | 343 |

E-3. Do you use a microwave oven?

- | | |
|----------------|--|
| 1 YES | |
| 0 NO --> [E-5] | |

IF "YES" ON Q. E-3, ASK:

- | | | |
|---|---|--|
| E-4. Please turn to Exhibit 23. How much of your food is cooked in the microwave? | 1 MOST OR ALL | |
| | 2 ABOUT HALF | |
| | 3 SOME OR VERY LITTLE | |
| | 4 USED ONLY FOR SNACKS OR DEFROSTING FOOD | |
| | 6 DON'T KNOW | |

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

LIGHTS

E-5. How many lights do you usually have turned on more than 12 hours per day?
Include lights inside and outside your home.

NUMBER OF
LIGHTS:

00 NO LIGHTS --> [E-8]

346-
347

IF LIGHTS ON MORE THAN 12 HOURS, ASK:

E-6. How many of these lights (Q. E-5) are floodlights?

FLOODLIGHTS:

348-
349

E-7. How many of these lights (Q. E-5) are fluorescent?

FLUORESCENT
LIGHTS:

350-
351

INTERVIEWER: THE TOTAL NUMBER OF LIGHTS [E-6 PLUS E-7] SHOULD BE EQUAL TO OR LESS THAN THE NUMBER IN E-5.

E-8. How many lights do you usually have turned on from 4 to 12 hours per day inside or outside your home?

NUMBER OF
LIGHTS:

352-
353

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

Section F. Appliances

These next questions are about household appliances.

- F-1. First, please tell me how many refrigerators in your home are used either regularly or occasionally?
- | | |
|------------------|-----|
| 1 ONE | 354 |
| 2 TWO | |
| 3 THREE OR MORE | |
| 0 NONE --> [F-9] | |

We would like to get some information about the refrigerator(s) you use.

(IF MORE THAN ONE IN Q. F-1, READ: Let's start with the one you use most often.) ASK F-2 THROUGH F-8 FOR EACH OF THE TWO MOST-USED REFRIGERATORS.

- F-2. First, please look at Exhibit 24. Approximately how old is the refrigerator?

INTERVIEWER:
IF "DO NOT
KNOW" PROBE
FOR BEST
ESTIMATE

	SECOND MOST-USED REFRIGERATOR	FIRST MOST-USED REFRIGERATOR
LESS THAN 2 YEARS	1	1
2-4 YEARS	2	2
5-9 YEARS	3	3
10-19 YEARS	4	4
20 YEARS OR MORE	5	5
DON'T KNOW	6	6

- F-3. Please look at Exhibit 25 and tell me what type of refrigerator it is.

HALF-SIZE OR QUARTER	1	1
REGULAR WITH SINGLE DOOR	2	2
TWO DOORS - TOP AND BOTTOM	3	3
TWO DOORS - SIDE BY SIDE	4	4
OTHER (SPECIFY:) _____	5	5

- F-4. Please look at Exhibit 26. What is the size of your refrigerator in cubic feet?

10 CUBIC FEET OR LESS	1	1
11-14 CUBIC FEET	2	2
15-18 CUBIC FEET	3	3
19-22 CUBIC FEET	4	4
23 CUBIC FEET OR MORE	5	5
DON'T KNOW	6	6

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

F-5. Has the refrigeration unit (the cooling equipment) been repaired in the past year?

	<u>MOST-USED REFRIGERATOR</u>	<u>SECOND MOST-USED REFRIGERATOR</u>
--	-----------------------------------	--

YES	1	1
NO	0	361
NOT SURE	6	362

F-6. Look at Exhibit 27. Which best describes the freezer or ice cube section, if any, in your refrigerator?

MANUAL DEFROST	1	1
FROST-FREE (AUTOMATIC DEFROST)	2	363
NO WORKING FREEZER SECTION	3	364

F-7. Do you use this refrigerator all year round?

YES	1	1
NO	0	365
		366

IF "NO" ON Q. F-7, ASK:

F-8. How many months out of the year do you use it?

1-3 MONTHS	1	1
4-6 MONTHS	2	367
7-9 MONTHS	3	368
10-12 MONTHS	4	4

INSTRUCTIONS: REPEAT SERIES FOR NEXT REFRIGERATOR OR, IF NO OTHER REFRIGERATOR, GO TO F-9.

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Form EIA-457A

Form EIA-457A (1990)

F-9. Do you use a separate freezer unit, that is, a freezer that is not part of a refrigerator?

1 YES
0 NO \Rightarrow [F-13]

369

IF "YES" ON Q. F-9, ASK FOR
THE MOST USED FREEZER:

F-10. Is that a manual-defrost or frost-free freezer?

**1 MANUAL DEFROST
2 FROST-FREE**

370

F-11. Is the freezer an upright or chest-type model?

1 UPRIGHT (VERTICAL CABINET)
2 CHEST-TYPE (HORIZONTAL CABINET) 371

F-12. Please turn to Exhibit 28. About how old is your freezer?

- 1 LESS THAN 2 YEARS OLD
- 2 2-4 YEARS
- 3 5-9 YEARS
- 4 10-19 YEARS
- 5 20 YEARS OR OLDER
- 6 DON'T KNOW

372

F-13. Now, I'd like to know about other appliances that you use here in your (house/apartment).

INTERVIEWER: READ AND CIRCLE
"YES" OR "NO" FOR EACH ITEM

Please look at Exhibit 29.
As I read each item from the
list, tell me if you use it
here in your (house/
apartment).

ITEM YES NO

- | | | | |
|--------------------------------------|---------|---|-----|
| a. Clothes Washer..... | 1 | 0 | 373 |
| b. Electric Dishwasher..... | 1 | 0 | 374 |
| c. Electric Clothes Dryer..... | 1 | 0 | 375 |
| d. Gas Clothes Dryer..... | 1 | 0 | 376 |
| e. Outdoor Gas Light..... | 1 | 0 | 377 |
| f. Electric Dehumidifier..... | 1 | 0 | 378 |
| g. Personal Computer..... | 1 | 0 | 379 |
| h. Electric Pump For Well Water..... | 1 | 0 | 380 |

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Form EIA-457A

Form EIA-457A (1990)

407-408:04

F-14. Please look at Exhibit 30.
 In the past 2 years, have
 you purchased any of these
 items for yourself?

INTERVIEWER: READ EACH, CIRCLE "YES" OR "NO".		
--	--	--

ITEM	YES	NO
a. Refrigerator.....	1	0
b. Central Air Conditioner.....	1	0
c. Window Air Conditioner.....	1	0
d. Freezer.....	1	0
e. Heat Pump.....	1	0
f. Central Furnace (Other than Heat Pump).....	1	0
g. Water Heater.....	1	0
h. Automobile.....	1	0

418

F-15. How many black and white
 television sets do you use
 here in your home?

NUMBER:

INTERVIEWER: IF <u>NONE</u> , WRITE IN "0" DO NOT LEAVE BLANK

F-16. How many color television
 sets do you use here in your
 home?

NUMBER:

419

F-17. Do you use any water bed
heaters?

1 YES
 0 NO --> [INSTRUCTION
 BEFORE [G-1]] 420

IF "YES" ON Q. F-17, ASK: F-18. How many water bed heaters do you use?
--

NUMBER:

421

1990 Residential Energy Consumption Survey
Form EIA-457A

Form EIA-457A (1990)

Section G. Pools and Other Equipment

INTERVIEWER CHECK FOLD OUT PAGE: IF 2 OR MORE APARTMENT UNITS IN BUILDING, SKIP TO H-1. OTHERWISE, CONTINUE.

G-1. Do you have a swimming pool solely for the use of your household? (DO NOT COUNT CHILDREN'S WADING POOL AS A SWIMMING POOL).

1 YES
0 NO --> [G-4]

422

IF "YES" ON Q. G-1, ASK:
 G-2. Is it a heated pool?

1 YES, HEATED
0 NO --> [G-4]

423

IF HEATED, ASK:

G-3. Please look at Exhibit 31 and tell me the one fuel that is used most often to heat the water?

INTERVIEWER: IF MORE THAN ONE FUEL USED, CHECK FUEL USED MOST OFTEN.

- 01 GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
- 02 BOTTLED GAS (LPG OR PROPANE GAS)
- 03 FUEL OIL
- 04 KEROSENE OR COAL OIL 424-
- 05 ELECTRICITY 425
- 06 COAL OR COKE
- 07 WOOD
- 08 SOLAR COLLECTORS
- 21 OTHER (SPECIFY): _____

96 DON'T KNOW

G-4. Do you have a hot tub, spa, or jacuzzi?

1 YES
0 NO --> [G-6]

426

IF "YES" ON Q. G-4, ASK:

G-5. Look at Exhibit 31 again and tell me the one fuel that is used most often to heat the water?

- 01 GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
- 02 BOTTLED GAS (LPG OR PROPANE GAS)
- 03 FUEL OIL
- 04 KEROSENE OR COAL OIL 427-
- 05 ELECTRICITY 428
- 06 COAL OR COKE
- 07 WOOD
- 08 SOLAR COLLECTORS
- 21 OTHER (SPECIFY): _____

96 DON'T KNOW

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Form EIA-457A**

Form EIA-457A (1990)

G-6. Do you have any other kinds of equipment that use a lot of energy that we have not mentioned? We don't mean VCRs or hair-dryers. We want you to think of equipment that uses a lot of energy.

1 YES
0 NO

429

IF "YES" ON Q. G-6, ASK:

G-7. Please describe the equipment and how you use it.

三

LISX

430-432

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Form EIA-457A

Form EIA-457A (1990)

Section H. Fuel Summary

H-1. In the past 12 months, have you participated in any energy program sponsored by your gas or electric company?

- | | |
|------------------------|-----|
| 1 YES | |
| 0 NO --> [H-3] | 433 |
| 6 DON'T KNOW --> [H-3] | |

IF "YES" ON Q. H-1, ASK:

H-2. Please look at Exhibit 32. Which of these types of programs did you participate in? (CIRCLE ALL THAT APPLY.)

- | | |
|--------------------|------|
| 1 REBATE | |
| 2 LOAD CONTROL | 434- |
| 3 ENERGY AUDIT | 438 |
| 4 CONSERVATION | |
| 5 OTHER (SPECIFY): | |

H-3. Please turn to Exhibit 33. We may have covered some of these points before, but just to be sure, I'm going to ask you about which fuels are used for certain purposes in your household.

INTERVIEWER: READ EACH ITEM (A-W) ON FOLDOUT PAGE AND CIRCLE "USED" OR "NOT USED" FOR EACH. RECORD ALL ANSWERS FOR Q. H-3 AND H-4 ON FOLDOUT PAGE.

FOR EACH FUEL USED IN Q. H-3, ASK:

H-4. Is that paid for by your household, included in your rent, or do you get it some other way?

INTERVIEWER: CHECK FOLDOUT PAGE. IF USE OF ANY FUEL IS "PAID BY HOUSEHOLD" IN Q. H-4, CONTINUE TO BOX BELOW. IF NO FUELS PAID BY HOUSEHOLD, SKIP TO INSTRUCTION BEFORE Q. J-1.

INTERVIEWER: SEE FOLDOUT PAGE. IF HOUSEHOLD LIVED HERE LESS THAN 1 YEAR, SKIP TO Q. I-1.

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Form EIA-457A

Form EIA-457A (1990)

INTERVIEWER: SEE FOLDOUT PAGE. IF HOUSEHOLD PAYS FOR FUEL OIL (Q. H-4 ITEMS "R" - "T"), ASK Q. H-5. OTHERWISE, SKIP TO INSTRUCTIONS BEFORE Q. H-9.

FUEL OIL

- | | | |
|---|---|-------------|
| H-5. Is fuel oil delivered to your (home/apartment)? | 1 YES
0 NO --> [H-8]
6 DON'T KNOW --> [H-8] | 439 |
| IF "YES" ON Q. H-5, ASK: | | |
| H-6. About how many deliveries does your household usually get in a year? | NUMBER OF DELIVERIES: [] | 440-
441 |
| H-7. How many different fuel companies delivered fuel oil to you in the last 12 months? | 1 ONE
2 TWO
3 THREE OR MORE
6 DON'T KNOW | 442 |
| H-8. Please turn to Exhibit 34. About how much fuel oil does your household use in a year, just approximately? (PROBE FOR BEST ESTIMATE.) | 1 LESS THAN 100 GALLONS
2 100-499 GALLONS PER YEAR
3 500-999 GALLONS PER YEAR
4 1,000 OR MORE GALLONS PER YEAR | 443
444 |

INTERVIEWER: SEE FOLDOUT PAGE. IF HOUSEHOLD PAYS FOR BOTTLED GAS/LPG/PROPANE (SEE Q. H-4 ITEMS "L" - "Q"), ASK Q. H-9. OTHERWISE, SKIP TO INSTRUCTION BEFORE Q. H-12.

BOTTLED GAS/LPG/PROPANE

- | | | |
|--|---|--------------------------------|
| H-9. Is LPG delivered to your (home/apartment)? | 1 YES
0 NO
6 DON'T KNOW | INSTRUCTIONS BEFORE [H-12] 444 |
| IF "YES" ON Q. H-9, ASK: | | |
| H-10. About how many deliveries does your household usually get in a year? | NUMBER OF DELIVERIES: [] | 445-
446 |
| H-11. How many different companies delivered LPG to you in the last 12 months? | 1 ONE
2 TWO
3 THREE OR MORE
6 DON'T KNOW | 447 |

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Form EIA-457A

Form EIA-457A (1990)

INTERVIEWER: SEE FOLDOUT PAGE. IF HOUSEHOLD PAYS FOR KEROSENE (SEE Q. H-4, ITEMS "U" THROUGH "W"), ASK Q. H-12. OTHERWISE, SKIP TO QUESTION I-1.

KEROSENE

H-12. Is kerosene delivered to your (home/apartment)?

- 1 YES
 0 NO --> [H-15]
 6 DON'T KNOW --> [H-15]

448

IF "YES" ON Q. H-12, ASK:

H-13. About how many deliveries does your household usually get in a year?

NUMBER
OF
DELIVERIES:

449-
450

H-14. How many different fuel companies or stores delivered kerosene to you in the last 12 months?

- 1 ONE
 2 TWO
 3 THREE OR MORE
 6 DON'T KNOW

451

H-15. Do you buy kerosene and bring it home, that is, cash and carry?

- 1 YES
 0 NO --> [I-1]

452

IF "YES" ON Q. H-15, ASK:

H-16. How many times in the past 12 months did you buy kerosene and bring it home?

NUMBER
OF
TIMES:

453-
454

H-17. Please look at Exhibit 35 -- it shows the most common sizes for kerosene containers. On average, how much kerosene did you buy and bring home each time?

- 1 1 GALLON
 2 3 GALLONS
 3 5 GALLONS
 4 55 GALLONS
 5 OTHER:
 6 NOT SURE

455

H-18. About how much per gallon did you pay for kerosene, on the average?

\$. . . PER GALLON --> [I-1]
 6 NOT SURE

456-
458

**IF "NOT SURE" ON Q.
H-18, ASK:**

H-19. About how much did you pay for kerosene each time you bought it?

\$. . . IN TOTAL
 6 NOT SURE

459-
463

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

Section I: Fuel Bills

I-1. A budget plan is a plan under which the utility company or fuel dealer and household will agree that the household will pay the same amount for fuel each month for a number of months.

Is your household on a budget plan for the main fuel used to heat your home?

I-2. Please turn to Exhibit 36. Do any of your household fuel bills include fuel used for purposes other than for your own living quarters, such as for farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

IF "YES" ON Q. I-2, ASK:

I-3. For which of the purposes listed on the exhibit are costs of fuel included in your household fuel bills? (INTERVIEWER: CIRCLE ALL THAT APPLY.)

I-4. Please turn to Exhibit 37. Which fuel bills include costs of fuel used for purposes other than your own living quarters? (INTERVIEWER: CIRCLE ALL THAT APPLY.)

INTERVIEWER: IF USE OF ANY FUEL IS PAID BY HOUSEHOLD (Q. H-1 ON FOLDOUT PAGE), CONTINUE WITH SECTION I.

1 YES	464
0 NO	
6 DON'T KNOW	

1 YES --- BAYS FOR NON-HH PURPOSES	
0 NO ---> [I-11]	
6 DON'T KNOW ---> [I-10]	465

1 FARM BUILDINGS OR MACHINERY	
2 THE HOUSE OR APARTMENT OF ANOTHER HOUSEHOLD	466-
3 A BUSINESS OR OFFICE	469
4 OTHER PURPOSES (SPECIFY): _____	

01 GAS FROM UNDERGROUND PIPES SERVING YOUR NEIGHBORHOOD	470-
02 BOTTLED GAS (LPG OR PROPANE) ---> [I-6]	475
03 FUEL OIL ---> [I-7]	
04 KEROSENE OR COAL OIL ---> [I-8]	
05 ELECTRICITY ---> [I-9]	

INTERVIEWER: ASK THE FOLLOWING QUESTIONS FOR EACH FUEL CIRCLED IN Q. I-4.

1990 Residential Energy Consumption Survey
Form EIA-457A

Form EIA-457A (1990)

IF "GAS FROM UNDERGROUND PIPES"
ON Q. I-4, ASK:

I-5. Please refer to Exhibit
 38. When you get your bill
 for gas, approximately what
 portion of the bill is for
 non-household uses?

507-508:05

0	VERY LITTLE (LESS THAN 5%)	
1	1/4 (5-33%)	510
2	1/2 (34-66%)	
3	3/4 (67-95%)	
4	ALL (96-100%)	

**IF "BOTTLED GAS" ON Q. I-4,
 ASK:**

I-6. Please refer to Exhibit
 38. When you get your bill
 for bottled gas, approxi-
 mately what portion of the
 bill is for non-household
 uses?

0	VERY LITTLE (LESS THAN 5%)	
1	1/4 (5-33%)	
2	1/2 (34-66%)	511
3	3/4 (67-95%)	
4	ALL (96-100%)	

IF "FUEL OIL" ON Q. I-4, ASK:

I-7. Please refer to Exhibit
 38. When you get your bill
 for fuel oil, approximately
 what portion of the bill is
 for non-household uses?

0	VERY LITTLE (LESS THAN 5%)	
1	1/4 (5-33%)	
2	1/2 (34-66%)	512
3	3/4 (67-95%)	
4	ALL (96-100%)	

**IF "KEROSENE OR COAL OIL" ON
 Q. I-4, ASK:**

I-8. Please refer to Exhibit
 38. When you get your bill
 for kerosene, approximately
 what portion of the bill is
 for non-household uses?

0	VERY LITTLE (LESS THAN 5%)	
1	1/4 (5-33%)	
2	1/2 (34-66%)	513
3	3/4 (67-95%)	
4	ALL (96-100%)	

IF "ELECTRICITY" ON Q. I-4, ASK:

I-9. Please refer to Exhibit 38.
 When you get your bill for
 electricity, approximately
 what portion of the bill is
 for non-household uses?

0	VERY LITTLE (LESS THAN 5%)	
1	1/4 (5-33%)	
2	1/2 (34-66%)	514
3	3/4 (67-95%)	
4	ALL (96-100%)	

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Form EIA-457A

Form EIA-457A (1990)

AUTHORIZATION FORM

I-10. In addition to the types of fuel you use, we are interested in the quantities used and in the amount that people pay for electricity, gas, fuel oil, or kerosene in different parts of the United States.

I have a form that would authorize the companies that supply fuel to your household to provide that information to Response Analysis Corporation, who is conducting this survey for the Department of Energy. The authorization applies to the period from September 1989 through December 1993.

Since this study is being done nationwide, it will give a good picture of the differences in fuel cost and usage all over the country. The information is needed to help establish important national energy policies. All information is kept confidential.

INTERVIEWER: REMOVE THE AUTHORIZATION FORM FROM THE QUESTIONNAIRE AND HAND TO RESPONDENT.

EITHER YOU OR RESPONDENT SHOULD FILL IN THE NAME(S) OF COMPANIES. IF MORE THAN ONE LPG OR FUEL OIL OR KEROSENE COMPANY HAS BEEN USED SINCE SEPTEMBER 1, 1989, FILL IN ADDITIONAL COMPANY NAMES ON OTHER SIDE OF FORM. PLEASE PRINT.

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

515

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Form EIA-457A

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INTERVIEWER

THE AUTHORIZATION FORM IS TO BE FILLED OUT AT THIS POINT
IN THE INTERVIEW. USE THE SEPARATE FORM (YELLOW PAGE)
THAT IS INSERTED IN THE QUESTIONNAIRE.

IF AUTHORIZATION FORM IS SIGNED, CONTINUE WITH Q. I-11.
OTHERWISE, SKIP TO INSTRUCTION BEFORE Q. J-1.

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

- I-11. Do your fuel bills come addressed to (NAME OF SIGNATURE ON AUTHORIZATION FORM), or are they in another name?
- IF BILL IS IN ANOTHER NAME, ASK:
- I-12. What is that name and address?
- BILLING NAME: _____
STREET ADDRESS: _____
CITY AND STATE: _____
ZIP CODE: _____
- I-13. Just for our records, what is the relationship of this person to you?
- 1 SPOUSE
2 PARENT/GRANDPARENT
3 SIBLING
4 CHILD/GRANDCHILD
5 OTHER RELATED INDIVIDUAL (SPECIFY): _____
6 OTHER NONRELATED INDIVIDUAL OR COMPANY (SPECIFY): _____
7 REFUSED

INTERVIEWER: USE SPACE ABOVE TO EXPLAIN ANY UNUSUAL SITUATIONS (MORE THAN ONE OTHER BILLING NAME, DIFFERENT NAMES FOR DIFFERENT FUEL BILLS, ETC.)

- I-14. Your account number helps the fuel suppliers to make sure they provide the data for the correct household. Would it be possible for you to give me your account number for each of your fuel companies? This number is on your bills from the company.

INTERVIEWER: IF QUESTIONED AS TO THE PURPOSE OF THIS INFORMATION, SAY: We need account numbers to get the information from your fuel suppliers.

GAS (FROM UNDERGROUND PIERS)

ACCOUNT NUMBER: _____ 7 REFUSED 518
8 NOT AVAILABLE

ELECTRIC COMPANY

ACCOUNT NUMBER: _____ 7 REFUSED 519
8 NOT AVAILABLE

FUEL OIL

ACCOUNT NUMBER: _____ 7 REFUSED 520
8 NOT AVAILABLE
9 NOT APPLICABLE (CASH AND CARRY ONLY)

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Form EIA-457A

Form EIA-457A (1990)

Section J: Locating Information

INTERVIEWER: CHECK FOLDOUT PAGE, IF "RENT" OR "OCCUPIED WITHOUT PAYMENT," ASK Q. J-1. OTHERWISE, SKIP TO Q. J-2.

- J-1. We may be needing some additional information about fuels used in this building (house). May I have the name of the person or company to whom you pay rent or who is responsible for paying the fuel bills for this building (house)?

521

NAME: _____

STREET ADDRESS: _____

CITY OR TOWN/STATE/ZIP CODE:

TELEPHONE NUMBER: (AREA CODE _____) _____-_____

ASK EVERYONE

- J-2. My supervisor may want to call you to see if I really have talked to you. May I have your name, phone number, and mailing address please?

RESPONDENT'S NAME: John Doe

STREET ADDRESS: _____

CITY OR TOWN/STATE/ZIP CODE:

TELEPHONE NUMBER: (AREA CODE)

INTERVIEWER: IF RESPONDENT LIVES IN AN APARTMENT COMPLEX OR

INTERVIEWER: IF RESPONDENT LIVES IN AN APARTMENT COMPLEX OR MOBILE HOME COMPLEX AND THE NAME OF THE COMPLEX IS NOT INCLUDED IN THE ADDRESS ABOVE, ASK Q. J-3. OTHERWISE, SKIP TO Q. K-1.

- J-3. Does this (building/
development/complex/park)
have a name? 1 YES
 0 NO --> [K-1]

IF "YES" ON Q. J-3, ASK:

- J-4. What is the name? NAME: _____

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Form EIA-457A

Form EIA-457A (1990)

Section K. Background

**INTERVIEWER: SEE INSTRUCTIONS ON
FACING PAGE.**

K-1. Now I have some questions about the people who live here. Please tell me their relationship to (HOUSEHOLDER) and their ages on their last birthdays. First, I need to get this information for (HOUSEHOLDER).

INTERVIEWER: COMPLETE INFORMATION FOR HOUSEHOLDER FIRST. THEN ASK FOR EACH REMAINING PERSON. RECORD RELATIONSHIPS, NOT NAMES.

