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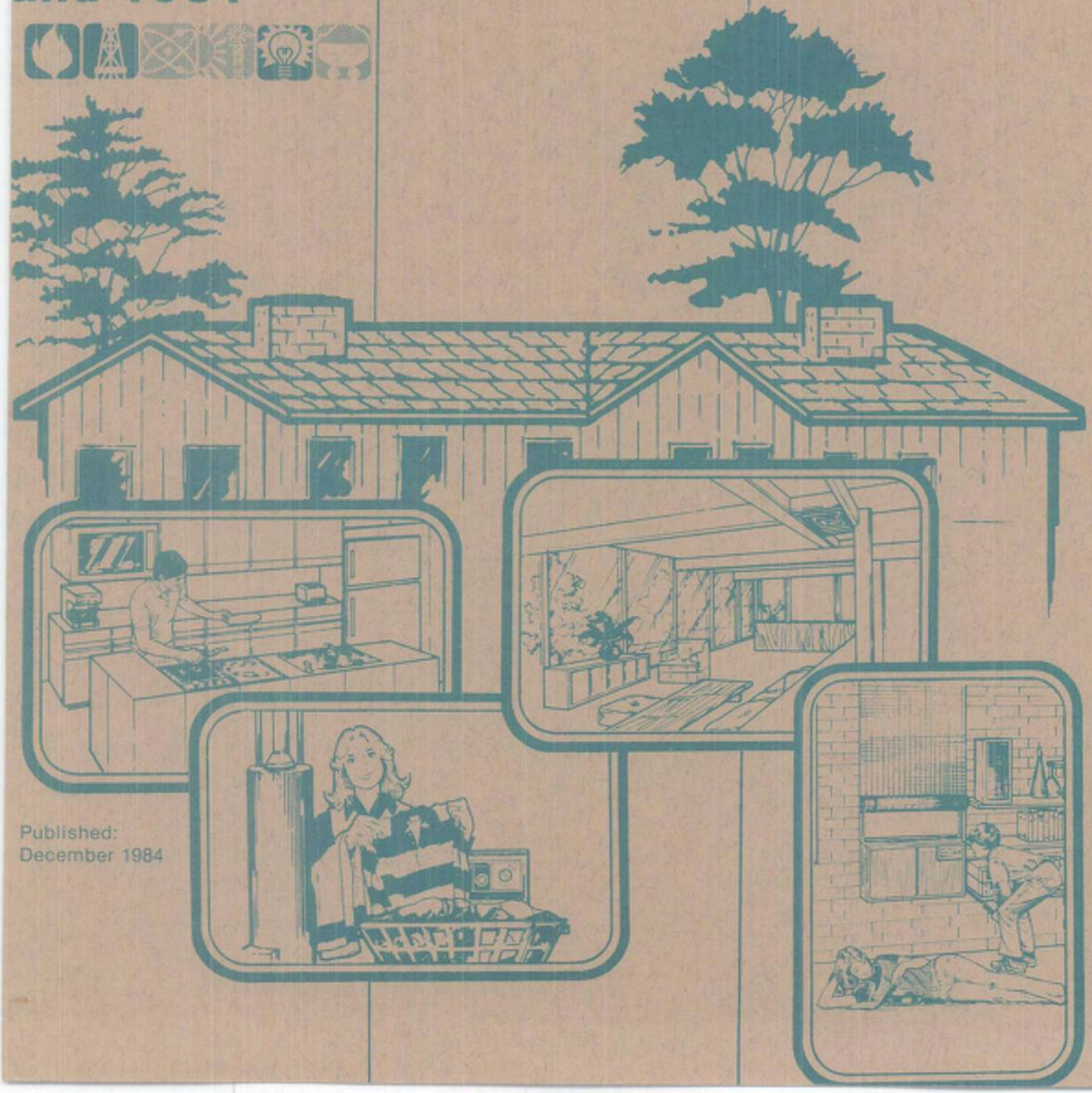
Residential Energy Consumption and Expenditures by End Use for 1978, 1980, and 1981

Energy Information Administration
Washington, D.C.



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Residential Energy Consumption and Expenditures by End Use for 1978, 1980, and 1981