		USE FOR Q. K-1 AND K-2				USE FOR Q. K-3			
PERSON NUMBER	WHO IS RESPONDENT?	RELATIONSHIP TO HOUSEHOLDER	SEX		AGE	EMPLOYMENT (AGE 14+)			
			FEMALE	MALE		FULL TIME	PART TIME	NOT EMPLOYED	
1		HOUSEHOLDER	1	2		1	2	0	522- 528
2			1	2		1	2	0	532- 538
3			1	2		1	2	0	542- 548
4			1	2		1	2	0	552- 558
5			1	2		1	2	0	562- 568
6			1	2		1	2	0	572-75 607-08:0
7			1	2		1	2	0	612- 618
8			1	2		1	2	0	622- 628
9			1	2		1	2	0	632- 638
10			1	2		1	2	0	642- 648
11			1	2		1	2	0	652- 658
12			1	2		1	2	0	662- 668



669-
670

INTERVIEWER: PLACE AN "X" ON THE LINE WHERE RESPONDENT IS DESCRIBED (ABOVE) BEFORE CONTINUING

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

- **HOUSEHOLDER DEFINITION:** IN GENERAL, THE HOUSEHOLDER IS THE PERSON (OR ONE OF THE PERSONS) IN WHOSE NAME THE HOME IS OWNED OR RENTED.
- FOR QUESTIONS WHERE THE TERM "HOUSEHOLDER" IS INSERTED, USE THE APPROPRIATE DESIGNATION -- YOU, YOUR HUSBAND, WIFE, PARTNER -- DEPENDING ON WHO IS THE HOUSEHOLDER AND WHOM YOU ARE INTERVIEWING.
- **Q. K-1 AND Q. K-2:** BE SURE TO LIST RELATIONSHIPS, NOT NAMES. INCLUDE MEMBERS OF A SECOND FAMILY SHARING THE HOUSING UNIT.
- PERSONS WHO ARE NORMALLY MEMBERS OF THE HOUSEHOLD BUT WHO ARE NOW LIVING AWAY FROM HOME (E.G., COLLEGE STUDENTS OR MEMBERS OF THE ARMED FORCES) SHOULD NOT BE LISTED.

K-2. I have listed (READ RELATIONSHIPS FROM GRID ON FACING PAGE).
Have I missed . . .

- a. Any babies or small children? 1 YES (ADD TO LISTING)
 0 NO
- b. Any lodgers, boarders, or persons in your employ who live here? 1 YES (ADD TO LISTING)
 0 NO
- c. Anyone who usually lives here but is away traveling or in the hospital? 1 YES (ADD TO LISTING)
 0 NO
- d. Anyone else staying here who does not have a regular residence elsewhere? 1 YES (ADD TO LISTING)
 0 NO

INTERVIEWER: CHECK GRID FOR EACH PERSON AGED 14 YEARS OR OLDER. FOR EACH, ASK:

K-3. Is (he/she) employed full-time, that is 30 hours or more per week, employed part-time, or not employed? (RECORD ON GRID.)

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Form EIA-457A

Form EIA-457A (1990)

K-4. How many people in this household drive a car on a fairly regular basis --- that is, at least once a month?

NUMBER OF REGULAR DRIVERS:	<input type="text"/>	671-
	<input type="text"/>	672
00	NONE	
96	DON'T KNOW	

I have a few questions about (HOUSEHOLDER) for background statistical purposes.

K-5. What is the highest grade or year (HOUSEHOLDER) completed in school or college?

00	NEVER ATTENDED SCHOOL		
01	FIRST	07 SEVENTH	
02	SECOND	08 EIGHTH	673-
03	THIRD	09 NINTH	
04	FOURTH	10 TENTH	674
05	FIFTH	11 ELEVENTH	
06	SIXTH	12 TWELFTH	

COLLEGE (ACADEMIC YEARS)

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

INTERVIEWER: CIRCLE ANSWER. ASK, IF NECESSARY.

675

K-6. Which of the following best describes (HOUSEHOLDER): now married, widowed, divorced, separated, or never married?

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

K-7. Please turn to Exhibit 39. Which of the groups on the exhibit best describes (HOUSEHOLDER)?

1	WHITE	576
2	BLACK	
3	AMERICAN INDIAN, ALASKAN NATIVE	
4	ASIAN, PACIFIC ISLANDER	
5	OTHER (SPECIFY): _____	

K-8. Is (HOUSEHOLDER) of Spanish or Hispanic origin or descent?

1	YES	
0	NO	677

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Form EIA-457A

Form EIA-457A (1990)

K-9. Please turn to Exhibit 40. In the past 12 months, did you or any member of your family living here receive any income or benefits from these sources? When we say "family," we mean all related persons living in this household.

INTERVIEWER: READ AND CIRCLE
 "YES" OR "NO" FOR EACH ITEM.

707-708:07

YES	NO	
		710
a. Wages and/or salaries		0
b. Self-employment from a business or farm		0
c. Social Security or Railroad Retirement		0
d. Pensions and other retirement funds		0
e. Food Stamps		0
f. Aid to Families with Dependent Children (AFDC)		0
g. Unemployment compensation		0
h. Supplemental Security Income (SSI)		0
i. General Assistance or other public assistance		0

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

- K-10. Now please look at EXHIBIT 41. This is a list of income groups. Please tell me which group letter best describes the total combined income in the last 12 months of all members of your family living here, from all sources -- wages, interest, Social Security, and so forth -- before taxes and deductions.

CIRCLE LETTER FOR INCOME GROUP

01 A LESS THAN \$ 3,000	22 T \$38,000 - \$39,999	-> [N-1]	
02 B \$ 3,000 - \$ 3,999	23 U \$40,000 - \$49,999		
03 C \$ 4,000 - \$ 4,999	24 V \$50,000 - \$74,999		
04 D \$ 5,000 - \$ 5,999	25 W \$75,000 OR OVER		
05 E \$ 6,000 - \$ 7,499			
07 F \$ 7,500 - \$ 8,999			
08 G \$ 9,000 - \$ 9,999			
09 H \$10,000 - \$10,999			
10 I \$11,000 - \$12,499	---> [L-1]		
12 J \$12,500 - \$13,999			
13 K \$14,000 - \$14,999			
14 L \$15,000 - \$17,499			
15 M \$17,500 - \$19,999			
16 N \$20,000 - \$22,499			
17 O \$22,500 - \$24,999			
18 P \$25,000 - \$27,499			
19 Q \$27,500 - \$29,999			
20 R \$30,000 - \$32,499			
21 S \$32,500 - \$34,999			

96 DON'T KNOW ---> [PROBE]
97 REFUSED

719--
720

PROBE, IF "DON'T KNOW" OR "REFUSED."

Can you tell me whether your household income in the last 12 months was under or over \$35,000?

1 UNDER \$35,000	721
2 OVER \$35,000	---> [M-1]
6 DON'T KNOW	
7 REFUSED	

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

Section L. Family Income Under \$35,000

- L-1. There is an 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 household receiving the assistance can be paid directly, or the assistance can be paid 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.

Were you aware of this
energy assistance program?

1 YES
0 NO

722

INTERVIEWER: THESE QUESTIONS REFER TO ANY HOME THE RESPONDENT
OCCUPIED IN THE LAST YEAR.

- L-2. Now turn to Exhibit 42. During
the last year -- from October
1989 through September 1990
-- did anyone in your
household receive government
assistance for any of the
following:

	YES	NO	DON'T KNOW	
a. Help in paying home <u>heating</u> costs?	1	0	6	723
b. Help in paying home <u>cooling</u> or air-conditioning costs?	1	0	6	724
c. Help with <u>other</u> home energy costs?	1	0	6	725
d. Emergency supplies, such as blankets, fans, portable heaters, or temporary emergency shelter?	1	0	6	726

INTERVIEWER: IF "NO" OR
"DON'T KNOW" TO ALL ITEMS,
SKIP TO Q. L-6.

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

IF "YES" FOR ANY ITEM IN Q. L-2, ASK:
L-3. Please describe this help.

DESCRIPTION: _____

IF "YES" ON Q. L-2a (HOME HEATING COSTS), ASK:

L-4. Please look at Exhibit 43. You mentioned that your household got help in paying for home heating costs. How were these payments received? (READ EACH AND CIRCLE "YES" OR "NO".)

	YES	NO	DON'T KNOW	
a. Sent directly to utility company or fuel dealer	1	0	6	727
b. Check to household	1	0	6	728
c. Coupon/voucher to household	1	0	6	729
d. Two-party check	1	0	6	730
e. OTHER SPECIFY: _____	1	0	6	731

L-5. About how much money did you receive from October 1989 to September 1990? \$ _____.00
6 NOT SURE 732--
735

L-6. Exhibit 44 shows some examples of how a person can weatherize a home; for example, insulating walls, insulating the hot water heater, weather stripping or caulking, and so on. During the last year -- from October 1989 to September 1990 -- did you receive any help from the government in paying the costs of weatherizing your home?

1. YES	736
0 NO	
6 DON'T KNOW	

1990 Residential Energy Consumption Survey
Form EIA-457A

Form EIA-457A (1990)

L-7. I want you to think about the home or homes you lived in last year -- that is, the time period from October 1989 to September 1990.

Was there ever a time during that period when you wanted to use your main source of heat, but could not, for one or more of the following reasons? (CIRCLE YES OR NO FOR EACH ITEM.)

	<u>YES</u>	<u>NO</u>	
a. Your heating system was broken and you were unable to pay for the repair or replacement?	1	0	737
b. You ran out of fuel oil, LPG, coal, or wood because you were unable to pay for a delivery?	1	0	738
c. The utility company discontinued your gas or electric service because you were unable to pay your bill?	1	0	739

INTERVIEWER: IF ALL
 ITEMS MARKED "NO",
 SKIP TO INSTRUCTION
 BEFORE Q. L-12.

IF "YES" TO Q. L-7 "a," "b," OR "c", ASK:

L-8. Thinking about these times that you went without heat -- how many separate times were there?

TOTAL TIMES:

740-
741

L-9. Altogether, how many hours or days were you without heat?

HOURS: OR DAYS:

742-
744

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

**IF "YES" TO Q. L-7 "a", "b",
OR "c", ASK:**

L-10. Please turn to Exhibit
45. During which month
or months were you
without heat?

01 OCT ('89)	08 MAY ('90)
02 NOV ('89)	09 JUN ('90)
03 DEC ('89)	10 JUL ('90)
04 JAN ('90)	11 AUG ('90)
05 FEB ('90)	12 SEP ('90)
06 MAR ('90)	96 NOT SURE
07 APR ('90)	

745-756

**INTERVIEWER: CIRCLE
ALL THAT APPLY.**

L-11. During these times, were you
able to heat your home in
some other way?

1 YES
0 NO

757

**INTERVIEWER CHECK FOLD OUT PAGE: IF "OWN," SKIP TO
Q. M-1; IF "RENT," CONTINUE.**

IF "RENT," ASK:

L-12. Is this residence in a
public housing project
--- that is, is it
owned by a housing
authority?

1 YES ---> (E-1)
0 NO
6 DON'T KNOW

758

**IF NO" OR "DON'T
KNOW" ON Q. L-12, ASK:**

L-13. Are you paying
lower rent
because the
federal, state,
or local
government is
paying part of
the cost?

1 YES
0 NO
6 DON'T KNOW

759

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

Section M. Conservation

INSULATION

ASK
EVERYONE

Now, I'd like to spend a few minutes talking about the insulation in this home.

M-1. Overall, would you say that this (house/apartment) is well insulated, adequately insulated, or poorly insulated?

- 1 WELL INSULATED --> [M-3]
- 2 ADEQUATELY INSULATED --> [M-3]
- 3 POORLY INSULATED
- 6 DON'T KNOW --> [M-3]

760

IF "POORLY INSULATED" ON Q. M-1, ASK:

M-2. Please turn to Exhibit 46. Is this (house/apartment) "poorly insulated" due to one or more of these reasons? (READ LIST AND CIRCLE ALL THAT APPLY).

- 1 Leaky windows
- 2 Doors not tight
- 3 Inadequate wall insulation
- 4 Inadequate ceiling insulation
- 5 Inadequate caulking
- 6 DON'T KNOW

761-765

INTERVIEWER CHECK FOLD OUT PAGE: IF ONE-FAMILY HOUSE OR MOBILE HOME, CONTINUE WITH REMAINDER OF SECTION M. IF 2 OR MORE APARTMENT UNITS IN BUILDING, SKIP TO Q. N-1b.

IF ONE-FAMILY HOUSE OR MOBILE HOME, ASK:

M-3. Do you have roof or ceiling insulation in your home?

- 1 YES
- 0 NO --> [M-6]
- 6 DON'T KNOW --> [M-6]

766

IF "YES" ON Q. M-3, ASK:

M-4. Please turn to Exhibit 47. About how much of the roof or ceiling area is insulated?

- 0 VERY LITTLE (LESS THAN 5%)
- 1 1/4 (5-33%)
- 2 1/2 (34-66%)
- 3 3/4 (67-95%)
- 4 ALL (96-100%)
- 6 DON'T KNOW

767

M-5. Was any of the roof or ceiling insulation added or installed in your home since September 1, 1987?

- 1 YES
- 0 NO
- 2 IN PROCESS
- 6 DON'T KNOW

768

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

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

INTERVIEWER: CONTINUE ONLY IF ONE-FAMILY HOUSE
OR MOBILE HOME. IF NOT, SKIP TO Q. M-1B.

M-6. Do you have insulation in all,
some, or none of the outside
walls of your home?

1 ALL
2 SOME
0 NONE ---> [M-8]
6 DON'T KNOW ---> [M-8]

769

IF "ALL" OR "SOME," ON
Q. M-6, ASK:

M-7. Was any of the insulation
in the outside walls
added or installed in
your home since
September, 1987?

1 YES
0 NO
2 IN PROCESS
6 DON'T KNOW

770

M-8. Please look at the list in
Exhibit 48 and as I read each
item, tell me which, if any,
you have in this home.

	YES	NO	DON'T KNOW	
a. Insulation around heating and/or cooling ducts.	1	0	6	771
b. Insulation around the hot water pipes.	1	0	6	772
c. Insulation around the hot water heater.	1	0	6	773
d. Weatherstripping around any windows or doors to the outside.	1	0	6	774
e. Caulking	1	0	6	775

**1990 Residential Energy Consumption Survey
Form EIA-457A**

Form EIA-457A (1990)

INTERVIEWER: CONTINUE ONLY IF ONE-FAMILY HOUSE OR MOBILE HOME. IF NOT, SKIP TO Q. N-1b.

IF "YES" ON Q. M-9, ASK:

M-10. Do you have any insulation in the floor area above the basement or crawl space?

1 YES
0 NO --> M=12

776

1 YES
0 NO --> [M-12]
6 DON'T KNOW --> [M-12]

777

IF "YES" ON Q. M-10.
ASK:

M-1

M-III. Please turn to Exhibit 49. How much of the floor area above the basement or crawl space is insulated?

0 VERY LITTLE (LESS THAN 5%)
 1 1/4 (5%-33%)
 2 1/2 (34%-66%)
 3 3/4 (67%-95%)
 4 ALL (96%-100%)
 6 DON'T KNOW

778

807-808:08

OTHER CONSERVATION MEASURES

M-12. Please tell me which, if any, of the following items have been added or installed in your home since September 1, 1987.

IN DON'T
YES NO PROCESS KNOW

a. An automatic set-back or clock thermostat?

1 0 2 5 810

b. Heat pump?

1 6 2 811

6. Wood-burning stove?

3 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100 102 104 106 108 110 112 114 116 118 120 122 124 126 128 130 132 134 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 174 176 178 180 182 184 186 188 190 192 194 196 198 200 202 204 206 208 210 212 214 216 218 220 222 224 226 228 230 232 234 236 238 240 242 244 246 248 250 252 254 256 258 260 262 264 266 268 270 272 274 276 278 280 282 284 286 288 290 292 294 296 298 299 300

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

M-13. Now, let's talk about your heating equipment.

Have you had a "tune-up" done on your heating equipment in the past year? By tune-up, we mean a cleaning and maintenance check.

1 YES
0 NO
6 DON'T KNOW

813

M-14. Have you replaced your main heating equipment since September 1, 1987?

1 YES, REPLACED AFTER 9/1/87
0 NO --> [M-14.]

814

IF "YES" ON Q. M-14. ASK:
M-15. Is the new equipment high-efficiency?

1 YES, HIGH EFFICIENCY
0 NO
6 DON'T KNOW

815

1990 Residential Energy Consumption Survey
Form EIA-457A

Form EIA-457A (1990)

Section N: Doors and Windows

DOORS

INTERVIEWER: NUMBER OF DOORS: COUNT EACH PAIR OF SLIDING GLASS DOORS AS ONE DOOR. INCLUDE DOORS THAT GO TO AN UNHEATED PORCH OR GARAGE.

DO NOT INCLUDE DOORS TO A HEATED HALLWAY IN AN APARTMENT BUILDING, DOORS THAT ARE PERMANENTLY SEALED SHUT, OR DOORS TO AN UNHEATED ATTIC OR BASEMENT.

**Q. N1: SEE FOLDOC PAGE FOR STRUCTURE TYPE. ASK N1a
OR N1b -- NOT BOTH.**

IF SINGLE FAMILY/MOBILE HOME:

N-1a. Please refer to Exhibit 50. How many doors lead directly from your house to the outside?

NUMBER
OF DOORS:

00 NONE --> [N-3]

816-817

IF BUILDING WITH 2 OR MORE UNITS:

N-1b. Please refer to Exhibit 50. How many doors here in your (apartment/home) lead either directly to the outside or open onto an unheated common hallway?

NUMBER
OF DOORS:

00 NONE --> [N-3]

IF ANY DOORS TO THE OUTSIDE OR AN UNHEATED HALLWAY ON Q. N-1a OR N-1b, ASK:

N-2. How many of these doors have a storm door or insulated glass?

NUMBER
OF DOORS:

00 NONE

818-819

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

WINDOWS

N-3. Please look at Exhibit 51. How many windows do you have in your home? Each window that opens separately should be counted as one window. Include basement, attic, garage, and porch windows only if these areas are heated.

NUMBER
OF
WINDOWS:
820-821

N-4. How many of these windows have storm windows or insulating glass?

NUMBER
OF
INSULATED
WINDOWS:
822-823

00 NONE

INTERVIEWER:

- Q. N-3 -- DOUBLE HUNG SLIDER WINDOWS COUNT AS ONE WINDOW. EACH WINDOW THAT OPENS SEPARATELY SHOULD BE COUNTED AS ONE WINDOW. ALSO COUNT WINDOWS THAT ARE MIXED IN PLACE. DO NOT INCLUDE WINDOWS (GLASS PANELS) IN DOORS.
- Q. N-4 -- WINDOWS MADE OF DOUBLE GLASS AND OTHER TYPES OF INSULATING GLASS COUNT THE SAME AS STORM WINDOWS.

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

SECTION O BEGINS ON THE NEXT PAGE

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

Section O: Vehicles

ASK EVERYONE

INTERVIEWER: SEE BOX ON FACING PAGE FOR INSTRUCTIONS ABOUT VEHICLES SECTION.

Now some questions about cars.

- O-1. Do you or other members of your household own or have the regular use of any cars, trucks, vans, or similar vehicles? (DO NOT INCLUDE MOTORCYCLES OR MOPEDS.)

1 YES
0 NO --> [P-1]

824

- IF "YES" ON O-1, ASK:
O-2. How many vehicles do you have?

NUMBER OF VEHICLES: []
825-
826

READ BEFORE ASKING ABOUT FIRST VEHICLE:

I'd like you to describe each vehicle your household owns or uses. First, let's start with the vehicle you use most often.

INTERVIEWER: PLEASE GO TO BLUE VEHICLE PAGE AND ASK SERIES OF QUESTIONS FOR EACH VEHICLE. RECORD ON WHITE PAGE.

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

INTERVIEWER:

Q. O-1 -- "REGULAR USE" MEANS THE VEHICLE IS KEPT AT HOME AND IS AVAILABLE FOR SOME PERSONAL USE.

Q. O-2 -- IF HOUSEHOLD HAS MORE THAN FOUR VEHICLES, MARK ANSWERS FOR THE FOUR VEHICLES USED MOST.

Q. O-4 -- MODEL NAME: A MODEL NAME MAY CONSIST OF SEVERAL PARTS -- BE SURE TO GET THE COMPLETE MODEL NAME. HERE ARE SOME EXAMPLES, WHERE THE COMPLETE MODEL NAME IS IN PARENTHESES: FORD (GALAXIE), CHEVROLET (V10 SUBURBAN), GMC (V15 JIMMY), TOYOTA (2WD CARGO VAN). IF RESPONDENT DOES NOT KNOW THE MODEL NAME OF A TRUCK, PROBE FOR SIZE (1/2 TON, 3/4 TON, ETC.)

Q. O-12 -- EXPLAIN WHAT THE VIN IS IF RESPONDENT DOES NOT KNOW. IF RESPONDENT QUESTIONS NEED FOR VIN, SAY: "The VIN is a set of codes assigned to a vehicle at the factory that, when decoded, describes several of the vehicle's characteristics. These characteristics may then be used to calculate an estimated miles per gallon for that specific type of vehicle."

SHOW EXHIBIT 53 OF POSSIBLE VIN LOCATIONS. ATTEMPT TO SECURE VIN FROM ONE OF THESE DOCUMENT SOURCES. RECORD THE VIN AND VERIFY FOR CORRECTNESS.

IF VEHICLE AVAILABLE--RECORD VIN FROM VEHICLE ITSELF.

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Form EIA-457A

Form EIA-457A (1990)

SECTION P: HOUSING CHARACTERISTICS

P-1. Please look at Exhibit 54. Since September 1987, have any of the changes listed on this exhibit been made to your home -- that is, anything that has either increased or decreased the total number of square feet of space?

1 YES
0 NO → [P-4]

827

IF "YES" ON Q. P-1, ASK:

P-2. Did the total number of square feet of space increase, decrease, or remain the same?

1 INCREASED
2 DECREASED
3 REMAINED THE SAME 828

P-3. Did the amount of heated space increase, decrease, or remain the same?

1 INCREASED
2 DECREASED
3 REMAINED THE SAME 829

ROOMS

P-4. How many of each of the following rooms does this (house/apartment) have? (ASK EACH ITEM AND RECORD NUMBER FOR EACH.)

INTERVIEWER: FOR ONE-ROOM EFFICIENCY OR STUDIO APARTMENT, RECORD "0 BEDROOMS" AND CORRECT NUMBER OF BATHROOMS.

a. Bedrooms?

NUMBER: 830
0 NONE

ROOMS CONTINUED ON NEXT PAGE

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INTERVIEWER: FULL BATHROOM -- SINK WITH RUNNING WATER AND FLUSH TOILET AND BATHTUB OR SHOWER.

HALF BATHROOM -- TOILET OR BATHTUB OR SHOWER.

b. Full bathrooms?.....

NUMBER:

831

0 NONE

c. Half bathrooms?.....

NUMBER:

832

0 NONE

d. All other rooms; do not count laundry rooms, foyers, or unfinished storage space. Only count porches if they are enclosed and used year-round.

NUMBER:

833

0 NONE

INTERVIEWER: CHECK FOLDOUT PAGE: IF SINGLE-FAMILY OR MOBILE HOME, CONTINUE. OTHERWISE, SKIP TO Q. P-13.

P-5. Is this house on more than one acre?

1 YES
0 NO

834

IF "YES" ON Q. P-5, ASK:

P-6. In the past 12 months, were there any sales of agricultural products from the property?

1 YES
0 NO

835

IF "YES" ON Q. P-6, ASK:

P-7. Please turn to Exhibit 55. What were the actual sales of all agricultural products from this property?

1 \$1 TO \$999
2 \$1,000 TO \$2,499
3 \$2,500 TO \$4,999
4 \$5,000 TO \$9,999
5 \$10,000 OR MORE
6 DON'T KNOW

836

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GARAGE

- P-8. Do you have an attached garage? 1 YES 0 NO --> [P-11] 837

INTERVIEWER: REMEMBER TO INCLUDE AN ATTACHED GARAGE ON DIAGRAM.

IF "YES" ON Q. P-8, ASK:

- P-9. Can the garage be heated in the winter months? 1 YES 0 NO --> [P-11] 838

IF "YES" ON Q. P-9, ASK:

- P-10. How often is it heated during the winter months -- always, usually, occasionally, almost never, or never? 4 ALWAYS 3 USUALLY 2 OCCASIONALLY 1 ALMOST NEVER 0 NEVER 839

BASEMENT

- P-11. Please turn to Exhibit 56. Does your home have a basement, an enclosed crawl space, a crawl space open to the outside, a concrete slab, or a combination of these?
- 1 A BASEMENT
 2 CRAWL SPACE -- ENCLOSED
 3 CRAWL SPACE -- OPEN TO THE OUTSIDE 840
 4 CONCRETE SLAB --> [P-13]
 5 COMBINATION (MARK ALL THAT APPLY)
 1 BASEMENT
 2 CRAWL SPACE -- ENCLOSED
 3 CRAWL SPACE -- OPEN TO THE OUTSIDE
 4 CONCRETE SLAB 841-844

**INTERVIEWER: REMEMBER TO INCLUDE BASEMENT ON DIAGRAM.
DO NOT INCLUDE CRAWL SPACE.**

IF "BASEMENT," "CRAWL SPACE," OR "COMBINATION" ON Q. P-11, ASK:

- P-12. About how much of the basement or crawl space would you say is warm enough to sit, work, or play in during the winter months -- all, part, or none? 1 ALL 2 PART 0 NONE 845

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Form EIA-457A

Form EIA-457A (1990)

MEASUREMENTS

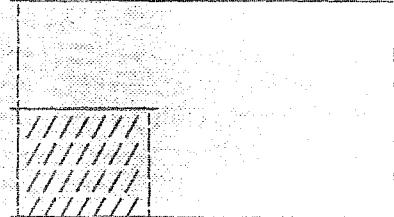
ASK EVERYONE

P-13. To understand the usage of energy in your (house/apartment), we need to know its size in square feet. With your permission, I would like to measure your home.

INTERVIEWER INSTRUCTIONS: ALWAYS DO MEASUREMENTS FROM THE OUTSIDE WHERE POSSIBLE. IF NOT POSSIBLE, READ: With your home, I think it would be most appropriate to measure the inside.

UNHEATED AREAS: WITHIN THE HOUSING UNIT THAT YOU MEASURE, INDICATE UNHEATED AREA(S) IN THE DIAGRAMS WITH SHADING. GIVE DIMENSIONS OF UNHEATED AREA(S).

SHADE UNHEATED
AREAS THIS WAY ----->



USE BLANK PAGES FACING MEASUREMENT PAGES FOR ADDITIONAL SKETCHES, MEASUREMENTS, AND EXPLANATIONS.

RECORD MEASUREMENTS ON
DIAGRAMS TO NEAREST FOOT

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Form EIA-457A

Form EIA-457A (1990)

NOTES REGARDING BASEMENT MEASUREMENTS

FOR OFFICE USE ONLY

Flr.	Codes	Unit A	Unit B	Unit C	Unit D	# of Units
846	47	48 49	50-51	52-53	56	55-56
					57-58	59

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Form EIA-457A

Form EIA-457A (1990)

BASEMENT OF HOME/APARTMENT

<input type="checkbox"/> SINGLE-FAMILY, MOBILE HOME, TOWNHOUSE <input type="checkbox"/> BASEMENT <input type="checkbox"/> HEATED-->DRAW <input type="checkbox"/> UNHEATED-->SHADE	<input type="checkbox"/> APARTMENT IN 2-4 UNIT BUILDING <input type="checkbox"/> BASEMENT -- ONLY THAT PART THAT IS FOR EXCLUSIVE OR PRIMARY USE BY THE HOUSEHOLD. <input type="checkbox"/> HEATED-->DRAW <input type="checkbox"/> UNHEATED-->SHADE	<input type="checkbox"/> APARTMENT IN 5+ UNIT BUILDING <input type="checkbox"/> BASEMENT -- DO NOT INCLUDE
--	--	---

CONSIDER BASEMENT HEATED IF (1) IT IS WARM ENOUGH TO SIT, WORK, OR PLAY IN DURING THE WINTER OR (2) IF ALL THE BASEMENT IS USED FOR LIVING SPACE WHERE A PERSON SLEEPS, WATCHES TV, OR READS.

<input type="checkbox"/> GARAGE (BASEMENT LEVEL AND ATTACHED) <input type="checkbox"/> HEATED-->DRAW <input type="checkbox"/> UNHEATED-->SHADE	GARAGE -- DO NOT INCLUDE	GARAGE -- DO NOT INCLUDE
---	-----------------------------	-----------------------------

WRITE "1-CAR", "2-CAR", OR "3-CAR" ON DIAGRAM.

RECTANGULAR SHAPE 	DRAW DIAGRAM, IF OTHER THAN RECTANGULAR <input type="checkbox"/>
--	--

INTERVIEWER: CHECK FINISHED DIAGRAM

1. DID YOU BASE YOUR FIGURES ON [] OUTSIDE
OUTSIDE OR INSIDE MEASURE- [] INSIDE
MENTS? [] OTHER: (SPECIFY) _____
2. DID YOU SHADE AND INCLUDE [] YES
DIMENSIONS FOR UNHEATED AREAS? [] NO UNHEATED AREAS
3. DID YOU LABEL GARAGE 1-CAR, [] YES
ETC.? [] NO GARAGE

INTERVIEWER: IF BASEMENT IS THE ONLY FLOOR, GO TO INSTRUCTION
BEFORE Q. P-14.

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Form EIA-457A

Form EIA-457A (1990)

NOTES REGARDING FIRST FLOOR MEASUREMENTS

FOR OFFICE USE ONLY

907-08:09

Flr.	Codes	Unit A	Unit B	Unit C	Unit D	# of Units
870	71 72 73	74-75 76-77	910 11-12 13-14	15 16-17 18-19	M 21-22 23-24	25

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Form EIA-457A

Form EIA-457A (1990)

FIRST FLOOR OF HOME/APARTMENT

- | | | |
|--|--|---|
| <input type="checkbox"/> SINGLE-FAMILY,
MOBILE HOME,
TOWNHOUSE

<input type="checkbox"/> ENCLOSED PORCH
<input type="checkbox"/> HEATED->DRAW
<input type="checkbox"/> UNHEATED->SHADE | <input type="checkbox"/> APARTMENT IN
2-4 UNIT BUILDING

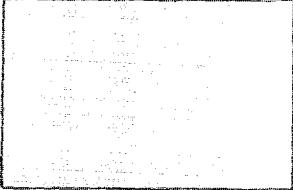
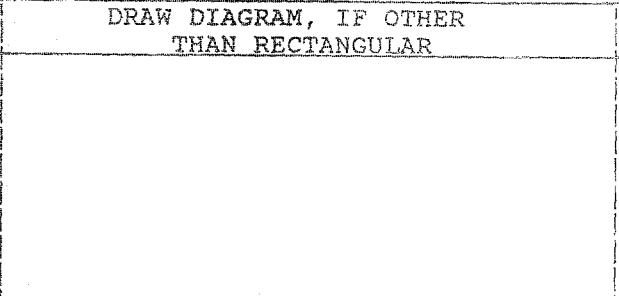
<input type="checkbox"/> ENCLOSED PORCH
<input type="checkbox"/> HEATED->DRAW
<input type="checkbox"/> UNHEATED->SHADE | <input type="checkbox"/> APARTMENT IN
5+ UNIT BUILDING

<input type="checkbox"/> ENCLOSED PORCH
<input type="checkbox"/> HEATED->DRAW
<input type="checkbox"/> UNHEATED->SHADE |
|--|--|---|

OPEN PORCH: DO NOT INCLUDE

- | | | |
|---|---------------------------------|---------------------------------|
| <input type="checkbox"/> GARAGE (ATTACHED)
<input type="checkbox"/> HEATED->DRAW
<input type="checkbox"/> UNHEATED->SHADE | GARAGE -- DO NOT INCLUDE | GARAGE -- DO NOT INCLUDE |
|---|---------------------------------|---------------------------------|

WRITE "1-CAR", "2-CAR", OR "3-CAR" ON DIAGRAM.

RECTANGULAR SHAPE  <input type="checkbox"/>	DRAW DIAGRAM, IF OTHER THAN RECTANGULAR 
---	---

INTERVIEWER: CHECK FINISHED DIAGRAM

1. DID YOU BASE YOUR FIGURES ON OUTSIDE OR INSIDE MEASUREMENTS? OUTSIDE
 INSIDE
 OTHER: (SPECIFY) _____
2. DID YOU SHADE AND INCLUDE DIMENSIONS FOR UNHEATED AREAS? YES
 NO UNHEATED AREAS
3. DID YOU LABEL GARAGE 1-CAR, ETC.? YES
 NO GARAGE

**INTERVIEWER: IF NO ADDITIONAL FLOORS OR ATTIC,
GO TO INSTRUCTION BEFORE O. P-14.**

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Form EIA-457A

Form EIA-457A (1990)

NOTES REGARDING SECOND FLOOR MEASUREMENTS

FOR OFFICE USE ONLY

Flr.	Codes	Unit A	Unit B	Unit C	Unit D	# of Units
926	27	28	29	30-31	32-33	34
						35-36 37-38 39 40-41 42-43 44 45-46 47-48 49

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Form EIA-457A

Form EIA-457A (1990)

SECOND FLOOR OF HOME/APARTMENT

- | | | |
|--|--|---|
| <input type="checkbox"/> SINGLE-FAMILY,
MOBILE HOME,
TOWNHOUSE
\downarrow
<input type="checkbox"/> ENCLOSED PORCH
<input type="checkbox"/> HEATED->DRAW
<input type="checkbox"/> UNHEATED->SHADE | <input type="checkbox"/> APARTMENT IN
2-4 UNIT BUILDING
\downarrow
<input type="checkbox"/> ENCLOSED PORCH
<input type="checkbox"/> HEATED->DRAW
<input type="checkbox"/> UNHEATED->SHADE | <input type="checkbox"/> APARTMENT IN
5+ UNIT BUILDING
\downarrow
<input type="checkbox"/> ENCLOSED PORCH
<input type="checkbox"/> HEATED->DRAW
<input type="checkbox"/> UNHEATED->SHADE |
|--|--|---|

OPEN PORCH: DO NOT INCLUDE

- | | | |
|---|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> GARAGE (ATTACHED)
<input type="checkbox"/> HEATED->DRAW
<input type="checkbox"/> UNHEATED->SHADE | GARAGE -- DO NOT
INCLUDE | GARAGE -- DO
NOT INCLUDE |
|---|-------------------------------------|-------------------------------------|

WRITE "1-CAR", "2-CAR", OR "3-CAR" ON DIAGRAM.

RECTANGULAR SHAPE	DRAW DIAGRAM, IF OTHER THAN RECTANGULAR
 <input type="checkbox"/> <input type="checkbox"/>	

INTERVIEWER: CHECK FINISHED DIAGRAM

1. DID YOU BASE YOUR FIGURES ON [] OUTSIDE
OUTSIDE OR INSIDE MEASURE- [] INSIDE
MENTS? [] OTHER: (SPECIFY) _____
2. DID YOU SHADE AND INCLUDE [] YES
DIMENSIONS FOR UNHEATED AREAS? [] NO UNHEATED AREAS
3. DID YOU LABEL GARAGE 1-CAR, [] YES
ETC.? [] NO GARAGE

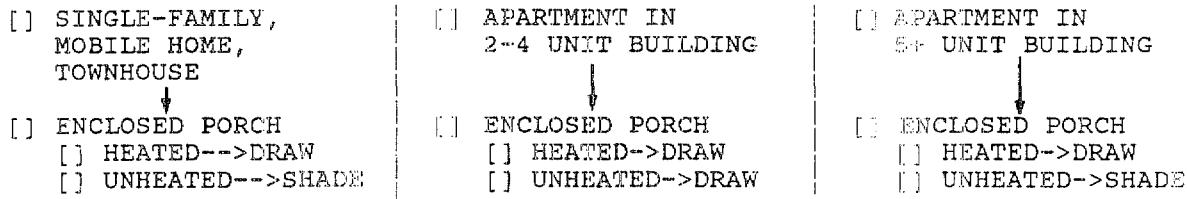
INTERVIEWER: IF NO ADDITIONAL FLOORS OR ATTIC,
GO TO INSTRUCTION BEFORE Q. P-14.

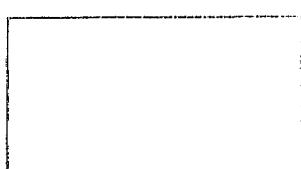
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Form EIA-457A

Form EIA-457A (1990)

THIRD FLOOR OF HOME/APARTMENT



RECTANGULAR SHAPE  <input type="checkbox"/> <input type="checkbox"/>	DRAW DIAGRAM, IF OTHER THAN RECTANGULAR
---	--

INTERVIEWER: CHECK FINISHED DIAGRAM

1. DID YOU BASE YOUR FIGURES ON OUTSIDE
OUTSIDE OR INSIDE MEASUREMENTS? INSIDE
 OTHER (SPECIFY): _____
2. DID YOU SHADE AND INCLUDE YES
DIMENSIONS FOR UNHEATED AREAS? NO UNHEATED AREAS

INTERVIEWER: IF NO ATTIC, GO TO INSTRUCTION
BEFORE Q. P-14.

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Flr. Codes	Unit A			Unit B			Unit C			Unit D			# of Units		
950	51	52	53	54-55	56-57	58	59-60	61-62	63	64-65	66-67	68	69-70	71-72	73

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

ATTIC OF HOME

SINGLE-FAMILY
MOBILE HOME,
TOWNHOUSE

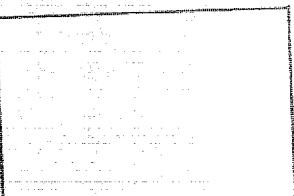
ATTIC
 HEATED-->DRAW
 FINISHED AND
UNHEATED-->DRAW
 UNHEATED AND UN-
FINISHED -- DO
NOT INCLUDE

APARTMENT IN
2-4 UNIT BUILDING

ATTIC -- MUST BE
FOR EXCLUSIVE USE
OF THE HOUSEHOLD.
 HEATED-->DRAW
 FINISHED AND
UNHEATED-->DRAW
 UNHEATED AND UN-
FINISHED -- DO NOT
INCLUDE

APARTMENT IN
5+ UNIT BUILDING

ATTIC -- DO NOT
INCLUDE

<p style="text-align: center;"><u>RECTANGULAR SHAPE</u></p> 	<p style="text-align: center;">DRAW DIAGRAM, IF OTHER THAN RECTANGULAR</p>
--	--

INTERVIEWER: CHECK FINISHED DIAGRAM

1. DID YOU BASE YOUR FIGURES ON
OUTSIDE OR INSIDE MEASUREMENTS?

OUTSIDE
 INSIDE
 OTHER (SPECIFY): _____

2. DID YOU INCLUDE SHADING AND
DIMENSIONS FOR UNHEATED AREAS?

YES
 NO UNHEATED AREAS

1007-1008:10

FOR OFFICE USE ONLY

Fir.	Codes	Unit A		Unit B		Unit C		Unit D		# of Units				
1010	11 12	13	14-15	16-17	18	19-20	21-22	23	24-25	26-27	28	29-30	31-32	33

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Form EIA-457A

Form EIA-457A (1990)

INTERVIEWER CHECK FOLDCUT PAGE AND Q. D-3: IF SINGLE-FAMILY HOME WITH CENTRAL AIR CONDITIONING, CONTINUE. OTHERWISE, SKIP TO NEXT PAGE.

P-14. I'd like to look at your central air conditioning equipment -- just the unit that is outside --- and record some information from its nameplate.

CENTRAL AIR CONDITIONER NAMEPLATE DATA

- a. MANUFACTURER: _____
- b. MODEL NUMBER: _____
- c. YEAR MANUFACTURED: _____
- d. RATED COOLING CAPACITY: _____ BTU/HR, LB/HR
- e. COMPRESSOR POWER/AMPERAGE: _____ HP, AMPS, WATTS
- f. FAN POWER/AMPERAGE: _____ HP, AMPS, WATTS

INTERVIEWER: RECORD ALL INFORMATION VISIBLE ON AIR CONDITIONER NAMEPLATE. (SEE INSTRUCTIONS FOR INTERVIEWERS.) USE SPACE BELOW FOR ADDITIONAL NOTES AND COMMENTS.

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	ME	FL	LOT	Heated	Unheated	DK	Htd/Unhtd
10	34-35	36	37-38	39-43	44-48	49-53	

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A (1990)

P-15. INTERVIEWER: DID YOU
REMEMBER TO INSPECT VEHICLES
FOR VIN NUMBERS AND ODOMETER
READINGS? 1 YES 0 NO -- PLEASE DO SO NOW 1054

RECORD VINS ON BLUE VEHICLE PAGE

P-16. INTERVIEWER: IF SINGLE-
FAMILY AND CENTRAL AIR-
CONDITIONING, DID YOU GET
AIR CONDITIONER NAMEPLATE
DATA? 1 YES 0 NO -- IF AVAILABLE, PLEASE DO SO
NOW 1055

RECORD NAMEPLATE DATA ON PREVIOUS PAGE

P-17. WHAT PROBLEMS, IF ANY, DID YOU HAVE IN MEASURING THIS
(HOUSE/APARTMENT)?

P-18. WHAT EFFECT, IF ANY, DID THESE PROBLEMS HAVE ON THE ACCURACY OF YOUR
MEASUREMENTS?

FILL IN AND CHECK THAT ALL INFORMATION IS COMPLETE:

AM

1056-1058

TIME INTERVIEW COMPLETED _____ PM LENGTH OF INTERVIEW: _____ MINUTES

INTERVIEWER'S SIGNATURE: _____ DATE: _____

INTERVIEWER'S I.D. #: _____

1059-1064

1990 Residential Energy Consumption Survey
Form EIA-457A

FOLD OUT PAGE

Q. A-1 HOUSING STRUCTURE: SINGLE FAMILY HOME BUILDING WITH 2-4 UNITS
 MOBILE HOME/TRAILER BUILDING WITH 5+ UNITS

Q. A-5 TENURE: OWN (BUYING) RENT OCCUPIED WITHOUT PAYMENT OF RENT

Q. A-7,8 YEAR MOVED IN: 19 _____ IF 1987 OR LATER, MONTH: _____

Q. B-2 MAIN HEATING FUEL: _____
 WRITE IN

	Q. H-3 Q. H-4 (ASK FOR EACH ITEM MARKED "USED" IN Q. H-3)				
	USED	NOT USED	PAID BY HOUSEHOLD	INCLUDED IN RENT	OTHER (SPECIFY)
<u>Electricity ...</u>					
a. For hot water	1	0	1	2	5 _____
b. For heating your home	1	0	1	2	5 _____
c. For air-conditioning (CENTRAL OR WINDOW/WALL UNITS)	1	0	1	2	5 _____
d. For cooking (INCLUDES MICROWAVE)	1	0	1	2	5 _____
e. For lighting and other appliance	1	0	1	2	5 _____
<u>Gas from underground pipes serving your neighborhood ...</u>					
f. For hot water	1	0	1	2	5 _____
g. For heating your home	1	0	1	2	5 _____
h. For central air-conditioning	1	0	1	2	5 _____
i. For cooking inside home	1	0	1	2	5 _____
j. For cooking on outdoor grill	1	0	1	2	5 _____
k. For other appliances (INCLUDE GAS DRYER AND GAS LIGHT HERE)	1	0	1	2	5 _____
<u>Bottled Gas, LPG, or Propane ...</u>					
l. For hot water	1	0	1	2	5 _____
m. For heating your home	1	0	1	2	5 _____
n. For central air-conditioning	1	0	1	2	5 _____
o. For cooking inside home	1	0	1	2	5 _____
p. For cooking on outdoor grill	1	0	1	2	5 _____
q. For other appliances (INCLUDE OUTSIDE GAS LIGHT HERE)	1	0	1	2	5 _____
<u>Fuel Oil ...</u>					
r. For hot water	1	0	1	2	5 _____
s. For heating your home	1	0	1	2	5 _____
t. For cooking and other uses	1	0	1	2	5 _____
<u>Kerosene ...</u>					
u. For hot water	1	0	1	2	5 _____
v. For heating your home	1	0	1	2	5 _____
w. For cooking and other uses	1	0	1	2	5 _____

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A
(01/90)

Form Approval:
OMB No.: 1905-0092
Expires: May 31, 1993

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U.S. DEPARTMENT OF ENERGY SURVEY

Authorization Form for Residential Energy Consumption Survey

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

This authorization covers use of fuels (electricity, natural gas or LPG, fuel oil or kerosene) by my household from September 1, 1993 through December 31, 1993.

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

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

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

Signature: _____

Date: _____

PLEASE
PRINT

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

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

ELECTRICITY →

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

GAS →

from underground pipes
or LPG (bottled or tank gas)

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

FUEL OIL →

or KEROSENE

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

1990 Residential Energy Consumption Survey

Form EIA-457A

Form EIA-457A
(01/90)

GAS

LPG (bottled
or tank gas)

SECOND GAS COMPANY

PRINT FULL NAME OF GAS COMPANY

LOCATION OF COMPANY (IF KNOWN) - CITY AND STATE

TELEPHONE
AREA CODE: _____ NUMBER: _____

THIRD GAS COMPANY

PRINT FULL NAME OF GAS COMPANY

LOCATION OF COMPANY (IF KNOWN) - CITY AND STATE

TELEPHONE
AREA CODE: _____ NUMBER: _____

FUEL OIL

or KEROSENE

SECOND FUEL OIL/KEROSENE COMPANY

PRINT FULL NAME OF OIL COMPANY

LOCATION OF COMPANY (IF KNOWN) - CITY AND STATE

TELEPHONE
AREA CODE: _____ NUMBER: _____

THIRD FUEL OIL/KEROSENE COMPANY

PRINT FULL NAME OF OIL COMPANY

LOCATION OF COMPANY (IF KNOWN) - CITY AND STATE

TELEPHONE
AREA CODE: _____ NUMBER: _____

1990 Residential Energy Consumption Survey

Form EIA-457A

Location # _____

Housing Unit # _____ 1207-1208-12

VEHICLES PAGE

1207-1308-13

VEHICLE #

QUESTION	VEHICLE #1	VEHICLE #2	VEHICLE #3	VEHICLE #4
0-3. What is the make?	0-3. MAKE 1212-13	0-3. MAKE 1243-44	0-3. MAKE 1312-13	0-3. MAKE 1343-44
0-4. What is the model name? (SEE INSTRUCTIONS)	0-4. MODEL 1224-15	0-4. MODEL 1245-46	0-4. MODEL 1314-15	0-4. MODEL 1345-46
0-5. What is the model year?	0-5. 19 1216-17	0-5. 19 1247-48	0-5. 19 1328-17	0-5. 19 1347-48
0-6. Please turn to Exhibit 52. What type of vehicle is that? (CIRCLE ONE). WRITE IN ADDITIONAL IDENTIFYING INFORMATION ON BACK OF PAGE.	0-6. 01 CAR 02 STATION WAGON 03 LARGE VAN 1218-19 04 MINI VAN 05 PICKUP TRUCK 06 JEEP/SIMILAR VEH. 21 OTHER (SPECIFY):	0-6. 01 CAR 02 STATION WAGON 03 LARGE VAN 1249-50 04 MINI VAN 05 PICKUP TRUCK 06 JEEP/SIMILAR VEH. 21 OTHER (SPECIFY):	0-6. 01 CAR 02 STATION WAGON 03 LARGE VAN 1318-19 04 MINI VAN 05 PICKUP TRUCK 06 JEEP/SIMILAR VEH. 21 OTHER (SPECIFY):	0-6. 01 CAR 02 STATION WAGON 03 LARGE VAN 1349-50 04 MINI VAN 05 PICKUP TRUCK 06 JEEP/SIMILAR VEH. 21 OTHER (SPECIFY):
0-7. Does it have an air conditioner?	0-7. 1 YES 1220 0 NO	0-7. 1 YES 1251 0 NO	0-7. 1 YES 1329 0 NO	0-7. 1 YES 1351 0 NO
0-8. Did you get this vehicle within the last 12 months or did you get it before that? (CIRCLE ONE, THEN ASK APPROPRIATE FOLLOW-UP QUEST.)	0-8. 1 WITHIN PAST 12 MONTHS 2 BEFORE THAT 1222	0-8. 1 WITHIN PAST 12 MONTHS 2 BEFORE THAT 1252	0-8. 1 WITHIN PAST 12 MONTHS 2 BEFORE THAT 1322	0-8. 1 WITHIN PAST 12 MONTHS 2 BEFORE THAT 1352
IF "WITHIN PAST 12 MONTHS," ASK: 0-9. In what month and year did you get it? →	0-9. MONTH: 1222-25 YEAR: 19	0-9. MONTH: 1253-56 YEAR: 19	0-9. MONTH: 1322-25 YEAR: 19	0-9. MONTH: 1353-56 YEAR: 19
0-10. Approximately how many miles has it been driven since you obtained it? → (ASK Q. 0-12 NEXT)	0-10. MILES 1226-30 1231-35	0-10. MILES 1257-61 1262-66	0-10. MILES 1326-30 1331-35	0-10. MILES 1357-61 1362-66
IF "BEFORE THAT," ASK: 0-11. Approximately how many miles has it been driven in the past 12 months? →	0-11. MILES PAST 12 MO.			
0-12. Is the vehicle here now? (CIRCLE ANSWER, READ APPROPRIATE FOLLOW-UP QUESTION).	1 YES, VEHICLE HERE 0 NO - (GO TO "a")	1 YES, VEHICLE HERE 0 NO - (GO TO "a")	1 YES, VEHICLE HERE 0 NO - (GO TO "a")	1 YES, VEHICLE HERE 0 NO - (GO TO "a")
IF "YES," READ: a. I would like to get the Vehicle Identification No. and odometer reading directly from the vehicle. I'll do that at the end of the interview. THEN, ASK QUESTIONS 0-3 THRU 0-12 FOR NEXT VEHICLE.	a. WRITE IN ODOMETER READING/ESTIMATE HERE:			
	ODOMETER (CIRCLE ONE): 1 ACTUAL READING 2 ESTIMATE 1242	ODOMETER (CIRCLE ONE): 1 ACTUAL READING 2 ESTIMATE 1273	ODOMETER (CIRCLE ONE): 1 ACTUAL READING 2 ESTIMATE 1342	ODOMETER (CIRCLE ONE): 1 ACTUAL READING 2 ESTIMATE 1373
REMEMBER TO GO BACK TO THE TOP FOR NEXT VEHICLE	b. GET VIN # FROM DOCUMENTS, WRITE IN BELOW	b. GET VIN # FROM DOCUMENTS, WRITE IN BELOW	b. GET VIN # FROM DOCUMENTS, WRITE IN BELOW	b. GET VIN # FROM DOCUMENTS, WRITE IN BELOW

VIN #1: 7 VIN REFUSED 8 VIN NOT OBTAINED 1409

1410

1426

VIN #2: 7 VIN REFUSED 8 VIN NOT OBTAINED 1427

1428

1446

VIN #3: 7 VIN REFUSED 8 VIN NOT OBTAINED 1445

1446

1462

VIN #4: 7 VIN REFUSED 8 VIN NOT OBTAINED 1463

1464

1480

CHECK Q. 0-12 IF ANY | YES |, PUT PAGE AT BACK AND GET VINS AND ODOMETER READINGS FROM VEHICLE(S) AT END OF INTERVIEW.

1990 Residential Energy Consumption Survey
Nationwide Survey on Household Energy Use (Mail)
Form EIA-457B

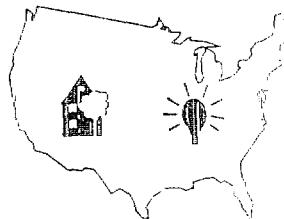
Form EIA-457 (1990)



Form Approval:
 OMB No.: 1905-0092
 Expires: May 31, 1993

Please complete this form and return it:

Response Analysis
 377 Wall Street
 P.O. Box 158
 Princeton, N.J. 08542



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

Housing Unit

- | | |
|---|---|
| <p>1. Do you or members of your household own or rent your present home? (Please mark one box.)</p> <p>2. What type of home is it? (Please mark one box.)</p> <p>3. About when was your present home (house or apartment building) first built? (Please mark the approximate year.)</p> <p>4. When did you move to your present home?</p> <p>5. If you moved to your present home in 1987 or later: In what month and year did you move to your present home?</p> <p>6. How many finished rooms are in your home? (Do not include bathrooms, closets, foyers, or laundry rooms. Include enclosed porches that are used year-round.)</p> | <p>1 <input type="checkbox"/> Owned or being bought 119</p> <p>2 <input type="checkbox"/> Rented</p> <p>3 <input type="checkbox"/> Occupied without payment of rent</p> <p>1 <input type="checkbox"/> Mobile home or trailer</p> <p>2 <input type="checkbox"/> Single-family house</p> <p>4 <input type="checkbox"/> Apartment in house or building divided into 2, 3, or 4 apartments 120</p> <p>5 <input type="checkbox"/> Apartment in building of 5 or more apartments</p> <p>6 <input type="checkbox"/> Other (PLEASE SPECIFY): _____</p> <p>01 <input type="checkbox"/> Before 1940 05 <input type="checkbox"/> 1970-1979</p> <p>02 <input type="checkbox"/> 1940-1949 06 <input type="checkbox"/> 1980-1984</p> <p>03 <input type="checkbox"/> 1950-1959 07 <input type="checkbox"/> 1985-1989 121-22</p> <p>04 <input type="checkbox"/> 1960-1969 08 <input type="checkbox"/> 1990-1991</p> <p>01 <input type="checkbox"/> Before 1940 05 <input type="checkbox"/> 1970-1979</p> <p>02 <input type="checkbox"/> 1940-1949 06 <input type="checkbox"/> 1980-1984</p> <p>03 <input type="checkbox"/> 1950-1959 07 <input type="checkbox"/> 1985-1989</p> <p>04 <input type="checkbox"/> 1960-1969 08 <input type="checkbox"/> 1990-1991</p> <p>Month: _____ Year: _____ 125-26</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; width: 150px; height: 20px; margin-right: 10px;"></div> Number of rooms 129-30 </div> |
|---|---|

The code number at the right lets us know that your questionnaire has been returned.

1990 Residential Energy Consumption Survey
Nationwide Survey on Household Energy Use (Mail)
Form EIA-457B

Main Heating Fuel

7. Which fuel is used most to heat your home? (Please mark only one fuel.)
- 01 Gas from underground pipes serving the neighborhood 06 Coal or Coke
 02 Bottled Gas (LPG or Propane) 07 Wood
 03 Fuel Oil 08 Solar Collectors 131-32
 04 Kerosene or Coal Oil 21 Other Fuel (PLEASE SPECIFY): _____
 05 Electricity 00 No Fuel Used (If "No Fuel Used," please skip to question 9.)
 96 Don't Know
8. How do you pay for your main heating fuel? (Please mark one answer.)
- 1 We pay directly to the utility or fuel company 133
 2 The cost is included in the rent for our home (house or apartment)
 6 Other (PLEASE SPECIFY): _____
9. What was the main fuel used to heat this house (apartment) in November of 1987? (Please mark one answer)
- 01 Gas from underground pipes serving the neighborhood 06 Coal or Coke
 02 Bottled Gas (LPG or Propane) 07 Wood 134-35
 03 Fuel Oil 08 Solar Collectors
 04 Kerosene or Coal Oil 21 Other Fuel (PLEASE SPECIFY): _____
 05 Electricity 00 No Fuel Used
 96 Don't Know

Water Heating Fuel

10. Which fuel is used most by your household for heating water for washing? (Please mark one answer)
- 01 Gas from underground pipes serving the neighborhood 06 Coal or Coke
 02 Bottled Gas (LPG or Propane) 07 Wood
 03 Fuel Oil 08 Solar Collectors
 04 Kerosene or Coal Oil 21 Other Fuel (PLEASE SPECIFY): _____
 05 Electricity 00 No Fuel Used (If "No Fuel Used," please skip to question 12.)
 96 Don't Know
11. How do you pay for your main water heating fuel. (Please mark one answer.)
- 1 We pay directly to the electric company 138
 2 The cost is included in the rent for our home (house or apartment)
 6 Other (PLEASE SPECIFY): _____

1990 Residential Energy Consumption Survey
Nationwide Survey on Household Energy Use (Mail)
Form EIA-457B

Cooking Fuel

12. Which fuel is used most for cooking by your household? (Please mark one answer)
- 01 Gas from underground pipes serving the neighborhood 06 Coal or Coke
02 Bottled Gas (LPG or Propane) 07 Wood or Charcoal 139-40
03 Fuel Oil 08 Other Fuel (PLEASE SPECIFY): _____
04 Kerosene or Coal Oil 09 No Fuel Used (If "No Fuel Used," please skip to question 14.)
05 Electricity
13. How do you pay for your main cooking fuel?
- 1 We pay directly to the utility or fuel company 141
2 The cost is included in the rent for our home (house or apartment)
6 Other (PLEASE SPECIFY): _____

Air-Conditioning and Appliances

14. Do you have air-conditioning in your home? (Please mark all answers that apply)
- 1 Yes, individual room units 142
2 Yes, central electric air-conditioning
3 Yes, central gas air-conditioning
0 No (If "No," please skip to question 16.)
15. How do you pay for your air-conditioning costs?
- 1 We pay directly to the gas or electric company
2 The cost is included in the rent for our home (house or apartment) 143
6 Other (PLEASE SPECIFY): _____
16. How do you pay for your electricity costs (for lighting and household appliances other than air-conditioning)?
- 1 We pay directly to the gas or electric company
2 The cost is included in the rent for our home (house or apartment) 144
6 Other (PLEASE SPECIFY): _____

1990 Residential Energy Consumption Survey
Nationwide Survey on Household Energy Use (Mail)
Form EIA-457B

Vehicles

17. How many cars, trucks, vans, motor homes, or similar vehicles do you or other members of your household own or have the regular use of? (Include station wagons, passenger vans, cargo vans, jeeps, or similar vehicles and company vehicles kept at home. Do NOT count motorcycles or mopeds.)

Number of vehicles

145-46

None (If "None," please skip to question 22.)

Please describe each car, truck, van, motor home, or similar vehicle below. If you have more than four vehicles, describe the four used most by your household.

18. VEHICLE #1

Make: _____
 Model Name: _____
 Model Year: 19_____

147-60

161-74

175-76

- Type: 01 Car
 02 Station wagon
 03 Large van
 04 Mini van
 05 Pickup truck
 06 Jeep/similar vehicle
 21 Other (specify): _____

177-78

207-08:02

19. VEHICLE #2

Make: _____
 Model Name: _____
 Model Year: 19_____

209-22

223-36

237-38

- Type: 01 Car
 02 Station wagon
 03 Large van
 04 Mini van
 05 Pickup truck
 06 Jeep/similar vehicle
 21 Other (specify): _____

239-40

20. VEHICLE #3

Make: _____
 Model Name: _____
 Model Year: 19_____

241-54

255-68

269-70

- Type: 01 Car
 02 Station wagon
 03 Large van
 04 Mini van
 05 Pickup truck
 06 Jeep/similar vehicle
 21 Other (specify): _____

271-72

307-08:03

21. VEHICLE #4

Make: _____
 Model Name: _____
 Model Year: 19_____

309-22

323-36

337-38

- Type: 01 Car
 02 Station wagon
 03 Large van
 04 Mini van
 05 Pickup truck
 06 Jeep/similar vehicle
 21 Other (specify): _____

339-40

**1990 Residential Energy Consumption Survey
Nationwide Survey on Household Energy Use (Mail)
Form EIA-457B**

For Statistical Purposes

All information is confidential

22. How many people live in your household, including yourself? (Please count children as well as adults. Include all members of your household whether or not they are related to you.)

341-42

Number of people in household

23. Please describe the head of your household:

Age (years) 343-44

- 1 Female 345
2 Male

- 1 Now married
2 Widowed 346
3 Divorced or separated
4 Never married

24. What is the highest grade in school completed by the head of household?

- 01 Some grade school
02 Grade school completed
03 Some high school 347-48
04 High school completed
05 Some college (at least one year completed)
06 College graduate
07 Graduate school (at least one year completed)
21 Other (PLEASE SPECIFY): _____

25. Please mark the box for the total combined income in the last 12 months of all members of your family (living in your household). Include income from all sources - before taxes and deductions.

- 01 Less than \$5,000
02 \$ 5,000 - \$ 9,999
03 \$10,000 - \$14,999
04 \$15,000 - \$19,999
05 \$20,000 - \$24,999
06 \$25,000 - \$34,999
07 \$35,000 - \$49,999
08 \$50,000 or over 349-50

26. Are you

- 1 Head of household
2 Husband or wife of head of household 351
6 Other (PLEASE SPECIFY): _____

1990 Residential Energy Consumption Survey
Nationwide Survey on Household Energy Use (Mail)
Form EIA-457B

PLEASE READ THIS IF YOU PAY DIRECTLY TO A COMPANY FOR ELECTRICITY, GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD, BOTTLED GAS, FUEL OIL, OR KEROSENE USED BY YOUR HOUSEHOLD.

We hope you will help in the next phase of our survey by filling in the names of companies that supply your household and by signing the form on the following page. This will permit us to obtain accurate information on energy consumption.

Information on the amount and cost of fuels used by households in all parts of the United States is needed to help establish important national energy policies.

The information provided by you and by fuel companies will be used only in statistical summaries for the U.S. Department of Energy survey.

**PLEASE FOLD AND RETURN IN THE ENCLOSED ENVELOPE. POSTAGE IS PREPAID.
THANK YOU VERY MUCH FOR YOUR HELP!**

1990 Residential Energy Consumption Survey
Nationwide Survey on Household Energy Use (Mail)
Form EIA-457B



U.S. DEPARTMENT OF ENERGY SURVEY

**Authorization Form for
Residential Energy Consumption Survey**

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

This authorization covers use of fuels (electricity, natural gas or bottled gas, fuel oil or kerosene) by my household from September 1, 1989 through December 31, 1993.

- 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 YOUR HOUSEHOLD
(IF MORE THAN ONE SUPPLIER OF A PARTICULAR FUEL USE THE OTHER SIDE OF THIS SHEET)**

ELECTRICITY →

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

GAS →

from underground pipes
or bottled gas (LPG or
propane)

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

FUEL OIL →

or Kerosene

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

1990 Residential Energy Consumption Survey
Nationwide Survey on Household Energy Use (Mail)
Form EIA-457B

We estimate that it will take 20 minutes to complete this questionnaire. Send comments regarding this estimate or any other aspects of this collection of information, including suggestions for reducing the length of this questionnaire, to the Energy Information Administration, Office of Statistical Standards EI-73, Mail Station 1H-023, 1000 Independence Avenue, S.W., Washington, D.C. 20585; and the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

1990 Residential Energy Consumption Survey
Rental Agents, Landlords, and Apartment Managers
Form EIA-457C

OMB No. 1905-0092
Expires 5-31-93
EIA-457C

TIME STARTED: : AM PM

Hello, this is _____ from Response Analysis Corporation in Princeton, N.J. I'm calling about the Department of Energy study on residential energy uses that we recently wrote you about. Your answers will be kept strictly confidential.

IF LETTER NOT RECEIVED: We will send you another copy and call back in a few days.

01-94

VERIFY ADDRESS ON CONTROL CARD.

25

1. I would like to get a brief description of the building at [GIVE ADDRESS, NOT NAME] as it was as of November 1990. 06:6
07-08

10-15

16-17

183-19

2. Was there a group of five or more housing units in the same building, a group of two to four units in the same building, a single unit in a building by itself, or would you describe it in some other way?

- 4 5 OR MORE UNITS IN BUILDING -- ASK Qs. 3a and 3b
3 2 TO 4 UNITS IN BUILDING -- ASK Q. 3a
2 SINGLE UNIT IN BUILDING BY ITSELF -- SKIP TO Q. 4
5 OTHER (DESCRIBE):

IF "2-4 UNITS" OR "5 OR MORE UNITS", ASK:

- 3a. How many residential units were in the building? **NUMBER OF UNITS:** _____ **23-25**

IF "5 OR MORE UNITS," ASK:

- 3b. How many floors (stories) were in the building? **NUMBER OF FLOORS:** _____

4. About when was the (house/building) built? (IF NOT KNOWN, ASK FOR "BEST ESTIMATE.")

- | | | | |
|----|-------------|----|-------------|
| 01 | BEFORE 1940 | 07 | 1985 - 1986 |
| 02 | 1940 - 1949 | 08 | 1987 |
| 03 | 1950 - 1959 | 09 | 1988 |
| 04 | 1960 - 1969 | 10 | 1989 |
| 05 | 1970 - 1979 | 11 | 1990 |
| 06 | 1980 - 1984 | 12 | 1991 |

1990 Residential Energy Consumption Survey
Rental Agents, Landlords, and Apartment Managers
Form EIA-457C

5. These next questions are about [IDENTIFY SPECIFIC HOUSING UNIT]. As of November 1990, what was the main fuel used for home heating?

- 01 GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD -- SKIP TO Q. 7 30-31
02 BOTTLED GAS (LPG OR PROPANE) -- SKIP TO Q. 7
03 FUEL OIL -- SKIP TO Q. 7
04 KEROSENE OR COAL OIL -- SKIP TO Q. 7
05 ELECTRICITY -- GO TO Q. 6
06 COAL OR COKE -- SKIP TO Q. 8
07 WOOD -- SKIP TO Q. 8
08 SOLAR COLLECTORS -- SKIP TO Q. 12
21 OTHER (SPECIFY): _____ -- SKIP TO Q. 9
00 NO SPACE HEATING FUEL USED -- SKIP TO Q. 14

IF ELECTRICITY USED FOR HOME HEATING, ASK:

6. What was the main heating equipment? Was it built-in electric units, heat pump, central warm-air furnace, portable heaters, or what?

- 05 BUILT-IN ELECTRIC UNITS
04 HEAT PUMP(S)
03 CENTRAL WARM AIR-FURNACE (WITH DUCTS)
10 PORTABLE HEATERS
21 OTHER (SPECIFY): _____

SKIP TO Q. 9

IF UNDERGROUND GAS, BOTTLED GAS, FUEL OIL, KEROSENE OR COAL OIL USED FOR HOME HEATING, ASK:

32-33

7. What was the main heating equipment? Was it radiant heating (hot water running through a slab floor); steam or hot water system with radiators; a central warm-air furnace; a floor, wall or pipeless furnace; room heaters; or what?

- 01 HOT WATER PIPES IN SLAB FLOOR (RADIANT HEATING)
02 STEAM OR HOT WATER SYSTEM WITH RADIATORS OR CONVECTORS
03 CENTRAL WARM-AIR FURNACE (WITH DUCTS)
06 FLOOR, WALL, OR PIPELESS FURNACE
07 ROOM HEATERS BURNING GAS, OIL, KEROSENE (NON-PORTABLE)
11 PORTABLE KEROSENE HEATER(S)
12 COOKING STOVE, RANGE, OR OVEN (USED TO HEAT HOME, AS WELL AS FOR COOKING)
21 OTHER (SPECIFY): _____

SKIP TO Q. 9

IF WOOD, COAL, OR COKE USED FOR HOME HEATING, ASK:

8. What was the main heating equipment? Was it a steam or hot water system with radiators, a heating stove, a fireplace, or what?

- 02 STEAM OR HOT WATER SYSTEM WITH RADIATORS OR CONVECTORS
08 HEATING STOVE
09 FIREPLACE(S)
21 OTHER (SPECIFY): _____

1990 Residential Energy Consumption Survey
Rental Agents, Landlords, and Apartment Managers
Form EIA-457C

9. Could this building switch its heating equipment (furnaces or boilers) to a different main heating fuel within one week's time without substantially reducing the area heated or the temperature maintained in the heated areas?

1 YES -- ASK Q. 10
 0 NO _____ -- SKIP TO Q. 11
 6 DON'T KNOW --

34

IF "YES," FOR Q. 9., ASK:

10. If the building did have to switch the main heating fuel within one week's time, what fuels could be used instead of [FUEL IN Q. 5]? (MARK ALL THAT APPLY).

[] GAS FROM UNDERGROUND PIPES	35
[] FUEL OIL	36
[] KEROSENE	37
[] ELECTRICITY	38
[] RESIDUAL FUEL OIL	39
[] DISTRICT STEAM	40
[] DISTRICT HOT WATER	41
[] OTHER (SPECIFY): _____	42

NOTE: DISTRICT STEAM OR HOT WATER IS STEAM OR HOT WATER FROM AN OUTSIDE SOURCE USED AS AN ENERGY SOURCE IN A BUILDING. THE STEAM OR HOT WATER IS PRODUCED IN A CENTRAL PLANT OR DISTRICT SYSTEM AND PIPED INTO THE BUILDING FOR SPACE HEATING, ABSORPTION COOLING, WATER HEATING, OR COOKING. IT MAY BE PURCHASED FROM A UTILITY OR PROVIDED BY A PHYSICAL PLANT IN A SEPARATE BUILDING THAT IS PART OF THE SAME FACILITY (FOR EXAMPLE, A HOSPITAL COMPLEX OR UNIVERSITY).

11. As of November 1990, was the main heating fuel paid for by the tenant or by the landlord?

1 TENANT
 2 LANDLORD
 5 OTHER (SPECIFY): _____

43

12. You say that [FUEL IN Q.5] was the main fuel used for home heating. Was any other fuel used for heating this apartment?

1 YES
 0 NO -- SKIP TO Q. 14

44

IF "YES," ASK:

13. What was the other fuel used?

01 GAS FROM UNDERGROUND PIPES	
02 BOTTLED GAS (LPG OR PROPANE)	
03 FUEL OIL	
04 KEROSENE OR COAL OIL	
05 ELECTRICITY	45-46
06 COAL OR COKE	
07 WOOD	
08 SOLAR COLLECTIONS	
21 OTHER (SPECIFY): _____	

1990 Residential Energy Consumption Survey
Rental Agents, Landlords, and Apartment Managers
Form EIA-457C

14. As of November 1990, what was the main fuel used for heating water?

- 01 GAS FROM UNDERGROUND PIPES
- 02 BOTTLED GAS (LPG OR PROPANE)
- 03 FUEL OIL
- 04 KEROSENE OR COAL OIL
- 05 ELECTRICITY
- 06 COAL OR COKE
- 07 WOOD
- 08 SOLAR COLLECTIONS
- 21 OTHER (SPECIFY): _____
- 00 NO WATER HEATING FUEL -- SKIP TO Q. 16

47-48

15. Was the main water heating fuel paid for by the tenant or by the landlord?

- 1 TENANT
- 2 LANDLORD
- 5 OTHER (SPECIFY): _____

49

16. As of November 1990, what was the main fuel used for cooking?

- 01 GAS FROM UNDERGROUND PIPES
- 02 BOTTLED GAS (LPG OR PROPANE)
- 03 FUEL OIL
- 04 KEROSENE OR COAL OIL
- 05 ELECTRICITY
- 06 COAL OR COKE
- 07 WOOD
- 21 OTHER (SPECIFY): _____
- 00 NO COOKING EQUIPMENT -- SKIP TO Q. 18

50-51

17. Was the main cooking fuel paid for by the tenant or by the landlord?

- 1 TENANT
- 2 LANDLORD
- 5 OTHER (SPECIFY): _____

52

18. Last summer (1990), did the (apartment/other unit) have air conditioning, either from a central system for the whole building or housing unit, or from individual window or wall units? (MARK ALL THAT APPLY.)

- YES, CENTRAL SYSTEM -- ASK Qs. 19 & 20
- YES, INDIVIDUAL (WINDOW/WALL) UNITS -- ASK Q. 21
- NO -- SKIP TO Q. 22

53

54

IF CENTRAL SYSTEM, ASK:

- 19. Did the central air-conditioning system use gas from underground pipes, bottled gas, or electricity?
- 20. Was the air-conditioning fuel paid for by the tenant or by the landlord?

- 1 GAS FROM UNDERGROUND PIPES
- 2 BOTTLED GAS (LPG OR PROPANE)
- 3 ELECTRICITY

55

- 1 TENANT
- 2 OTHER (SPECIFY): _____

56

IF WINDOW OR WALL UNITS, ASK:

- 21. Was the air-conditioning fuel paid for by the tenant or by the landlord?

- 1 TENANT
- 2 LANDLORD
- 5 OTHER (SPECIFY): _____

57

1990 Residential Energy Consumption Survey
Rental Agents, Landlords, and Apartment Managers
Form EIA-457C

22. Was electricity for lighting within the apartment paid for by the tenant or by the landlord?

- 1 TENANT
2 LANDLORD
5 OTHER (SPECIFY): _____

56

IF OTHER UNITS ARE ON CONTROL CARD, ASK ABOUT NEXT UNIT USING THE NEXT QUESTIONNAIRE.

IF NO OTHER UNITS ON CONTROL CARD, CONTINUE.

Thank you very much for your time and help. Have a nice day!

NAME OF PERSON INTERVIEWED: _____

TITLE OR RELATION TO RENTAL AGENT: _____

INTERVIEWER: _____ DATE COMPLETED: ____ / ____ / ____ 60-63

TIME COMPLETED: ____ : ____ AM PM LENGTH OF INTERVIEW: ____ MINUTES 65-66

**1990 Residential Energy Consumption Survey
Bottled Gas (LPG or Propane) Usage
Form EIA-457D**

Form EIA-457D
1990 Residential Energy Consumption Survey



Form Approval:
OMB No.: 1905-0092
Expires: May 31, 1993

**U.S. DEPARTMENT OF ENERGY
ENERGY INFORMATION ADMINISTRATION**

1990 RESIDENTIAL ENERGY CONSUMPTION SURVEY

Bottled Gas (LPG or Propane) Usage

SERVICE ADDRESS:

BILLING ADDRESS (If Different):

CUSTOMER ACCOUNT:

(If customer account number is not shown on label, please enter it here.)

These data will be combined with similar data throughout the country to show the use of bottled gas in U.S. homes. Information about specific households will be kept strictly confidential.

This research is being conducted for the Energy Information Administration by Response Analysis Corporation under U.S. Department of Energy Contract Number DE-AC01-88EI20351. This survey is mandatory as authorized by the Federal Energy Administration Act of 1974 (Public Law 93-275), as amended. Late filing, failure to keep records, or failure otherwise to comply with these instructions may result in criminal fines, civil penalties, and other sanctions as provided by law.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, which includes the time for reviewing the instructions, searching for the billing record, recording the information, and answering questions about the billing records. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Energy Information Administration, Office of Statistical Standards EI-73, Mail Station 1H-023, 1000 Independence Avenue 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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Please return forms to:
RESPONSE ANALYSIS CORPORATION
377 Wall Street
P.O. Box 158
Princeton, New Jersey 08542

If you have any questions, please call collect to Ms.
Arlene Shipley at (609) 921-3333.

Thank you for your cooperation.

1990 Residential Energy Consumption Survey
Bottled Gas (LPG or Propane) Usage
Form EIA-457D

For Office Use Only:

HHID	Fuel	Beginning Date	Ending Date	CR	Reason							CR/E	Tank	Units	TPRs
					23	24	25	26	27	28	29				
1-4	9	11-16	17-22									30	31-34	37	38-39
	3														

First Company	PRs	FT	DC	Second Company	PRs	FT	DC	Third Company	PRs	FT	DC	Suppliers
41-45	46-47	48	49	51-55	56-57	58	59	61-65	66-67	68	69	71-72

BOTTLED GAS (LPG or Propane) USAGE

Please provide information on all deliveries to this household from October 1, 1989 to the present date. If information is available only for a shorter period, just report deliveries for that shorter period.

Delivery #	Date of Delivery	Column 1			Column 2			Column 3		Column 4		Column 5	
					Fuel Sold Was:								
			Propane P Butane B Other O (Circle one)			Quantity Delivered		Price per Unit		Total Dollar* Amount			
1		P	B	O									
2		P	B	O									
3		P	B	O									
4		P	B	O									
5		P	B	O									
6		P	B	O									
7		P	B	O									
8		P	B	O									
9		P	B	O									
10		P	B	O									
11		P	B	O									
12		P	B	O									
13		P	B	O									
14		P	B	O									
15		P	B	O									
16		P	B	O									
17		P	B	O									
18		P	B	O									
PLEASE CONTINUE ON PAGE 4 IF NECESSARY													

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

1990 Residential Energy Consumption Survey
Bottled Gas (LPG or Propane) Usage
Form EIA-457D

BOTTLED GAS (LPG or Propane) USAGE

1. If "Other" has been circled for type of fuel in Column 2 (page 2 or page 4),
please specify what fuel was sold: _____

2. Please mark unit of measure of deliveries reported in Column 3 on page 2.

- | | |
|-------------------------------------|---|
| <input type="checkbox"/> POUNDS | <input type="checkbox"/> CUBIC METERS |
| <input type="checkbox"/> GALLONS | <input type="checkbox"/> DECATHERMS |
| <input type="checkbox"/> CUBIC FEET | <input type="checkbox"/> OTHER (Specify): _____ |

3. What is the capacity of this household's storage tank(s)? Capacity is:
and is measured in: _____

- | |
|--|
| <input type="checkbox"/> POUNDS |
| <input type="checkbox"/> GALLONS |
| <input type="checkbox"/> OTHER UNIT (Specify): _____ |

--

4. Were you supplying this household as of October 1, 1989?

- | | |
|-----------------------------------|---|
| <input type="checkbox"/> YES | |
| <input type="checkbox"/> NO ----> | If "NO," approximately when did this household become a customer of your company? |

APPROXIMATE DATE: _____

- | |
|---|
| <input type="checkbox"/> DONT KNOW |
| <input type="checkbox"/> NEVER A CUSTOMER |

5. Is this household currently your customer?

- | | |
|-----------------------------------|---|
| <input type="checkbox"/> YES | |
| <input type="checkbox"/> NO ----> | If "NO," approximately when did this household stop being a customer of your company? |

APPROXIMATE DATE: _____

- | |
|---|
| <input type="checkbox"/> DONT KNOW |
| <input type="checkbox"/> NEVER A CUSTOMER |

6. The information reported here is from:

- | |
|---|
| <input type="checkbox"/> COMPANY RECORDS |
| <input type="checkbox"/> AN ESTIMATE MADE BY A COMPANY REPRESENTATIVE |
| <input type="checkbox"/> INFORMATION SECURED FROM THE CUSTOMER |

7. How do you classify this account in your records?

- | |
|---|
| <input type="checkbox"/> RESIDENTIAL |
| <input type="checkbox"/> COMMERCIAL |
| <input type="checkbox"/> INDUSTRIAL |
| <input type="checkbox"/> COMMERCIAL/INDUSTRIAL |
| <input type="checkbox"/> OTHER (Specify): _____ |

8. This information has been supplied by:

Name: _____

Company: _____

Telephone: _____

Date: _____

**1990 Residential Energy Consumption Survey
Bottled Gas (LPG or Propane) Usage
Form EIA-457D**

CONTINUATION (IF MORE SPACE IS NEEDED)

Delivery #	Date of Delivery	Fuel Sold Was:			Quantity Delivered	Price per Unit	Total Dollar* Amount
		Propane P	Butane B	Other O			
19		P	B	O			
20		P	B	O			
21		P	B	O			
22		P	B	O			
23		P	B	O			
24		P	B	O			
25		P	B	O			
26		P	B	O			
27		P	B	O			
28		P	B	O			
29		P	B	O			
30		P	B	O			

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

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

PLEASE CHECK THAT THE QUESTIONS ON PAGE 3 HAVE BEEN ANSWERED.

**1990 Residential Energy Consumption Survey
Household Electricity Usage
Form EIA-457E**

Form EIA-457E
1990 Residential Energy Consumption Survey



Form Approval:
OMB No.: 1905-0092
Expires: May 31, 1993

**U.S. DEPARTMENT OF ENERGY
ENERGY INFORMATION ADMINISTRATION**

1990 RESIDENTIAL ENERGY CONSUMPTION SURVEY

Household Electricity Usage

SERVICE ADDRESS:

BILLING ADDRESS (If Different):

CUSTOMER ACCOUNT:

(If customer account number is not shown on label, please enter it here.)

These data will be combined with similar data throughout the country to show the use of electricity in U.S. homes. Information about specific households will be kept strictly confidential.

This research is being conducted for the Energy Information Administration by Response Analysis Corporation under U.S. Department of Energy Contract Number DE-AC01-88EI20351. This survey is mandatory as authorized by the Federal Energy Administration Act of 1974 (Public Law 93-275), as amended. Late filing, failure to keep records, or failure otherwise to comply with these instructions may result in criminal fines, civil penalties, and other sanctions as provided by law.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, which includes the time for reviewing the instructions, searching for the billing record, recording the information, and answering questions about the billing records. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Energy Information Administration, Office of Statistical Standards EI-73, Mail Station 1H-023, 1000 Independence Avenue 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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Please return forms to:
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377 Wall Street
P.O. Box 158
Princeton, New Jersey 08542

If you have any questions, please call collect to Ms.
Arlene Shipley at (609) 921-3333.

Thank you for your cooperation.

1990 Residential Energy Consumption Survey
Household Electricity Usage
Form EIA-457E

For Office Use Only:

HHID 1-4	Check Digit 5	Fuel 9	Beginning Date 11-16	Ending Date 17-22	R 23	Compan 24-28	Periods 29-30	Class 31	Rate 32-36
		1							

ELECTRICITY

Please provide information on all consumption of this household from December 1, 1989, to the present date. If information is available only for a shorter period, just report consumption for that shorter period.

ELECTRICITY USAGE FROM DECEMBER 1, 1989, TO THE PRESENT									
Time Period	Consumption Period			Number of kWh Used	(Circle One) if/h are:			Total Dollar* Amount	
	Beginning Date	Ending Date	A - Actual E - Estimated R - Read by Customer		A - Actual E - Estimated R - Read by Customer	A - Actual E - Estimated R - Read by Customer			
1					A	E	R		
2					A	E	R		
3					A	E	R		
4					A	E	R		
5					A	E	R		
6					A	E	R		
7					A	E	R		
8					A	E	R		
9					A	E	R		
10					A	E	R		
11					A	E	R		
12					A	E	R		
13					A	E	R		
14					A	E	R		
15					A	E	R		
16					A	E	R		

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

What rate classification applies to this account? _____
 (Please include one sheet describing rate classes with your return mailing.)

Form completed by: (Name): _____ (Telephone): _____ (Date): _____

**1990 Residential Energy Consumption Survey
Household Natural Gas Usage
Form EIA-457F**

Form EIA-457F
1990 Residential Energy Consumption Survey

Form Approval:
OMB No.: 1905-0092
Expires: May 31, 1993



**U.S. DEPARTMENT OF ENERGY
ENERGY INFORMATION ADMINISTRATION**

1990 RESIDENTIAL ENERGY CONSUMPTION SURVEY

Household Natural Gas Usage

SERVICE ADDRESS:

BILLING ADDRESS (if Different):

CUSTOMER ACCOUNT:

(If customer account number is not shown on label, please enter it here.)

These data will be combined with similar data throughout the country to show the use of natural gas in U.S. homes. Information about specific households will be kept strictly confidential.

This research is being conducted for the Energy Information Administration by Response Analysis Corporation under U.S. Department of Energy Contract Number DE-AC01-88EI20351. This survey is mandatory as authorized by the Federal Energy Administration Act of 1974 (Public Law 93-275), as amended. Late filing, failure to keep records, or failure otherwise to comply with these instructions may result in criminal fines, civil penalties, and other sanctions as provided by law.

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377 Wall Street
P.O. Box 158
Princeton, New Jersey 08542

If you have any questions, please call collect to Ms.
Arlene Shipley at (609) 921-3333.

Thank you for your cooperation.

1990 Residential Energy Consumption Survey
Household Natural Gas Usage
Form EIA-457F

For Office Use Only:

HRID	Check Digit	Fuel	Unit	Beginning Date	Ending Date	R	Company	Periods	Class	Rate
1-4	5	9	10	11-16	17-22	23	24-28	29-30	31	32
		2								

NATURAL GAS

Please provide information on all consumption of this household from December 1, 1989, to the present date. If information is available only for a shorter period, just report consumption for that shorter period.

NATURAL GAS USAGE FROM DECEMBER 1, 1989, TO THE PRESENT										
Time Period	Consumption Period			Quantity Used*	(Circle one) Quantities are:			Total Dollar** Amount		
	Beginning Date	Ending Date	Quantity Used*		A - Actual	E - Estimated	R - Read by Customer			
1					A	E	R			
2					A	E	R			
3					A	E	R			
4					A	E	R			
5					A	E	R			
6					A	E	R			
7					A	E	R			
8					A	E	R			
9					A	E	R			
10					A	E	R			
11					A	E	R			
12					A	E	R			
13					A	E	R			
14					A	E	R			
15					A	E	R			
16					A	E	R			

*What is the unit of measurement for the quantities reported?

- Therms
- Cubic feet
- Hundreds of cubic feet (CCF)
- Thousands of cubic feet (MCF)
- Other (Specify): _____

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

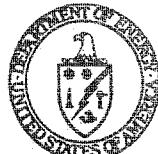
What rate classification applies to this account? _____
 (Please include one sheet describing rate classes with your return mailing.)

Form Completed by: (Name): _____ (Telephone): _____ (Date): _____

**1990 Residential Energy Consumption Survey
Household Fuel Oil or Kerosene Usage
Form EIA-457G**

Form EIA-457G
1990 Residential Energy Consumption Survey

Form Approval:
OMB No.: 1905-0092
Expires: May 31, 1993



**U. S. DEPARTMENT OF ENERGY
ENERGY INFORMATION ADMINISTRATION**

1990 RESIDENTIAL ENERGY CONSUMPTION SURVEY

Household Fuel Oil or Kerosene Usage

SERVICE ADDRESS:

BILLING ADDRESS (If Different):

CUSTOMER ACCOUNT: _____

(If customer account number is not shown on label, please enter it here.)

These data will be combined with similar data throughout the country to show the use of fuel oil or kerosene in U.S. homes. Information about specific households will be kept strictly confidential.

This research is being conducted for the Energy Information Administration by Response Analysis Corporation under U.S. Department of Energy Contract Number DE-AC01-88E120351. This survey is mandatory as authorized by the Federal Energy Administration Act of 1974 (Public Law 93-275), as amended. Late filing, failure to keep records, or failure otherwise to comply with these instructions may result in criminal fines, civil penalties, and other sanctions as provided by law.

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Princeton, New Jersey 08542

If you have any questions, please call collect to Ms.
Arlene Shipley at (609) 921-3333.

Thank you for your cooperation.

1990 Residential Energy Consumption Survey
Household Fuel Oil or Kerosene Usage
Form EIA-457G

For Office Use Only:

HHID	Fuel	Beginning Date		Ending Date		CR	Reason						CR/E	Tank	TPRs
		14	9	11-16	17-22		23	24	25	26	27	28	29	31-34	38-39
						4									

First Company	PRs	FT	DC	Second Company	PRs	FT	DC	Third Company	PRs	FT	DC	Suppliers
41-45	46-47	48	49	51-55	56-57	58	59	61-65	66-67	68	69	71-72

FUEL OIL AND KEROSENE USAGE

Please provide information on all deliveries to this household from October 1, 1989, to the present date. If information is available only for a shorter period, just report deliveries for that shorter period.

Delivery #	Date of Delivery	Column 1				Column 2		Column 3		Column 4		Column 5	
		Fuel Sold Was:						Gallons Delivered	Price per Gallon	Total Dollar* Amount			
1		1	2	K	O								
2		1	2	K	O								
3		1	2	K	O								
4		1	2	K	O								
5		1	2	K	O								
6		1	2	K	O								
7		1	2	K	O								
8		1	2	K	O								
9		1	2	K	O								
10		1	2	K	O								
11		1	2	K	O								
12		1	2	K	O								
13		1	2	K	O								
14		1	2	K	O								
15		1	2	K	O								
16		1	2	K	O								
17		1	2	K	O								
18		1	2	K	O								

PLEASE CONTINUE ON PAGE 4 IF NECESSARY.

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

1990 Residential Energy Consumption Survey
Household Fuel Oil or Kerosene Usage
Form EIA-457G

FUEL OIL AND KEROSENE

1. If "Other" has been circled for type of fuel in Column 2 (page 2 or page 4), please specify what fuel was sold: _____
2. What is the capacity of this household's storage tank? CAPACITY: _____ GALLONS
3. Was this household your customer as of October 1, 1989?
 YES
 NO —> If "NO," approximately when did this household become a customer of your company?
APPROXIMATE DATE: _____
 DON'T KNOW
 NEVER A CUSTOMER
4. Is this household currently your customer?
 YES
 NO —> If "NO," approximately when did this household stop being a customer of your company?
APPROXIMATE DATE: _____
 DON'T KNOW
 NEVER A CUSTOMER
5. How do you classify this account in your records?
 RESIDENTIAL
 COMMERCIAL
 INDUSTRIAL
 COMMERCIAL/INDUSTRIAL
 OTHER (Specify): _____
6. The information about deliveries to this household is from:
 COMPANY RECORDS
 AN ESTIMATE MADE BY A COMPANY REPRESENTATIVE
 INFORMATION SECURED FROM THE CUSTOMER
7. Were these deliveries made automatically, did you call the customer to schedule each delivery, or did the customer call you to get each delivery?
 AUTOMATIC DELIVERY
 CALL FROM COMPANY
 CALL FROM CUSTOMER
 OTHER (Specify): _____
8. This information has been supplied by:
Name: _____
Company: _____
Telephone: _____
Date: _____

**1990 Residential Energy Consumption Survey
Household Fuel Oil or Kerosene Usage
Form EIA-457G**

Delivery #	Column 1 Date of Delivery	Column 2 Fuel Sold Was:		Column 3 Gallons Delivered	Column 4 Price per Gallon	Column 5 Total Dollar* Amount
		Fuel oil #1 (1)	Fuel oil #2 (2)			
19		1	2	K	O	
20		1	2	K	O	
21		1	2	K	O	
22		1	2	K	O	
23		1	2	K	O	
24		1	2	K	O	
25		1	2	K	O	
26		1	2	K	O	
27		1	2	K	O	
28		1	2	K	O	
29		1	2	K	O	
30		1	2	K	O	

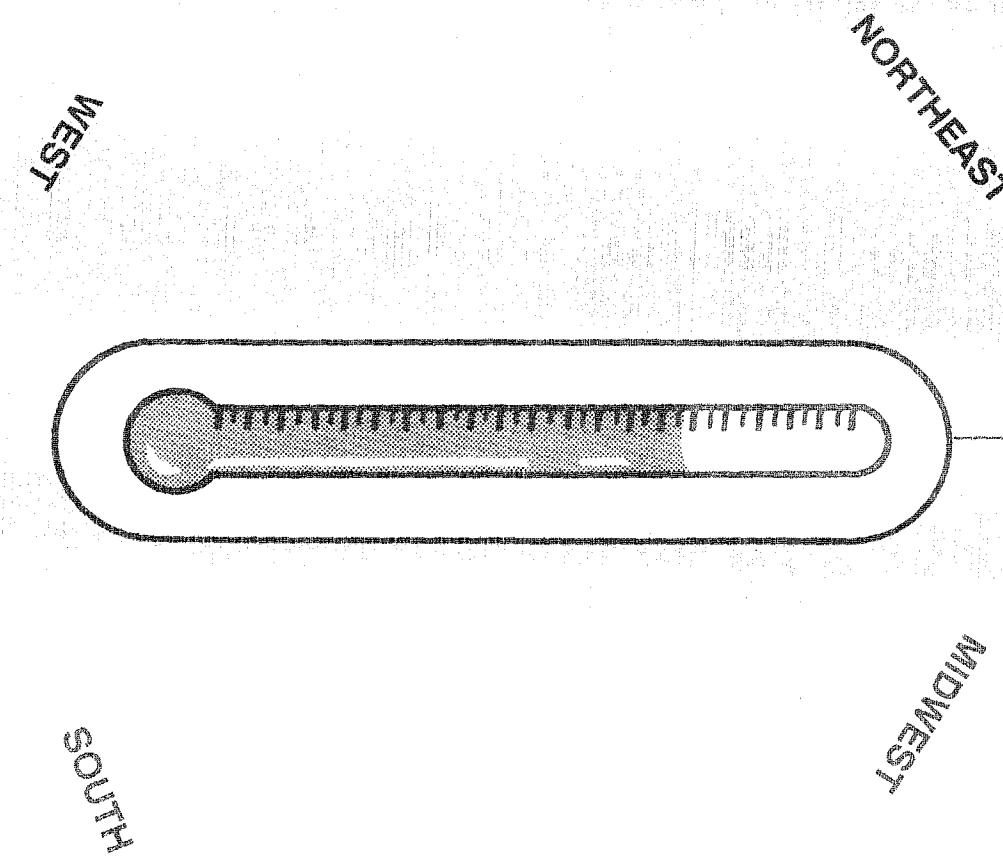
***Please include state and local taxes, where applicable. Exclude merchandise, shipping, or service charges.**

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

PLEASE CHECK THAT THE QUESTIONS ON PAGE 3 HAVE BEEN ANSWERED

Appendix E

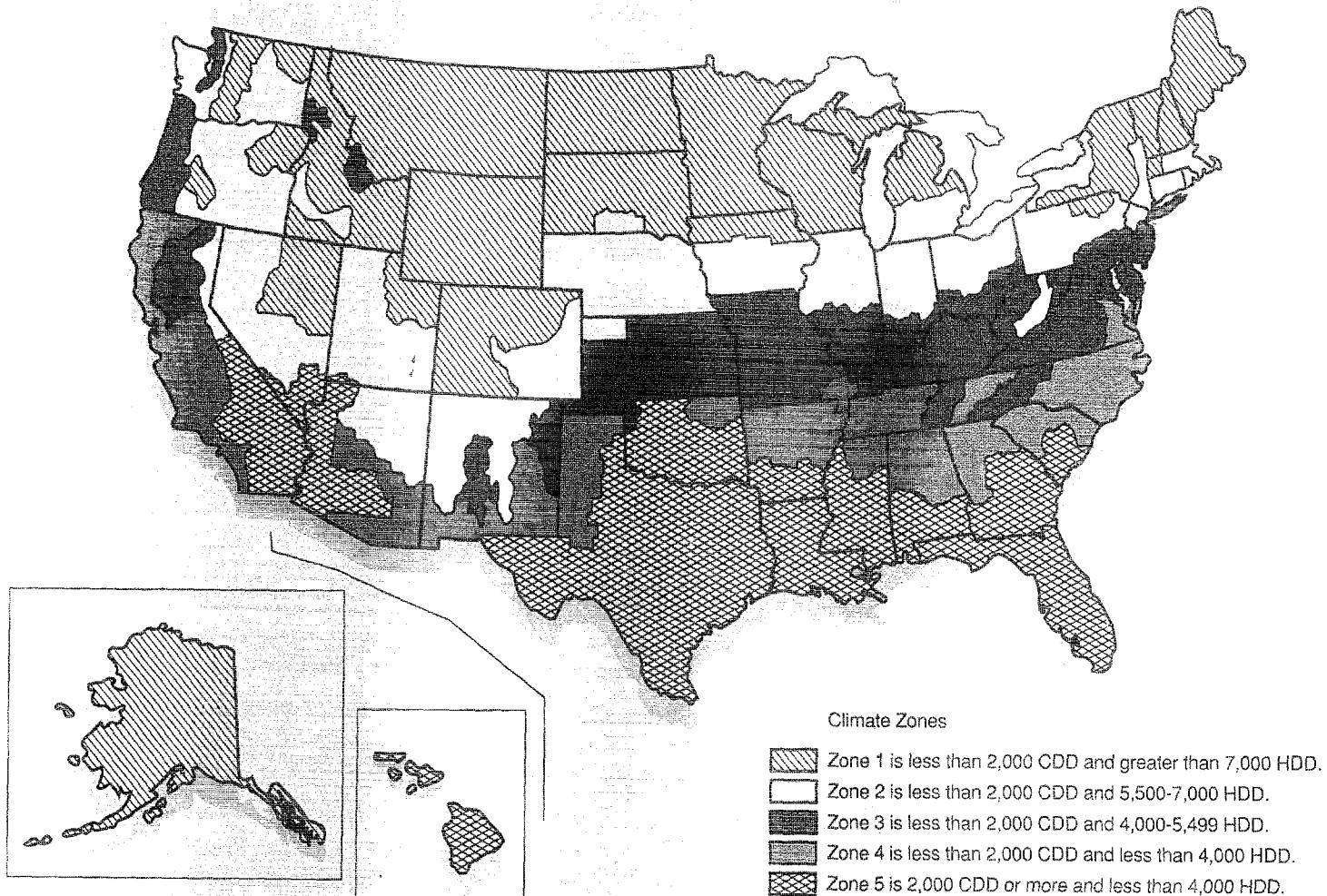
U.S. Climate Zone and Census Regions and Divisions Maps



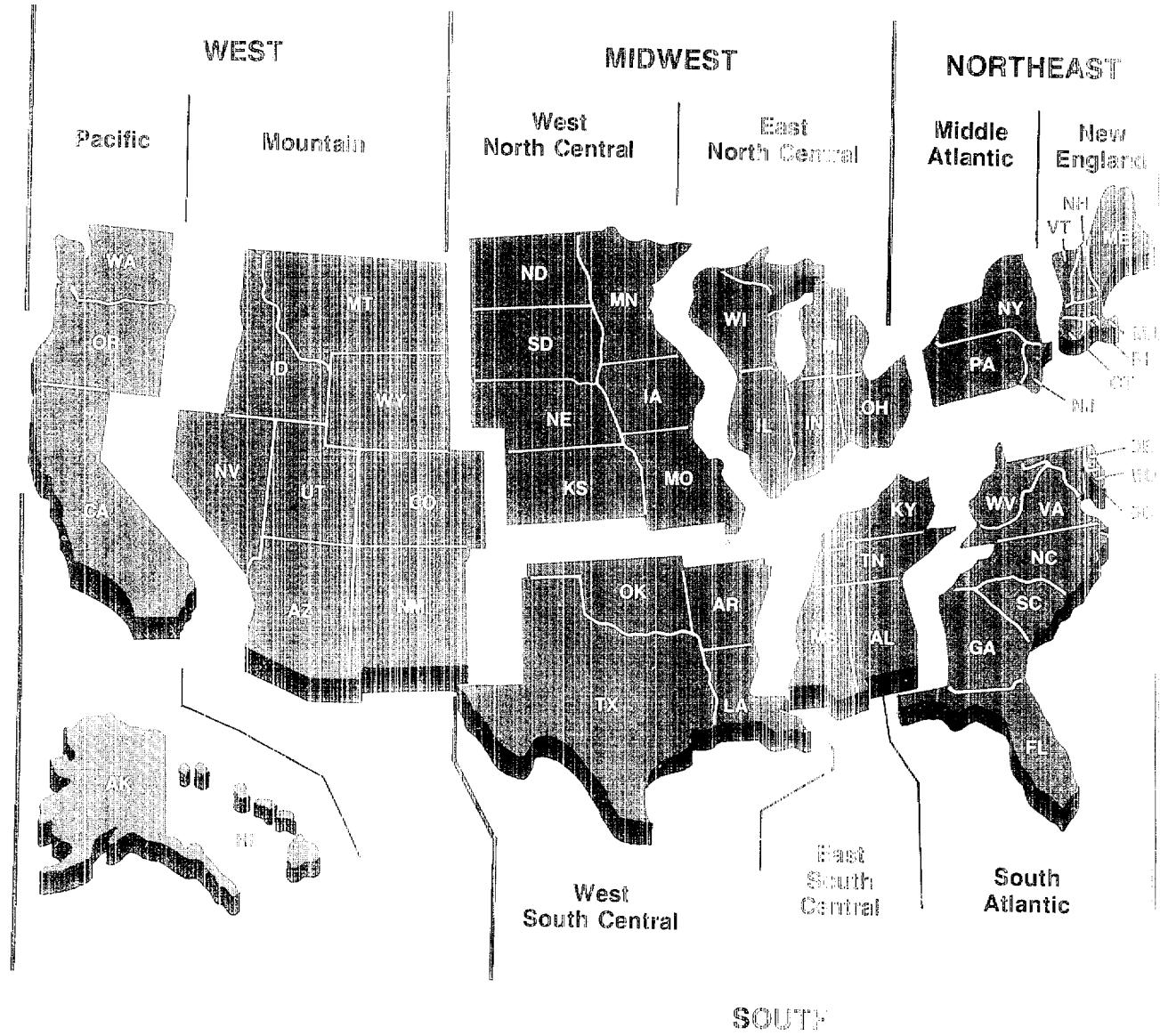
Appendix E

U.S. Climate Zone and Census Regions and Divisions Maps

U.S. Climate Zone Map

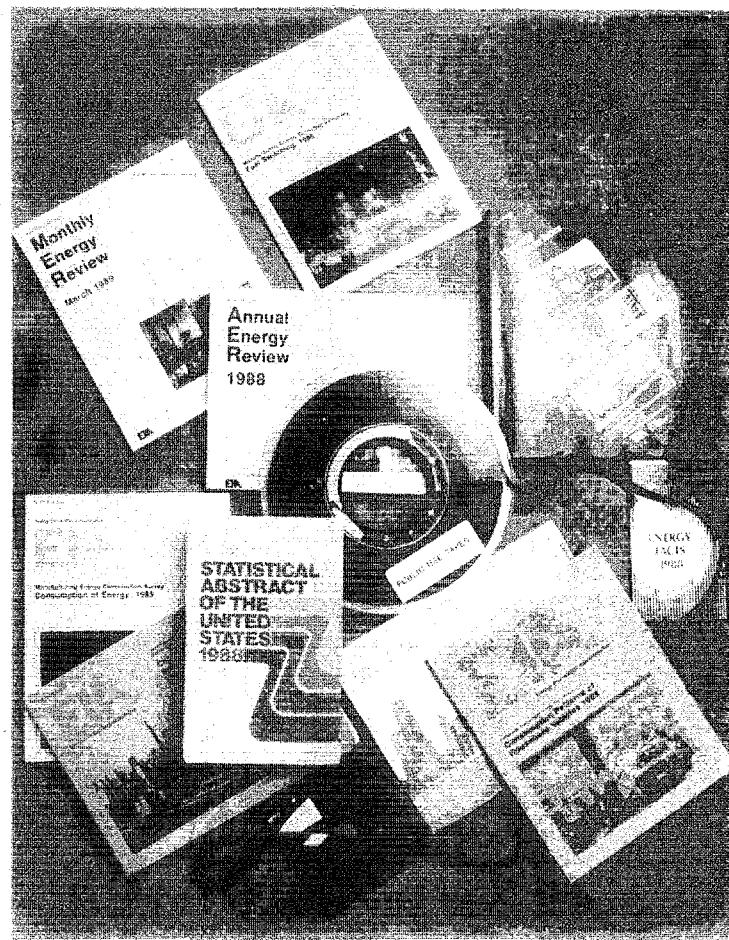


U.S. Census Regions and Divisions



Appendix F

Related EIA Publications on Energy Consumption



Appendix F

Related EIA Publications on Energy Consumption

For information about how to obtain these publications, see the inside cover of this report. Please note that the prices quoted here are subject to change.

In addition to the reports listed below, public use data tapes and data diskettes for the residential, residential transportation and commercial sectors are available from the National Technical Information Service (NTIS). To obtain information on how to order the tapes/diskettes, you may call NTIS at 703-487-4807, FAX number 703-321-8547. Data diskettes can also be obtained from GPO. For ordering information, call 202-512-2235.

Residential Sector

Housing Characteristics

Note: The survey name was dropped from the beginning of the report title starting with the 1987 data reports.

Housing Characteristics 1987; May 1989, DOE/EIA-0314(87), GPO Stock No. 061-003-00619-1, \$13.00.

Residential Energy Consumption Survey: Housing Characteristics 1984; October 1986, DOE/EIA-0314(84), GPO Stock No. 061-003-00499-7, \$12.00.

Residential Energy Consumption Survey: Housing Characteristics, 1982; August 1984, DOE/EIA-0314(82), GPO Stock No. 061-003-00393-1, \$7.00.

Residential Energy Consumption Survey Housing Characteristics, 1981; August 1983, DOE/EIA-0314(81), GPO Stock No. 061-003-00330-3, \$6.50.

Residential Energy Consumption Survey: Housing Characteristics, 1980; June 1982, DOE/EIA-0314, GPO Stock No. 061-003-00256-1, \$11.00.

Residential Energy Consumption Survey: Characteristics of the Housing Stock and Households, 1978; February 1980, DOE/EIA-0207/2, GPO Stock No. 061-003-00093-2, \$4.25.

Residential Energy Consumption Survey: Conservation; February 1980, DOE/EIA-0207/3, GPO Stock No. 061003-00087-8, \$6.00.

Preliminary Conservation Tables from the National Interim Energy Consumption Survey; August 1979, DOE/EIA-0193/P (no GPO Stock No.).

Characteristics of the Housing Stock and Households: Preliminary Findings from the National Interim Energy Consumption Survey; October 1979, DOE/EIA-0199/P (no GPO Stock No. available).

Consumption and Expenditures

Note: The survey name was dropped from the beginning of the report title starting with the 1987 data reports. The titles were changed to *Household Energy Consumption and Expenditures 1987, Part 1: National and Part 2: Regional*.

Household Energy Consumption and Expenditures 1987, Part 1: National Data; October 1989, DOE/EIA-0321/1(87), GPO Stock No. 061-003-00635-3, \$15.00. 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) (no GPO Stock No available), \$16.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 Through March 1985, Part 1: National Data; March 1987, DOE/EIA-0321/1(84), GPO Stock No. 061-003-00519-5, \$9.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 Through March 1985, Part 2: Regional Data; May 1987, DOE/EIA-0321/2(84), GPO Stock No. 061-003-00528-4, \$17.00. 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), GPO Stock No. 061-003-00411-3, \$7.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1982 Through March 1983, Part 2: Regional Data; December 1984, DOE/EIA-0321/2(82), GPO Stock No. 061-003-00414-8, \$9.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, Part 1: National Data; September 1983, DOE/EIA-0321/1(81), GPO Stock No. 061-003-00340-1, \$6.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, Part 2: Regional Data; October 1983, DOE/EIA-0321/2(81), GPO Stock No. 061-003-00357-5, \$8.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 1: National Data; September 1982, DOE/EIA-0321/1(80), GPO Stock No. 061-003-00278-1, \$7.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 2: Regional Data; June 1983, DOE/EIA-0321/2(80), GPO Stock No. 061-003-00319-2, \$7.00.

Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures, Part 1: National Data (Including Conservation); April 1981, DOE/EIA-0262/1, GPO Stock No. 061-00300191-2, \$6.50.

Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures, Part II: Regional Data; May 1981, DOE/EIA-0262/2, GPO Stock No. 061-003-00189-1, \$8.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1978 Through March 1979; July 1980, DOE/EIA-0207/S, GPO Stock No. 061-003-00131-9, \$7.50.

Single-Family Households: Fuel Oil Inventories and Expenditures: National Interim Energy Consumption Survey; December 1979, DOE/EIA-0207/1, GPO Stock No. 061-003-00075-4, \$3.50.

Other Publications on the Residential Sector

"End-Use Consumption of Residential Energy" Monthly Energy Review, (Article), pp. vii-xiv, July 1987, DOE/EIA-0135(87/07).

Residential Energy Consumption Survey: Trends in Consumption and Expenditures 1978-1984 June 1987, DOE/EIA-0482, GPO Stock No. 061-003-00535-7, \$12.00.

Residential Conservation Measures; July 1986, SR/EEUD/86/01 (no GPO Stock No.).

An Economic Evaluation of Energy Conservation and Renewable Energy Tax Credits; October 1985, Service Report (no GPO Stock No.).

Residential Energy Consumption and Expenditures by End Use for 1978, 1980, and 1981; December 1984, DOE/EIA-0458, GPO Stock No. 061-003-00415-6, \$4.50.

Weatherization Program Evaluation, SR-EEUD-84-1; August 1984 (available from the Office of the Assistant Secretary for Conservation and Renewable Energy, Department of Energy).

Residential Energy Consumption Survey: Regression Analysis of Energy Consumption by End Use; October 1983, DOE/EIA-0431, GPO Stock No. 061-00300347-6, \$5.00.

National Interim Energy Consumption Survey: Exploring the Variability in Energy Consumption; July 1981, DOE/EIA-0272, GPO Stock No. 061-003-00205-6, \$5.00.

National Interim Energy Consumption Survey: Exploring the Variability in Energy Consumption--A Supplement; October 1981, DOE/EIA-0272/S, GPO Stock No. 061-003-00217-0, \$4.50.

Energy Use by U.S. Households; November 1980, DOE/EIA-0248 (brochure, no GPO Stock No.).

Residential Transportation Sector

Note: The survey name was dropped from the beginning of the report title starting with the 1988 data report, and the report title changed to "Household Vehicles Energy Consumption 1988."

Household Vehicles Energy Consumption 1988; February 1990, DOE/EIA-0464(88), GPO Stock No. 061-003-00652-3, \$11.00.

Residential Transportation Energy Consumption Survey: Consumption Patterns of Household Vehicles 1985; April 1987, DOE/EIA-0464(85), GPO Stock No. 061-003-00521-7, \$8.50.

Residential Transportation Energy Consumption Survey: Consumption Patterns of Household Vehicles, 1983; January 1985, DOE/EIA-0464(83), GPO Stock No. 061-003-00420-2, \$4.50.

Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, Supplement: January 1981 to September 1981; February 1983, DOE/EIA-0328, GPO Stock No. 061-003-00297-8, \$4.75.

Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, June 1979 to December 1980; April 1982, DOE/EIA-0319 (no GPO Stock No.).

Commercial Sector

Note: The name of the Nonresidential Buildings Energy Consumption Survey was changed to the Commercial Buildings Energy Consumption Survey, beginning with the 1989 survey. The survey name was also dropped from the report title.

Characteristics of Buildings

Commercial Buildings Characteristics 1989; June 1991, DOE/EIA-0246(89), GPO Stock No. 061-003-00699-0, \$18.00.

Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings,

1986; September 1988, DOE/EIA-0246(86), GPO Stock No. 061-003-00580-2, \$16.00.

Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1983; July 1985, DOE/EIA-0246(83), GPO Stock No. 061-003-00439-3, \$7.50.

Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1983; A Supplemental Reference, DOE/EIA-M008, \$22.95. Available from the NTIS, Order No. DE-85015581.

Nonresidential Buildings Energy Consumption Survey: Fuel Characteristics and Conservation Practices; June 1981, DOE/EIA-0278, GPO Stock No. 061-00300200-5, \$9.00.

Nonresidential Buildings Energy Consumption Survey: Building Characteristics; March 1981, DOE/EIA-0246, GPO Stock No. 061-003-00171-8, \$6.50.

Consumption and Expenditures

Commercial Buildings Consumption and Expenditures 1989; April 1992, DOE/EIA-0318(89), GPO Stock No. 061-003-00735-8.

Nonresidential Buildings Energy Consumption Survey: Commercial Buildings Consumption and Expenditures 1986; May 1989, DOE/EIA-0318(86), GPO Stock No. 061-003-00613-2, \$19.00.

Nonresidential Buildings Energy Consumption Survey: Commercial Buildings, Consumption and Expenditures 1983; September 1986, DOE/EIA-0318(83), GPO Stock No. 061-003-00496-2, \$13.00.

Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures, Part 1: Natural Gas and Electricity; March 1983, DOE/EIA-0318/1, GPO Stock No. 061-003-00298-6, \$9.50.

Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures, Part 2: Steam, Coal, Fuel Oil, LPG, and Total Fuels; December 1983, DOE/EIA-0318(79)/2, GPO Stock No. 061003-00366-4, \$6.00.

Other Publications on the Commercial Sector

Analysis Report: Lighting in Commercial Buildings; March 1992, DOE/EIA-0555(92)/1, GPO Stock No. 061-003-00749-0, \$6.50.

Industrial Energy Consumption, "Survey of Large Combustors: Report on Alternate Fuel-Burning Capabilities of Large Boilers in 1979"; February 1982, DOE/EIA-0304, GPO Stock No. 061-003-0233-1, \$2.50.

Industrial Sector

Manufacturing Energy Consumption Survey: Changes in Energy Intensity in the Manufacturing Sector 1980-1988; DOE/EIA-0552(80-88), GPO Stock No. 061-003-00734-1, \$4.75.

Manufacturing Energy Consumption Survey: Manufacturing Fuel-Switching Capability 1988; September 1991, DOE/EIA-0515(88), GPO Stock No. 061-003-00720-1, \$9.00.

Manufacturing Energy Consumption Survey: Consumption of Energy, 1988; May 1991, DOE/EIA 0512(88), GPO Stock No. 061-003-00703-8, \$11.00.

Manufacturing Energy Consumption Survey: Energy Efficiency in Manufacturing 1985; January 1990, DOE/EIA-0516(85), GPO Stock No. 061-00300650-7, \$4.25.

Manufacturing Energy Consumption Survey: Fuel Switching Capability, 1985; December 1988, DOE/EIA-0515(85), GPO Stock No. 061-003-00601-9, \$3.50.

Manufacturing Energy Consumption Survey: Methodological Report, 1985; November 1988, DOE/EIA-0514(85), GPO Stock No. 061-00300593-1, \$6.00.

Manufacturing Energy Consumption Survey: Consumption of Energy, 1985; November 1988, DOE/EIA-0512(85), GPO Stock No. 061-003-00594-2, \$6.00.

"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, GPO Stock No. 061-003-00293-5, \$5.00.

Methodological Report of the 1980 Manufacturing Industries Survey of Large Combustors (EIA-463); March 1982, DOE/EIA-0306 (no GPO Stock No.).

Cross-Sector

Energy Consumption by End-Use Sector: A Comparison of Measures by Consumption and Supply Surveys; April 6, 1990, DOE/EIA-0533 (no GPO Stock No. available), \$2.50.

Natural Gas: Use and Expenditures; April 1983, DOE/EIA-0382, GPO Stock No. 061-003-00307-9, \$5.50.

Public Use Tapes

Note: All tapes are available through the NTIS.

Residential and Residential Transportation Sectors

Residential Energy Consumption Survey: 1987 and Residential Transportation Energy Consumption Survey, 1988; Order No. PB90-501461, \$220.

Residential Energy Consumption Survey: 1984 and Residential Transportation Energy Consumption Survey, 1985; Order No. PB87-186540, \$220.

Residential Energy Consumption Survey: 1982 and Residential Transportation Energy Consumption Survey, 1983; Order No. PB85-221760, \$220.

Residential Energy Consumption Survey: Consumption and Expenditures, 1980-1981; Monthly Billing Data; Order No. PB84-166230, \$220.

Residential Energy Consumption Survey: Housing Characteristics, 1981; Consumption and Expenditures, 1981-1982; Monthly Billing Data; Order No. PB84-120476, \$220.

Residential Energy Consumption Survey: Housing Characteristics, Annualized Consumption and Expenditures, 1980-1981; Order No. PB83-199554, \$220.

Residential Energy Consumption Survey: Household Transportation Panel Monthly Gas Purchases and Vehicle and Household Characteristics, 6/79-9/81; Order No. PB84-162452, \$220.

Residential Energy Consumption Survey: Household Screener Survey, 1979-1980; Order No. PB82-114877, \$220.

Residential Energy Consumption Survey: Household Monthly Energy Consumption and Expenditures, 1978-1979; Order No. PB82-114901, \$220.

National Interim Energy Consumption Survey (Residential), 1978; Order No. PB81-108714, \$220.

Commercial Sector

Nonresidential Buildings Energy Consumption Survey: 1986 Data; Order No. PB90-500034, \$220.

Nonresidential Buildings Energy Consumption Survey: 1979 and 1983 Data; Order No. PB88-245162, \$220.

Public Use Diskettes

Note: Diskettes are available through the NTIS and GPO.

Residential Energy Consumption Survey 1987 Data, NTIS - ASCII format: Order No. PB-91-505115, \$130, and dBASE format: Order No. PB-91-505107, \$130. GPO - ASCII/dBASE format, order by title, \$45 for each set.

Commercial Buildings Energy Consumption Survey 1989 data diskettes planned for release in June 1992.

Nonresidential Buildings Energy Consumption Survey 1986 Data, NTIS - ASCII format: Order No. PB91-506808, \$130.

Residential Transportation Energy Consumption Survey 1988 Data, NTIS - ASCII format: Order No. PB91-507269, dBASE format: Order No. PB91-507277, \$50 each. GPO - ASCII/dBASE format, order by title, \$15 for each set.

Planned Publications

Manufacturing Energy Consumption Survey: Changes in Energy Consumption 1985-1988; planned for early 1993.

Household Energy Consumption and Expenditures 1990; planned for December 1992.

Household Vehicles Energy Consumption 1991; planned for December 1992.

Manufacturing Energy Consumption Survey 1991 Methodology Report Based on Data Users and Industry Input, planned for June 1992.

Note: The Energy Information Administration also publishes the *State Energy Data Report, Consumption Estimates*, DOE/EIA-0214, annually; the *State Energy Price and Expenditures Report*, DOE/EIA-0376, annually; and the *Monthly Energy Review*, DOE/EIA-0035, monthly. These reports contain monthly and annual consumption information derived from EIA supply surveys.

Glossary

Active Solar: As an energy source, energy from the sun collected and stored by use of mechanical pumps or fans to circulate heat-laden fluids or air between solar collectors and a building.

Adequacy of Insulation: The perception of the respondent as to the adequacy of insulation present in the housing unit; or how "good" the insulation in the unit is. This was first asked in the 1990 RECS.

Air-Conditioned Rooms: The number of rooms the air-conditioning equipment *usually* cools when the equipment is used. In previous RECS, this question referred to the number of rooms that *could* be cooled by the air conditioner. Numbers may not sum to the total for this variable, because fewer than 0.1 million households with air-conditioning equipment reported that they "usually" cool zero rooms; these households are not shown in the Detailed Tables. A "none" category for this variable refers only to those households without any air-conditioning equipment. There are cases of households that usually cool some rooms but are still categorized as "did not use at all," in tabulations of the variable "use of air conditioning in the summer of 1990." (See Air Conditioning Usage.)

Air Conditioning: Cooling and dehumidification of the air in a building by a refrigeration unit driven by electricity or gas. This definition excludes fans, blowers, or evaporative cooling systems ("swamp coolers") that are not connected to a refrigeration unit. Air-conditioning units that are not currently in working condition or are not used are still included in the RECS if they are in place in the housing unit. (See Refrigeration Unit.)

Air-Conditioning Equipment: Either a central air-conditioning system with ducts or window or wall air conditioners that cool the air in a housing unit by a refrigeration unit driven by electricity or natural gas. Excluded are 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 still included in RECS if they are in place in the housing unit. (See Room Air Conditioner.)

Air Conditioning Usage: The way the central air conditioner or the most used room air conditioner was used during the summer of 1990. When a household had both a central air conditioner and a room air conditioner, the tabulation was based on the use of the central air conditioner, not the room air conditioner. Some households responded "other" to this question of "use last summer"; these were mainly households that said they did not live in their house last summer. Some households responded that they did not use their air conditioner at all last summer but still said that they "usually" air condition some rooms. (See Air-Conditioned Rooms.)

Appliance Efficiency Index: As used in this report, the index of appliance efficiency was a relative comparison of trends in new-model efficiencies for major appliances and energy-using equipment. The base year for relative comparisons was 1972 (1972=100). Efficiencies for each year were efficiencies of different model types which were weighted by their market shares. (See Normalized and *Energy Conservation Trends*, DOE/PB-0092 U.S. Department of Energy, Office of Policy, Planning & Analysis, Office of Conservation & Renewable Energy September, 1989, p. 37.)

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 took effect in 1990. The standards for clothes washers, dishwashers, and ranges took effect in 1988 because they require 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 will not take effect until 1992, because it will take longer

to redesign these products. Appliance efficiency standards for refrigerators go into effect in 1993. Virtually no refrigerator models now (1990) on the market meet the 1993 standards.

Appliances: Appliances used in the home during the year, including those loaned to the householder for regular use. Appliances possessed by the household but not used are not counted, except for air-conditioning equipment. Appliances temporarily not in working condition but generally used by the household are included, only if a repair person has been called or the appliance has been taken to a repair shop. The following list of appliances were specifically asked about in the 1990 RECS: refrigerator, freezer, clothes washer, electric dishwasher, electric clothes dryer, gas clothes dryer, outdoor gas light, electric dehumidifier, personal computer, electric pump for well water, black and white television sets, color television sets, water bed heaters, swimming pool, swimming pool heater, hot tub or spa. Cooking appliances included the following: gas stove-top or burners, gas oven, electric stove-top or burners, electric oven, microwave oven, gas grill (that uses bottled gas or propane), and natural gas grill. "Stove-top or burners" includes range tops and stand-alone "cook tops." Range burners and ovens are counted as separate appliances. Cooling appliances included: evaporative cooler (swamp cooler), "whole house" or "attic fan", exhaust fan, window or ceiling fan, portable or table fan. (See Air-Conditioning Equipment and Lights.)

Assistance for Heating in Winter: Indicates the household answered "yes" to whether the household received assistance from the Low-Income Home Energy Assistance Program (LIHEAP). The purpose of LIHEAP is to provide assistance to low-income households to offset the rising costs of home energy that are excessive in relation to household income. The most recent report on the program is found in the U.S. Department of Health and Human Services', *Low-Income Home Energy Assistance Program: Report to Congress for Fiscal Year 1990*, September 11, 1991. Copies are available from: Administration for Children and Families, Office of Community Services, Division of Energy Assistance, 370 L'Enfant Promenade, S.W., Washington, D.C. 20447.

Assistance for Weatherization of Residence: The household received services free, or at a reduced cost, from the Federal, State, or local Government. Any of the following services could have been received:

- Insulation in the attic, outside wall, or basement/crawl space below the floor of the house
- Insulation around the hot water heater
- Repair of broken windows or doors to keep out the cold or hot weather
- Weather stripping or caulking around any windows or doors to the outside
- Storm doors or windows added
- Repair of broken furnace
- Furnace tuneup and/or modifications
- Other home energy-saving devices.

Attic Insulation: Insulating materials in the attic, either placed underneath the roof, on the roof, or on the floor of the attic.

Authorization Form: The one-page form signed by the respondent that gives permission to ask the energy supplier for information about the energy used in the housing unit. The form contains the name and address for 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 certain predetermined times.

Availability of Natural Gas in the Neighborhood: Respondents were asked "Is gas from underground pipes available in this neighborhood?" The meaning of "available" and "neighborhood" were left to individual interpretation by the respondents. The intent of this question was to determine whether a residence could be "readily" hooked up to a gas line.

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: For this report, the average age of major appliances and household energy-using equipment has been estimated from categorical age data. Respondents were provided four age 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. Midpoints were assigned as follows: "Less than 2 Years" (1), "2 to 4 Years" (3), "5 to 9 Years (7)", "10 to 19 Years" (14.5), and "20 Years or More" (20).

Backup Fuel: In a central heat pump system, the fuel used in the furnace which takes over the space heating when the outdoor temperature drops below that which is feasible to operate a heat pump. See Heat Pump.

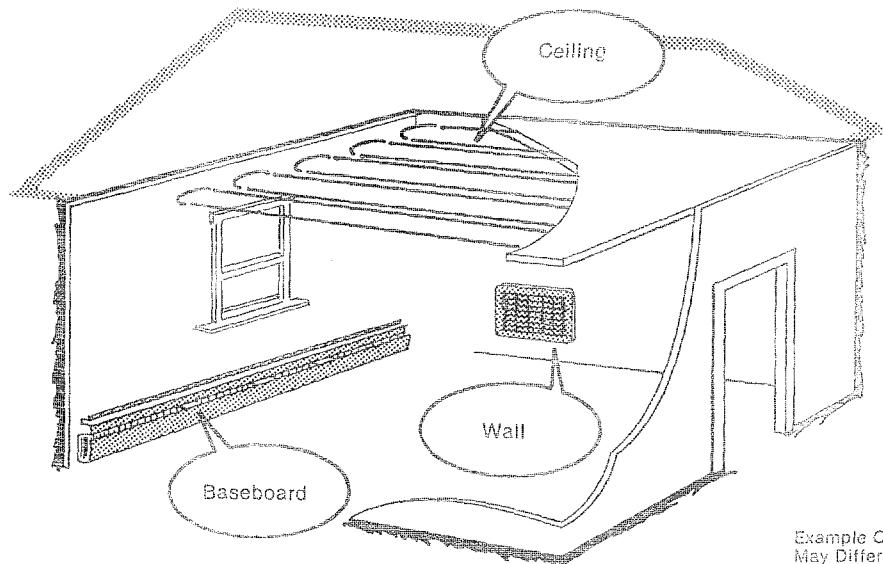
Basement: An enclosed space in which a person can walk upright under all or part of the building.

Bathroom: For this report, a full bathroom contains a sink with running water and 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.

Built-In Electric Units: An individual electric resistance 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.

Built-in Electric Units



Example Only. Your Equipment
May Differ in Minor Ways
From the Example Shown.

Caulking: Moldable sealing material around any windows or doors to the outside that (when put into cracks around the frames of windows or doors, or cracks in other stationary parts of a house) reduces the passage of air and moisture. Caulking comes in a tube and is claylike so it can be molded by hand to fit the space being treated. Caulking can be applied either to the inside or to the outside of the home. It includes materials known as "sealants," "putty," and "glazing compounds."

CDD: See Cooling Degree-Days (CDD).

Ceiling Insulation: Insulating material placed between the ceiling and the roof.

Census Division: A geographic area consisting of several States defined by the U.S. Department of Commerce, Bureau of the Census. (See the map in Appendix F.) The States are grouped into four regions and nine divisions:

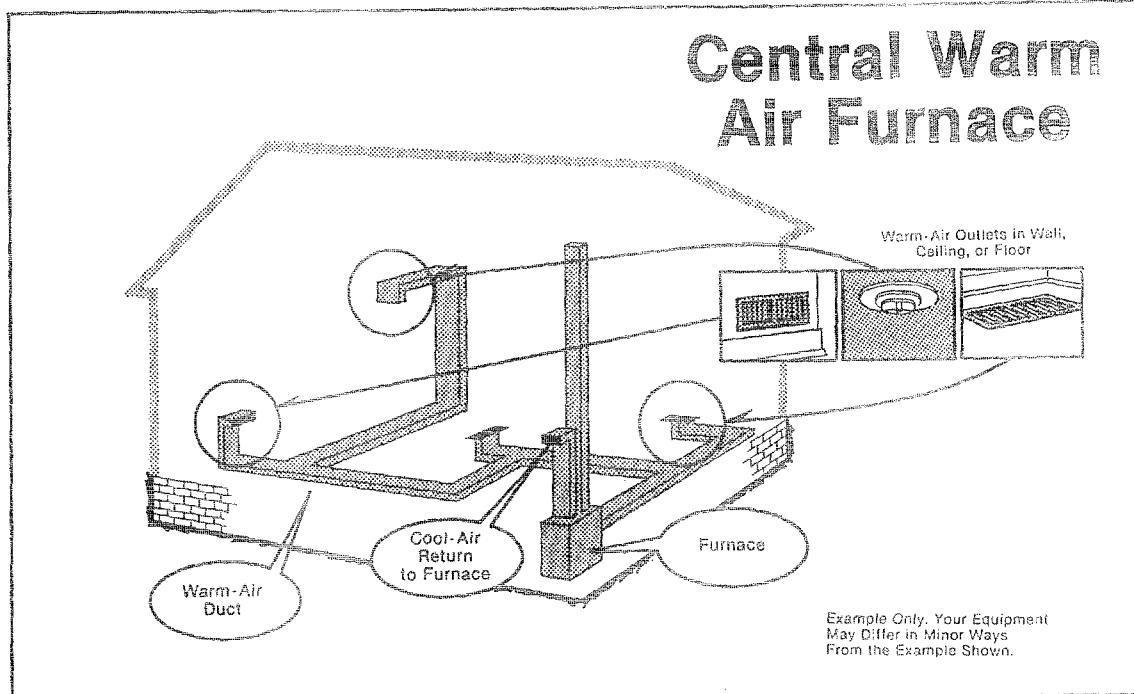
Region	Division	States
Northeast	New England	Connecticut, Maine, Massachusetts, New Hampshire, Vermont, and Rhode Island
	Middle Atlantic	New Jersey, New York, and Pennsylvania
Midwest	East North Central	Illinois, Indiana, Michigan, Ohio, and Wisconsin
	West North Central	Iowa, Kansas, Minnesota, Missouri, 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

Census Region: See Census Division and the map in Appendix F.

Central Air-Conditioning: See Air-Conditioning Equipment.

Central City: Is usually one or more legally incorporated cities within the Metropolitan Statistical Area (MSA) that is significantly large by itself or large relative to the largest city in the MSA. Additional criteria for being classified "central city" include having at least 75 jobs for each 100 employed residents and having at least 40 percent of the resident workers employed within the city limits. Every MSA has at least one central city, which is usually the largest city. Central cities are commonly regarded as relatively large communities with a denser population and a higher concentration of economic activities than the outlying or suburban areas of the MSA. "Suburban" are those parts of the MSA that are not designated as central city. In previous RECS reports, suburban areas were called "outside central city." For this report, the central city and suburban areas are called urban areas, whereas, in previous RECS reports, these components were referred to as metropolitan areas. (See Metropolitan Statistical Areas, Urban, Suburban, and Rural.)

Central Warm-Air Furnaces: A type of space-heating equipment where a central combustor or resistance unit--generally using gas, fuel oil, or electricity provides warm air through ducts leading to the various rooms. Heat pumps are not included in this category. A forced-air furnace is one in which a fan is used to force the air through the ducts. In a gravity furnace, air is circulated by gravity, relying on the natural flow of warm air up and cold air down; the warm air rises through ducts and the cold air falls through ducts that return it to the furnace to be reheated and this completes the circulation cycle.



Climate Zone: One of five climatically distinct areas, defined by long-term weather conditions affecting the heating and cooling loads in buildings. The zones were developed 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	Less than 2,000	More than 7,000
2	Less than 2,000	5,500 to 7,000
3	Less than 2,000	4,000 to 5,499
4	Less than 2,000	Less than 4,000
5	2,000 or More	Less than 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 Heating Degree-Days (HDD) and Cooling Degree-Days (CDD).)

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 liquefied petroleum gas.

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 tub rather than an agitator.

Coal: A combustible mineral substance (carbonized vegetable matter); in this report, the term includes its derivative (formed by destructive distillation or imperfect combustion) coke. Only statistics on the number of households using coal are collected in RECS. (See **Fuel**.)

Compressor: Used in air-conditioning equipment and usually powered by an electric motor, most compressors are of the reciprocating (piston) type which compress the refrigerant to maintain the proper pressure in the air conditioning system. The compressor is contained in the outdoor unit of central air-conditioning systems which usually contains a condenser also. The refrigerant circulates through the tubes with finned surfaces (the condenser) which removes heat and condenses the refrigerant to a liquid. (See **Refrigeration Unit**.)

Condominium: A type of ownership that enables a person to own an apartment or house in a project of similar units. The owner has his/her own deed and, most likely, his/her own mortgage on the unit. The owner also holds a common or joint ownership in all common areas, such as hallways, entrances, and elevators. Ownership may cover one-family houses, including row houses and townhouses, as well as apartments.

Conservation Program: A program in which a utility company furnishes home weatherization services free or at reduced cost, or provides free or low-cost devices for saving energy, such as energy-efficient light bulbs, flow restrictors, weather stripping, and water heater insulation.

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. For the RECS, the control totals are given by the number of households in one of the 12 cells by categorizing households by the four Census regions and by three categories of urban status (Urban -- central city, Urban -- outside central city, and Rural). The control totals were obtained from the Current Population Survey. See Table A4, in Appendix A, "How the Survey Was Conducted."

Cooking Stove: A stove built for preparing food. In this survey, it may be used as the main heating equipment. (See **Heating Equipment and Appliances**.)

Cooled Floorspace: See **Floorspace**.

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 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 degree-days averaged over 30 years from 1951 to 1980 are called **Normal Cooling Degree-Days**. Average daily temperature is the mean of the maximum and minimum temperature for a 24-hour period. Cooling degree-days can also be calculated using a base temperature other than 65 degrees. The computation is performed in an analogous manner.

Since the 1987 RECS, cooling degree-days for households are taken from records of an appropriate nearby weather station. In previous RECS, weather data were assigned to households according to the NOAA division in which the household was located. (See **Heating Degree-Days (HDD)**, **Climate Zone** and **NOAA Division**.)

Cord of Wood: A cord of wood measures 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); the walls of the crawl space protect it from the weather.

Dehumidifier: A dehumidifier removes moisture from the air (often needed in summer when the high moisture content of air makes it uncomfortable). (See Humidifier and Humidity.)

Demand: The rate of energy consumption per unit time. The term is commonly applied to electricity for which demand is typically measured in watts (W) or kilowatts (kW).

Demand-Side Management Programs: A term used to describe a variety of programs being sponsored by utility companies to encourage customers to modify their energy use. These programs are generally designed to reduce demand, or modify patterns of demand as an alternative to increasing new capacity.

Dishwasher: A built-in or portable appliance used for automatically cleaning dishware, utensils, and cutlery.

Door: A movable, usually solid barrier for opening and closing an entrance way. Outside doors lead from a heated area to the outside or to an unheated area, such as a porch or garage. Doors leading to a heated hallway in an apartment building, doors permanently sealed shut, and doors to an unheated attic or basement are not counted, because they are not usually fitted with storm doors. Therefore, an apartment with one door leading to a heated hallway would have zero doors for RECS purposes. Double doors are counted as one door. A pair of sliding glass doors is counted as one door in this survey. The definition of "standard" doors includes doors both with and without glass panels.

Electric Pump for Well Water: This pump 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.

Eligible for Federal Assistance: Households are categorized as eligible for federal energy assistance if their income is below the federal maximum 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 maximum. (See Poverty Line.)

Energy Audit: A program carried out by a utility company in which an auditor inspects a home and suggests ways energy can be saved.

Energy Source: A type of energy or fuel consumed by the household. For this report, the energy sources identified are electricity, natural gas, fuel oil, kerosene, liquefied petroleum gas (propane), wood, coal, and active solar. (See Electricity, Natural Gas, Fuel Oil, Kerosene, Liquefied Petroleum Gas (LPG), Wood, Coal, and Active Solar.)

Energy Supplier: Fuel companies supplying electricity, natural gas, fuel oil, kerosene or LPG to the household. (See Authorization Form and Appendix A, "How the Survey Was Conducted".)

Evaporative Cooler (Swamp Cooler): An air-cooling unit that turns air into moist, cool air by saturating the air with water vapor. It does not cool air by use of a refrigeration unit, so for this report it is not considered air-conditioning equipment.

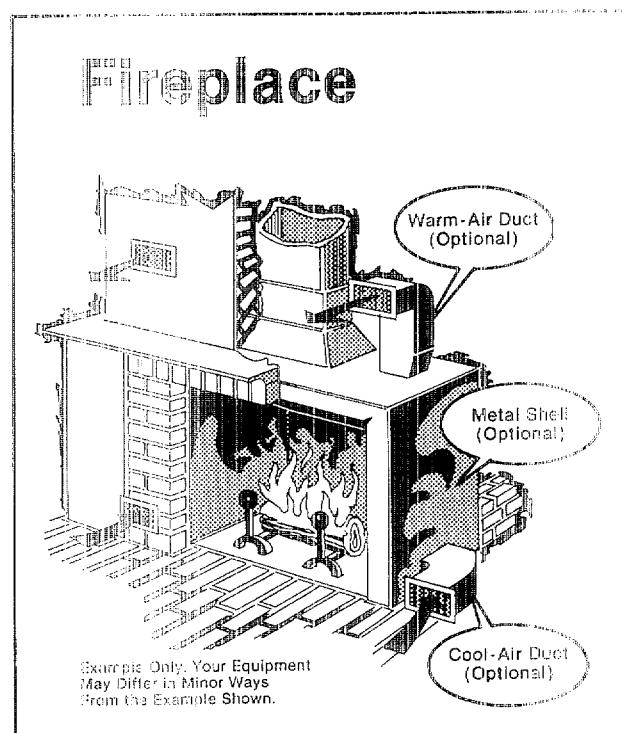
Exhaust Fan: Small fans located in the wall or ceiling which exhaust air, odors, and moisture from the bathroom, kitchen, or basement to the outside.

Family Income Category: The income grouping for the total combined income (before taxes and deductions) of all members of the family from all sources, for the 12 months prior to 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. This definition includes the total income of all family members who lived in the household during the 12 months prior to the interview, regardless of whether they were living there at the time of the interview. Income of nonfamily members of the household is not included. "Family" includes the following types of relationships: mother, father, sister, brother, son, daughter, father-in-law, uncle, aunt, niece, grandchild, foster child (and similar relationships).

Fan: See Whole-House Cooling Fan, Exhaust Fan, Window or Ceiling Fan, Portable Fan and Furnace Fan.

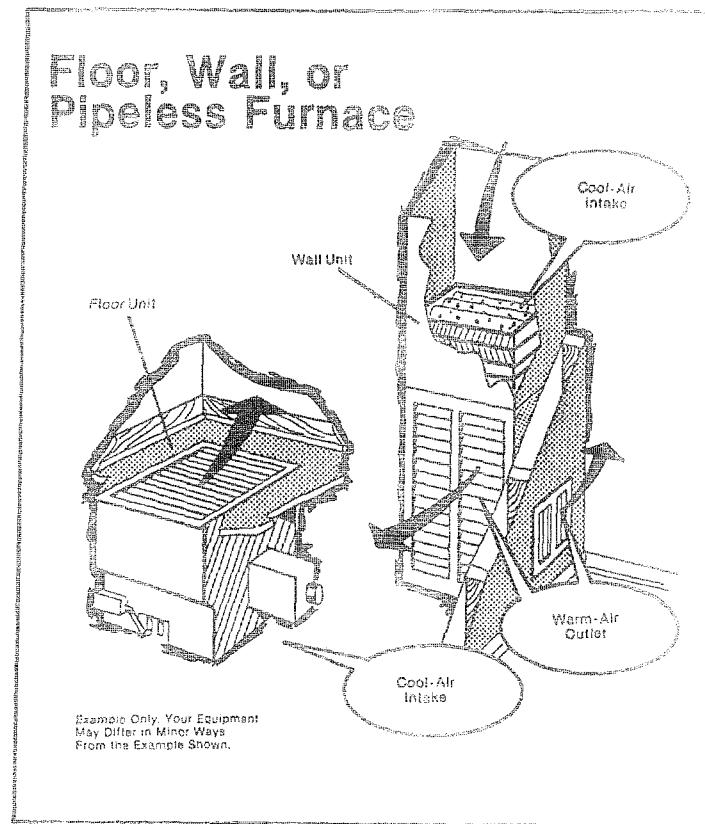
Fireplace: Usually a masonry unit which burns wood, that is built into the wall of a house and has a permanent chimney. Fireplaces in mobile homes are included. Fireplaces may have glass doors or metal shields to cover the opening into the room. Accessories such as convective grates or radiant grates may be present to increase the efficiency of the fireplace. A free-standing fireplace that can be detached from its chimney is a heating stove. (See Heating Stove.)



Fireplace Insert: A heating stove that occupies most of the burning area of a fireplace. Fireplace accessories such as glass doors, metal shields to cover the opening into the room, convective or radiant grates, or air circulation devices (including fans) are not considered fireplace inserts.

Floodlights: Lights that illuminate large areas, often used outdoors. Incandescent floodlights, the most common, are at least 150 watts. Mercury vapor or sodium vapor floodlights are at least 100 watts. Floodlights can not be fluorescent lights.

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. Basements are included, whether or not they contain finished space. The finished space and the heated space in attics are included. Garages are included if they have a wall in common with the house. Crawl spaces are not included, even if they are enclosed from the weather. Sheds and other buildings that are not attached to the house are not included. Floorspace in square feet is derived from an actual measurement made by the interviewer using a metallic, retractable, 50-foot tape measure. For details on how the measurement was made and how the data were treated, see Appendix A, "Estimates of Housing Unit Size." To convert square feet to square meters multiply the square feet by .093. To convert square meters to square feet, multiply the square meters by 10.765.

"Heated Floorspace" is the portion of the floorspace that is heated during most of the winter season. Rooms that are shut off during the heating season to save fuel are not counted as heated square footage. Attached garages that are unheated and unheated areas in basements and attics are not counted as heated square foot.

"Cooled Floorspace" is computed as heated floorspace times the percentage of rooms that are cooled over total rooms. If the housing unit has no heated floorspace then total floorspace is substituted for heated floorspace in the computation of cooled floorspace.

Fluorescent Lamps: Usually long, narrow, white tubes connected to a fixture at both ends of the lamp; some are circular tubes. Newer types ("compact" fluorescent lamps), looking somewhat more like a conventional bulb, are being made, which can be screwed into fixtures. These lights are typically found in kitchen and basement work areas.

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. For this report, 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: Freezer section of the refrigerator is either fully frost-free or automatically defrosts after some buildup of frost.

Fuel: The primary fuel or energy source delivered to a residential site. It may be converted to some other form of energy at the site. Electricity is included as a fuel. Other primary fuels are coal, fuel oil, kerosene, liquefied petroleum gas (LPG), natural gas, wood and solar.

Fuel Oil: In this report, any No. 1, No. 2, or No. 4 grade fuel oil or residual oil that is burned for space- or water-heating purposes. No. 1 distillate fuel oil is 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. (See Fuel.)

Furnace: That part of a boiler or warm-air space-heating plant in which combustion takes place.

Furnace Fan: A fan that forces air through the ducts for a central warm-air furnace.

Garage (Attached): A space large enough to accommodate a car, with a door opening at least 6 feet wide and 7 feet high. This space is attached directly to the house (it shares part of a wall in common with the house) or under part or all of the house. Not included are carports, barns, or buildings not connected to the house or storage space for golf carts or motorcycles.

Gas Air Conditioning: Cooling and dehumidification of the air in a building by a refrigeration unit driven by gas (either natural gas or LPG). (See Refrigeration Unit.)

Group Quarters: Living arrangement for institutional groups containing ten or more unrelated persons. Group quarters are typically found in hospitals, nursing or rest homes, military barracks, ships, 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 ten or more unrelated persons. Group quarters are often equipped with a dining area for residents. Group quarters are excluded from the RECS. (See Housing Unit.)

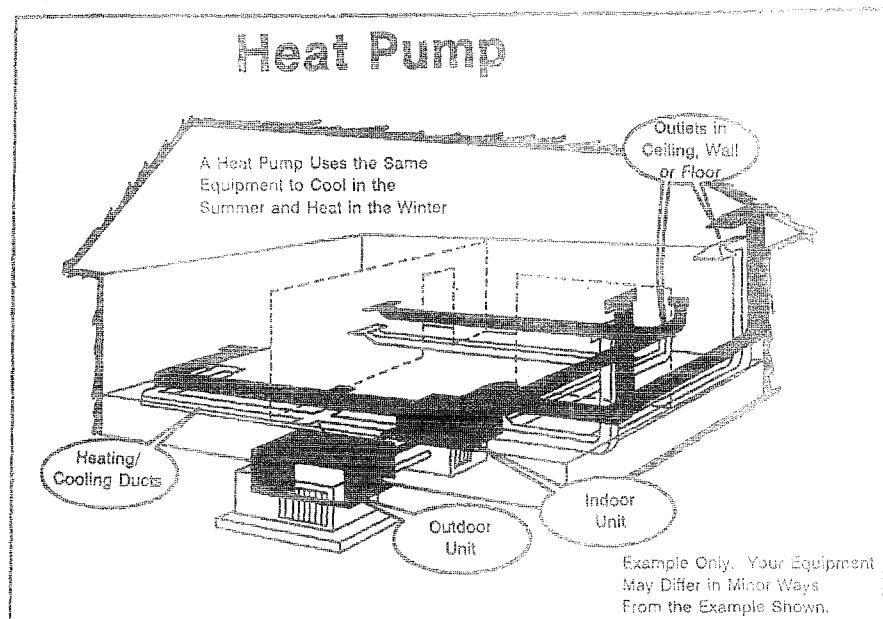
Halogen Lamp: See Incandescent Lamps.

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, only electricity is allowed as the power source.

The heat pump, when attached to a central furnace, is either the main or secondary heating equipment (depending on how often the heat pump operates). If it operates for a short time before the furnace comes on, the heat pump is secondary (or additional) heating equipment. If the heat pump is sufficient to provide the desired warmth, the heat pump is the main heating equipment. Some heat pumps are single-package systems in which the indoor and outdoor coils are contained in the same unit. A window or wall unit heat pump is a single-package system.

An air-source heat pump, the most common, extracts heat from the outdoor air. When the outdoor air approaches the freezing point (32 degrees Fahrenheit), the system does not work very well and requires a backup heating fuel. Sometimes a light comes on in the house to indicate the backup system is operating. A water-source heat pump extracts heat from underground water.



Heated: A room or space warmed by space-heating equipment. Basements and other areas where the space-heating equipment or heating ducts are located may be considered heated if they are warm enough to sit, work, or play in during the winter months. If a housing unit has no space-heating equipment, then there are no heated areas in the housing unit.

Heated Floorspace: See Floorspace.

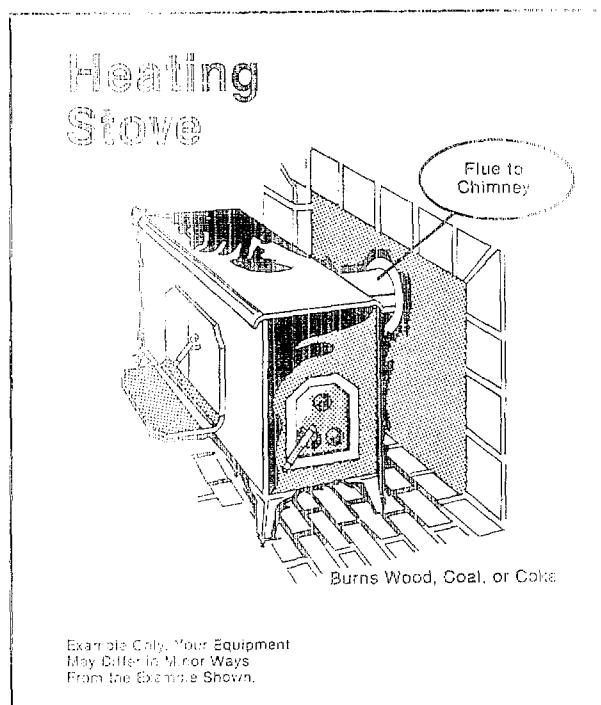
Heating Degree-Days (HDD): A measure of how cold a location was over a period of time, relative to a base temperature. In this report, the base temperature used is 65 degrees Fahrenheit and the period of time is one year. The heating degree-days for a single day is the difference between the base temperature and the day's average temperature if the daily average is less than the base; it is 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. Annual heating degree-days averaged over 30 years from 1951 to 1980 is called Normal Heating Degree-Days. Average daily temperature is the mean of the maximum and minimum temperature for a 24-hour period. Heating degree-days can also be calculated using a base temperature other than 65 degrees. The computation is performed in an analogous manner.

Since the 1987 RECS, heating degree-days for households are taken from records of an appropriate nearby weather station. In previous RECS, weather data were assigned to households according to the NOAA division in which the household was located. (See Cooling Degree-Days (CDD) and 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, portable heater. The main space-heating equipment is reported as such even if it is temporarily out of order. A "cooking stove" may be used as the main space-heating equipment even though it was built for preparing food. (See also description of specific types of space-heating equipment, Central Warm-Air Furnace, Heat Pump, Built-In Electric Units, Steam or Hot-Water System, Floor, Wall or Pipeless Furnace, Heating Stove, Room Heater.)

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 chimney are considered heating stoves.



High Efficiency (Replacement Main Heating Equipment): The respondent's perception of the level of efficiency of new main heating equipment purchased since September 1, 1987. High efficiency was not defined.

High-Intensity Discharge (HID) Lamp: A lamp that produces light by passing electricity through gas, which causes the gas to glow. Examples of HID lamps are mercury vapor lamps, metal halide lamps, and high-pressure sodium lamps. HID lamps have extremely long life and emit far more lumens per fixture than do fluorescent lights.

Hispanic Descent: This, as the question on origin, was self-determined by the respondent. The respondent was asked, "Is the householder of Spanish or Hispanic origin or descent?" and the respondent's answer was recorded.

Hot-Deck Imputation: A statistical procedure for deriving a probable response to a questionnaire item concerning a household or vehicle, for which a response is missing. To perform the procedure, an analyst sorts the households or vehicles by variables related to the missing item. Thus, a series of sort categories are formed, which are internally homogeneous with respect to the sort variables. Within each category, households or vehicles for which the questionnaire item is not missing are randomly selected to serve as "donors" to supply values for the missing item of "recipient" households or vehicles. (See Imputation and Appendix A, "How the Survey Was Conducted.")

Hot Tub: Water-filled wood, plastic, or ceramic container in which up to 12 people can lounge. Normally equipped with a heater which heats the water from 80 degrees to 106 degrees Fahrenheit. It may also have

jets to bubble the water. An average-size hot tub holds 200-400 gallons of water. All reported hot tubs were assumed to include an electric pump. These 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 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. The household does not include persons who are normally members of the household but who were away from home as college students or members of the armed forces at the time of the contact. The household does not include persons temporarily visiting with the household if they have a place of residence elsewhere, persons who take their meals with the household but usually lodge or sleep elsewhere, domestic employees or other persons employed by the household who do not sleep in the same housing unit, or persons who are former members of the household, but have since become inmates of correction or penal institutions, mental institutions, homes for the aged or needy, homes or hospitals for the chronically ill or handicapped, nursing homes, convents or monasteries, or other places in which residents may remain for long periods of time. By definition, in the RECS, the number of households is the same as the number of occupied housing units. (See Primary Residence.)

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 such as prisons or nursing homes where ten or more unrelated persons live. A common dining area used by residents is an indication of group quarters. 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.)

Humidifier: A humidifier adds moisture to the air (often needed in winter when indoor air is very dry).

Humidity: The moisture content of air. Relative humidity is the ratio of the amount of water vapor actually present in the air to the greatest amount possible at the same temperature. (See Dehumidifier and Humidifier.)

Imputation: A statistical method used to fill in values for missing items, designed to minimize the bias of estimates. (See Hot-Deck Imputation and Appendix A, "How the Survey Was Conducted.")

Incandescent Lamps: Incandescent bulbs are the most common and least energy-efficient household lamps. Electricity runs through a tungsten filament that glows and produces a soft, warm light. Because so much of the energy used is lost as heat, these are highly inefficient sources of light. These common general-service bulbs emit light in all directions. Incandescent reflector lamps provide directed lighting used in track lights and outdoor spotlighting. Low-wattage incandescent bulbs are also available and are specifically suited for track lights, small fixtures and outdoor long-distance lighting.

The halogen lamp is a type of incandescent lamp made more efficient by the addition of a halogen gas, usually iodine or bromine. The gas suppresses tungsten filament evaporation by a chemical process that permits the filament to be operated at a higher temperature, increasing lamp efficiency.

Insulation: Any material or substance that provides a high resistance to the flow of heat from one surface to another. The different types include blanket or batt, foam, or loose fill which are used to reduce heat transfer by conduction. Dead air space is an insulating medium in storm windows and storms as it reduces passage of heat through conduction and convection. Reflective materials are used to reduce heat transfer by radiation. (See **Insulation Around Heating and/or Cooling Ducts** and **Insulation Around Water Heater and Insulation Around Hot-Water Pipes**.)

Insulation Around Heating and/or Cooling Ducts: Extra insulation around the heating and/or cooling ducts intended to reduce the loss of hot or cold air as it travels to different parts of the residence.

Insulation Around Hot-Water Pipes: Wrapping of insulating material around hot-water pipes to reduce the loss of heat through the pipes.

Insulation Around Water Heater: Blanket insulation wrapped around the water heater to reduce loss of heat. To qualify under this definition, this wrapping must be in addition to any insulation provided by the manufacturer.

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. Kerosene is used for cooking stoves or for space heating or water heating or for lighting equipment that uses wicks. It is sometimes sold under the names "range oil," "stove oil," or "coal oil." (See **Fuel**.)

Lamp: A term generally used to describe artificial light. The term is often used when referring to a "bulb" or "tube." (See **Lights**.)

Lights: For the RECS, all of the light bulbs controlled by one switch were counted as one light. For example, a chandelier with multiple lights controlled by one switch is counted as one light. A floor lamp with two separate globes or bulbs controlled by two separate switches would be counted as two lights. Indoor and outdoor lights were counted if they were under the control of the householder. This would exclude lights in the hallway of multifamily buildings. (See **Floodlights**, **Fluorescent**, **High-Intensity Discharge** and **Incandescent Lamps**.)

LIHEAP: See **Assistance for Heating in Winter**.

Liquefied Petroleum Gas (LPG): Any fuel gas supplied to a residence in liquid form, such as propane or butane. It is usually delivered by tank truck and stored near the residence in a tank or cylinder until used. Propane was the most common liquefied petroleum gas supplied to RECS households. (See **Fuel**.)

Load Control Program: A program in which the utility company offers a lower rate in return for having permission to turn off the air conditioner or water heater for short periods of time by remote control. This control allows the utility to reduce peak demand. (See **Peak Demand**.)

LPG: See **Liquefied Petroleum Gas**.

Main: In this report, main means *Used Most*, as in "Main Space-Heating Fuel," which is the fuel used most for space heating. (See **Used Most**.)

Mean Indoor Temperature: Is the "usual" temperature. If different sections of the house are kept at different temperatures, the reported temperature is for the section where the people are. A thermostat setting is accepted if the temperature is not known.

Metropolitan: See **Urban**.

Metropolitan Statistical Area (MSA): Areas defined by the U.S. Office of Management and Budget. An MSA is (1) a county or group of contiguous counties that contain at least one city of 50,000 inhabitants or more, or (2) an urbanized area of at least 50,000 inhabitants and a total MSA population of at least 100,000 (75,000 in New England). The contiguous counties are included in an MSA if, according to certain criteria, they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England, MSA's consist of towns and cities, rather than counties. (See Urban, Central City, Suburban, 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 a browning coil and convection heating as additional features.

Migratory Units: Housing units intended for occupancy by migratory workers employed in farm work during the crop season.

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.

MSA: See Metropolitan Statistical Area.

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 and 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 national coverage. (See Appendix A, "How the Survey Was Conducted.")

Natural Gas: Utility gas supplied by underground pipeline to individual housing units by a central utility company. It does not refer to privately-owned gas wells operated by the household, nor to LPG. (See Fuel.)

Nonmetropolitan: See Rural.

Normal Degree-Days: Annual cooling or heating degree-days averaged over 30 years (from 1951 to 1980) are called Normal Heating Degree-Days. (See Cooling Degree-Days (CDD) and Heating Degree-Days (HDD).)

Occupied Housing Unit: A unit in which someone was living as his or her usual or permanent place of residence when the first RECS field contact was made. (See Housing Unit.)

Origin: The primary ethnic background of the person considered to be the householder as determined by the respondent. Each respondent was asked, "Which of the groups on this exhibit best describes the householder?" The groups included: white, black or Negro, American Indian, Alaskan native, Asian, and Pacific Islander. The word "race" was not used in either the questionnaire or the instructions. (See Hispanic Descent.)

Outside Central City: See Suburban.

Oven: An appliance which is an enclosed compartment supplied with heat and used for cooking food. Toaster ovens are not considered ovens for this survey. For this survey, the range stove top or burners and the oven are considered two separate appliances, although they are often purchased as one appliance. (See Appliances.)

Owned/Rented: The relationship of a housing unit's occupants to the structure itself, not the land on which the structure is located. "Owned" means the owner or co-owner is a member of the household and the housing unit is either fully paid for or mortgaged. A household is classified "renter" even if the rent is paid by someone not living in the unit. "Rent free" means the unit is not owned or being bought and no money is paid or contracted for rent. Such units are usually provided in exchange for services rendered or as an allowance or favor from a relative or friend not living in the unit. Unless shown separately, rent-free households are grouped with rented households.

Ownership: See Owned/Rented.

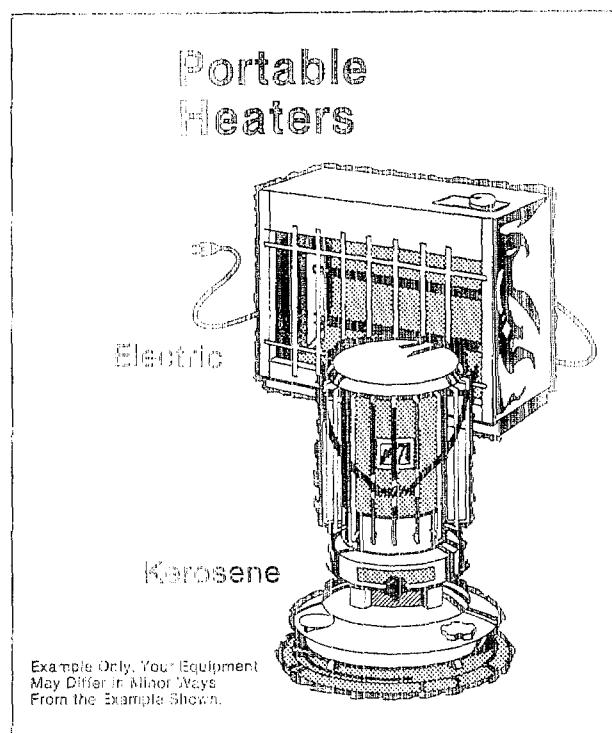
Passive Solar: A system in which solar energy alone is used for the transfer of thermal energy. Pumps, blowers, or other heat transfer devices which use energy other than solar are not used. (See Active Solar.)

Peak Demand: The maximum rate of energy consumption per unit time over a period of measurement. (See Demand.)

Perceptions of Householders: Items in which the opinions of the respondent were being sought, in order to gain insight into particular energy-related behavior. Technical definitions were not used as prompts by the interviewers, nor was the information provided *verified* by the interviewer. (See Adequacy of Insulation and High Efficiency (Replacement Main Heating Equipment).)

Personal Computer: A microcomputer for producing written, programmed or coded material, playing games, or doing calculations; included as an appliance in RECS.

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.

Portable Fan: Box fans, oscillating fans, table or floor fans, or other fans that can be moved. (See Whole-House Fan, Exhaust Fan, Window or Ceiling Fan and Furnace Fan.)

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. (See Eligible for Federal Assistance.)

Primary Residence: A housing unit in which a householder spends the largest part of the calendar year; it is the householder's usual or permanent 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, Migratory Unit, Seasonal Unit, Year-Round Unit, and Second Home.)

Primary Sampling Unit (PSU): A sampling unit selected at the first stage in multistage area probability sampling. A PSU typically consists of one to several contiguous counties—for example, a metropolitan area with surrounding suburban counties. The approximately 3,100 counties and independent cities of the contiguous United States were grouped into about 1,800 PSU's by a procedure similar to the one used by the Census Bureau for its Current Population Survey. PSU's can be composed of one or more MSA's or can be composed of rural counties. (See Metropolitan Statistical Area and Appendix A, "How the Survey Was Conducted.")

Propane: See Liquefied Petroleum Gas.

PSU: See Primary Sampling Unit (PSU).

Race: See Origin.

Radiator: A heating unit usually exposed to view within the room or space to be heated; it transfers heat by radiation to objects within visible range and by conduction to the surrounding air, which in turn is circulated by natural convection; usually fed by steam or hot water.

Range Top: The range burners or stove top and the oven are considered two separate appliances in this survey. Counted also with range tops are stand-alone "cock tops." (See Appliances.)

Rebate Program: A utility company-sponsored conservation program whereby the utility company returns a portion of the purchase price or cost when a more energy-efficient refrigerator, water heater, air conditioner, or other appliance is purchased.

Reflective Film: Transparent covering for glass that helps keep out heat from the sun.

Refrigeration 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 "refrigerant" is a substance that changes between liquid and gaseous states under desirable temperature and pressure conditions.) Heat from the compressed liquid is removed and discharged from the unit, and the refrigerant then evaporates when pressure is reduced. The refrigerant picks up heat as it evaporates and it returns to the compressor to repeat the cycle.

Refrigerator: 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 is used as the imputed value for the missing variable. (See **Imputation**.)

Relative Standard Error: See **RSE** or **Relative Standard Error**.

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, and solar thermal energy.

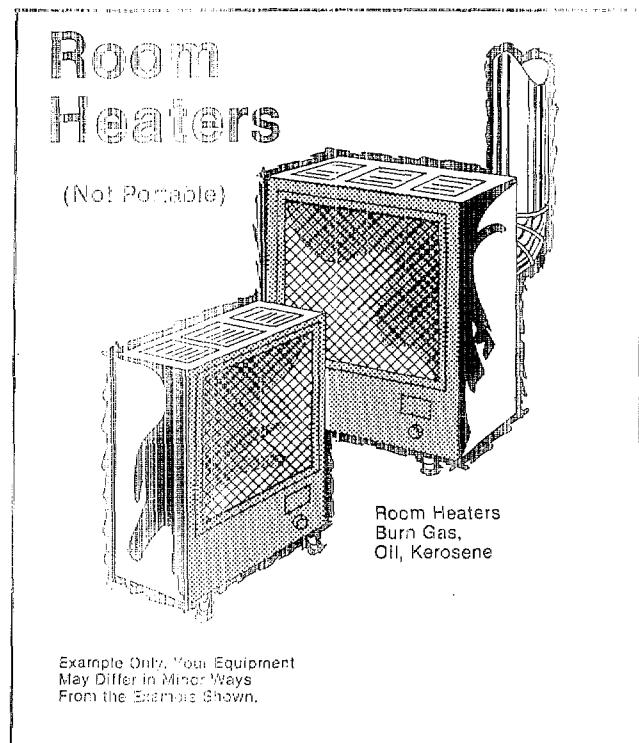
Rent: See **Owned/Rented**.

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**.)

Roof Insulation: Insulating materials placed underneath the roof or on the roof.

Room Air Conditioner: Air-conditioning units that typically fit into the window or wall and are designed to cool only one room. (See **Air Conditioning**.)

Room Heater Burning Gas, Oil, Kerosene: Any of the following 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 living unit. Whole rooms are rooms such as living rooms, dining rooms, bedrooms, kitchens, lodgers' rooms, finished basements or attic rooms, recreation rooms, and permanently enclosed sun porches that are used year-round. Rooms used for offices by a person living in the unit are included in this survey. "Finished" means that the ceiling and walls are covered with finishing materials.

Not considered to be rooms in this survey are bathrooms, halls, foyers, or vestibules, balconies, closets, alcoves, pantries, strip or pullman kitchens, laundry or furnace rooms, unfinished attics or basements, open porches, and unfinished space used for storage.

A partially divided room, such as a dinette next to a kitchen or a living room, is considered a separate room only if there is a partition from floor to ceiling--but not if the partition consists solely of shelves or cabinets. If a room is used by occupants of more than one unit, the room is included with the unit from which it is most easily reached. (See Bedroom and Bathroom.)

RSE Column Factor: An adjustment factor that appears above each column of the published tables and is used to compute RSE's. For a survey estimate in a particular row and column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that cell. (See RSE or Relative Standard Error, RSE Row Factor, and the "Generalized Variances" section of Appendix B, "Quality of the Data.")

RSE or Relative Standard Error: A measure of the reliability or precision on a percentage scale of a survey statistic. Variability occurs in survey statistics because the different samples that could be drawn would each produce different values for the survey statistics. The RSE is defined as the standard error of a survey estimate, divided by the survey estimate and multiplied by 100. (Standard error is the square root of the variance.) For example, an RSE of 50 percent means that the standard error is half as large as the survey estimate. (See Appendix B, "Quality of the Data.")

RSE Row Factor: A factor that appears to the right of each row of the published tables and is used to compute RSE's. For a survey estimate in a particular row and column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that particular cell. The row factor is equal to the geometric mean of the RSE's in a particular row of the tables. (See RSE or Relative Standard Error, RSE Column Factor, and the "Generalized Variances" section of Appendix B, "Quality of the Data.")

Rural: Households not located within Metropolitan Statistical Areas as defined by the U.S. Office of Management and Budget. In this report these are households which are not located in urban areas. In previous RECS reports, rural areas were referred to as "nonmetropolitan" areas. (See Metropolitan Statistical Area and Urban.)

Sampling: The procedure used to select housing units for interview from the population of all residential housing units in the United States. (See Multistage Area Probability Sample and Appendix A, "How the Survey Was Conducted.")

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 to take effect in 1992. The average heat pump or central air conditioner sold in 1986 had an SEER of about 9.

Seasonal Units: Housing units intended for occupancy at only certain seasons of the year. Seasonal units are not usually included in the RECS count of occupied housing units. Seasonal units include units intended only for recreational use, such as beach cottages and hunting cabins. It is not likely that this type of unit will be the usual residence for a household, since it may not be fit for living quarters for more than half of the year. (See Primary Residence.)

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. When no secondary space-heating equipment is used, a secondary space-heating fuel that is used in the main space-heating equipment is not included in the tabulations. This occurs when, for example, wood and coal are both used in a furnace but wood is named the main space-heating fuel. Coal, in this case, is not tabulated.

Second Home: By definition, a second home is not the primary residence of a householder. Second homes are not included in the RECS count of occupied housing units. (See Housing Unit, Primary Residence, and Seasonal Unit.)

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 unit that provides living space for one household or family. The structure may be detached or attached to another unit. Attached houses are considered single-family houses as long as the house itself is not divided into more than one housing unit and has an independent outside entrance. A single-family house is contained within walls that go from the basement (or the ground floor, if there is no basement) to the roof. (A mobile home with one or more rooms added is classified as a single-family home.) 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 that go from the basement to the roof to separate the units.

Solar: In this report, all solar energy is considered to be active solar. (See Active Solar.)

Solar Collector: A device designed to receive solar radiation and convert it into thermal energy. Normally, a solar thermal collector includes a frame, glazing, and an absorber, together with appropriate insulation. The heat collected by the solar thermal collector may be used immediately or stored for later use. In RECS, solar collectors are used for space heating (main or secondary); water heating (main or secondary); and heating a swimming pool, hot tub, spa, or jacuzzi.

Spa: See Hot Tub.

Space Heating: The use of energy to generate heat for warmth in housing units using space-heating equipment. The equipment could be the main space-heating equipment or secondary space-heating equipment. It does not include the use of energy to operate appliances (such as lights, televisions, and refrigerators) that give off heat as a byproduct. (See Heating Equipment, Heated, and Floorspace).

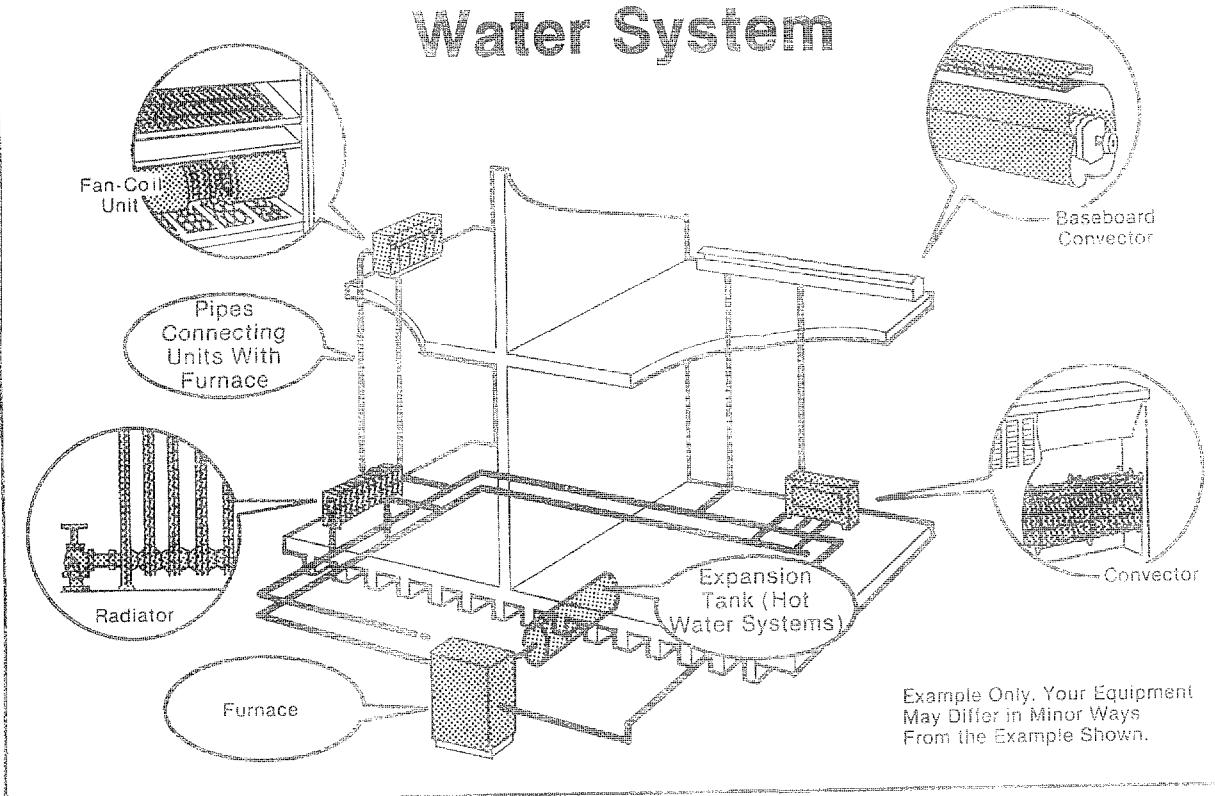
Space-Heating Equipment: See Heating Equipment.

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.

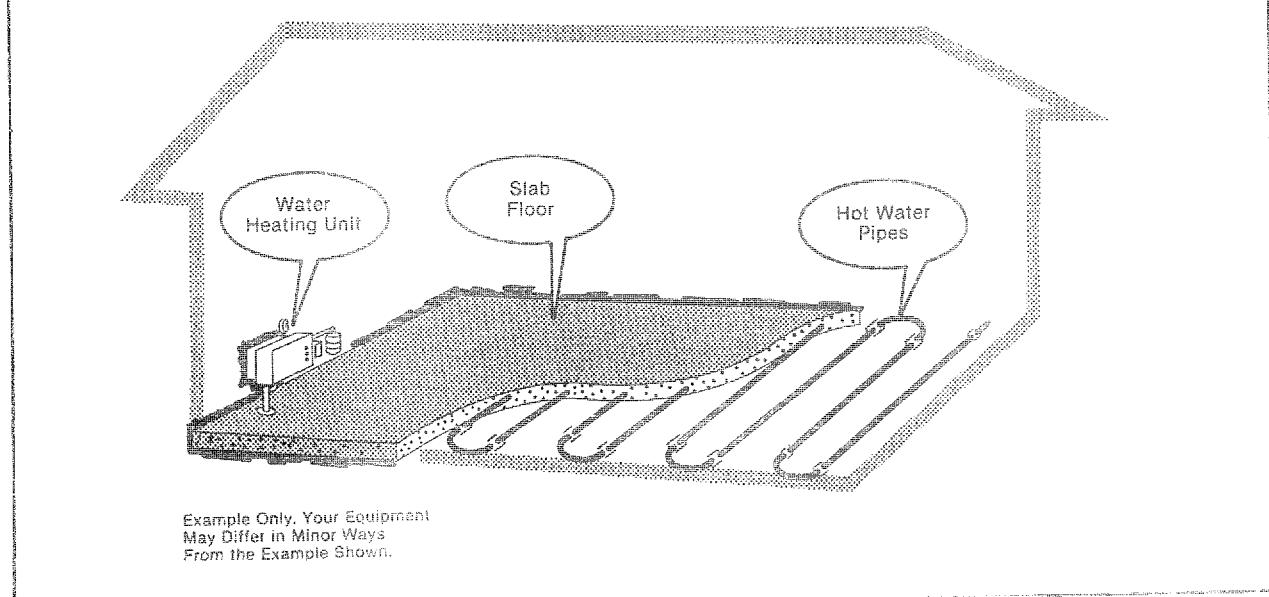
Square Feet: See Floorspace.

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 laid in a concrete slab floor.

Steam or Hot Water System



Hot Water Pipes Running Through 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.

Storm Door: A second door installed outside or inside a prime door creating an insulating air space. Included are sliding glass doors made of double glass or of insulating glass such as thermopane; sliding glass doors with glass or plexiglass placed on either the outside or inside of the door to create an insulating air space are also considered storm doors. Not included are doors or sliding glass doors covered by plastic sheets or doors with storm window covering on just the glass portion of the door.

Storm Window: A window or glazing material placed outside or inside a window creating an insulating air space. Windows with double glass or thermopanes are considered storm windows. Plastic material over windows is counted as a storm window if the same plastic material can be used year after year. If the plastic material must be put up new each year, it is not counted as a storm window. Glass or plexiglass placed over windows on either the interior or exterior side are counted as storm windows.

Stove: See Heating Stove and Cooking Stove.

Structure: One of four categories used to categorize the building in which the housing unit was located. For the RECS, the categories were single-family, multifamily (2-4 units), multifamily (5 or more units), and mobile home. (See Single-Family, Multifamily, and Mobile Home.)

Suburban: Those parts of the MSA that are not designated as central city. In previous RECS reports, suburban areas were referred to as "outside central city." (See Central City and Rural.)

Swamp Cooler: See Evaporative Cooler.

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: All reported swimming pools were assumed to have an electric pump for filtering and circulating the water. (See Swimming Pool Heater.)

Temperature: Respondent 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 utilized. If the heat is turned off upstairs during the day because the family is downstairs, the downstairs temperature is reported. If the respondent does not know the temperature, the thermostat setting is requested.

Total Floorspace: Floorspace summed or aggregated over all households in a category (such as households in the United States). In this survey, aggregate floorspace was estimated by multiplying each household's square footage by its weight, then summing over all sample households of interest to represent nationwide totals. (See Floorspace and Weight.)

Tuneup of Main Heating Equipment: A cleaning or maintenance check of the main space-heating equipment.

Urban: Urban refers to a group of households located within Metropolitan Statistical Areas (MSA's) as defined by the U.S. Office of Management and Budget. For this report urban is composed of central city and suburban areas. In previous RECS reports, the equivalent terms were central city and outside central city. An MSA is (1) a county or group of contiguous counties that contain at least one city of 50,000 inhabitants or more, or (2) an urbanized area of at least 50,000 inhabitants and a total MSA population of at least 100,000 (75,000 in New England). The contiguous counties are included in an MSA if, according to certain criteria, they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England, MSA's consist of towns and cities rather than counties. (See Central City, Suburban, and Rural.)

Urban Status: Refers to geographic location of the households in relationship to Metropolitan Statistical Areas (MSA's). (See Urban, Rural, Central City, and Suburban.)

Used Most: For this report, used more days in the year. When two or more fuels are used for the same purpose (such as to heat water or heat a swimming pool), the fuel used more days is the one "used most." When the household uses more than one refrigerator, freezer, window/wall air conditioning unit, or motor vehicle, the one used more days is the one "used most."

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 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.

Wall Insulation: Insulating materials within or on the walls between heated areas of the building and unheated areas or the outside. The walls may separate air-conditioned areas from areas not air-conditioned.

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 in Furnace: Some furnaces provide hot water as well as heat the home. The water is heated by a coil that is part of the furnace. There is no separate hot water tank.

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 Blanket: See Insulation Around Water Heater.

Water Heater Size: The RECS asked households the size of their water heater tank. Three categories were provided, which were described by a range of gallon sizes: Small (30 gallons or less), Medium (31 to 49 gallons), Large (50 gallons or more). Households were not asked this question if they shared a water heater with other housing units or if their water heater was part of their furnace. (See Water Heated in Furnace.)

Water-Heating Fuel: The fuel used to heat bath and wash water. Households that did not have running water in the home were also asked what fuel was used for heating water. The hot water may have been available anywhere in the same building as the respondent's living quarters--in a hallway, in a room used by several units in the building, in the basement, or in an enclosed porch--provided the respondent's household had access to it.

Weather Stripping: Any of several kinds of crack-filling material around any windows or doors to the outside used to reduce the passage of air and moisture around movable parts of a door or window. Weather stripping is available in strips or rolls of metal, vinyl, or foam rubber and can be applied on the inside or outside of a building.

Weight: The number of households in the United States that a particular sample unit represents. To estimate the total value of an attribute (such as Floorspace) in the U.S. residential population as a whole, each sample household's value is multiplied by the household's weight. Summing the weighted sample values provides an estimate of the nationwide total. (See Multistage Area Probability Sample, Total Floorspace and Appendix B, "Quality of the Data.")

Well Pump: See Electric Pump for Well Water.

Whole-House Cooling Fan: A very large fan located in an upstairs ceiling or side wall that pulls air through the house and out through the attic. The attic must have good air circulation--with fairly large vents--for such a fan to work well. (See Fan.)

Window or Ceiling Fan: Fans located in the window or installed on the ceiling. Does not include portable table or floor fans. (See Appliances and Fan.)

Windows: Openings in the building envelope that contain framed glass. To be counted for RECS, the interior space must be heated; windows in unheated spaces such as a garage or unheated basement are not counted. Generally, each window that opens separately is counted as one window. Panels of glass in a large window are not counted separately unless they open separately. Double-hung slider windows count as one window. Windows (glass panels) in doors are not counted.

Wood-Burning Stove: See Heating Stove.

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 Units and Seasonal Units.)

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