Energy Information Administration
Office of Energy Markets and End Use
Energy End Use Division
U.S. Department of Energy
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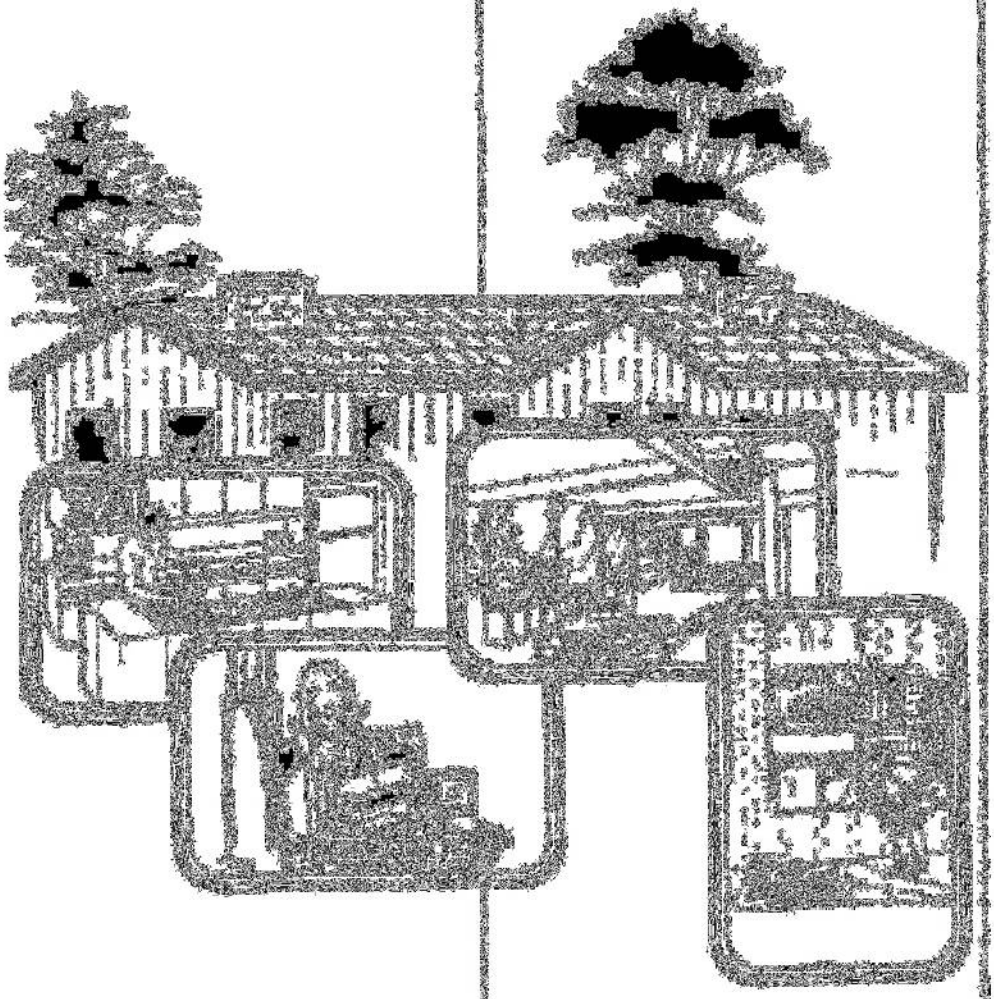

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Summary of Findings

Introduction

There is an increasing interest in information on the amount and cost of residential energy that is used for space heating, air conditioning, water heating, and appliance use. This report, an abbreviation of a previous report,[1] in the first in a series to provide household energy usage by end use.

The end-use estimates of the average household consumption and expenditures are statistical estimates based on the 1978, 1979, and 1980 Residential Energy Consumption Survey (RECS)[2] conducted by the Energy Information Administration (EIA) before they ran natural disconnections. The end-use estimates were derived by developing a set of equations that predict the percentage of energy used for each household end-use category. The equations were applied separately to each household and by each fuel. The resulting household end-use estimates were compared by various subsets of the average end-use consumption and expenditures on a national and regional basis. (Households in Alaska and Hawaii were included in the 1978 survey but not included in the 1979 survey, resulting in a change in sample population in the base data 1978 through 1980.) The accuracy and potential biases of these end-use estimates vary depending on the fuel type, on the year of the survey, and on the type of end use.[3]

The three RECS surveys were cross sectional surveys; thus, they did not have any information on changes. Because households were surveyed once only, any projections of the average consumption and expenditures for similar populations at different times are not made. The problem with this approach is that the population is changing over time. This is particularly true when considering only households living in dwellings that have been built since 1970. The reader should be cautioned that throughout this report 1978 refers to the period April 1978 through March 1979; 1979 refers to April 1979 through March 1980; and 1980 refers to April 1980 through March 1981. Data for April 1978 through March 1980 were not included in this report because of an insufficient listing of appliances.

The figures and tables presented show the amount and the type of energy consumed, plus the cost of this energy. Regional averages are given as well as averages for various categories including region, size and age of dwelling, number of housing characteristics, and income. The majority of the report focuses on the amount and the cost of natural gas and electricity used for space heating. However, data on other end uses and fuels are also presented.

The first section of this report discusses some of the significant findings. The second section discusses energy stocks by end use for all fuels used in the home for 1978, 1980, and 1981. The third and fourth sections summarize the electricity consumption and expenditures and natural gas consumption and expenditures, respectively.

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[1] Residential Energy Consumption Survey: Household Analysis of Energy Consumption and Expenditures, Preliminary Publication, E.I., October 1982.

[2] Residential Energy Consumption Surveys: April 1978 through March 1979, April 1979 through March 1980, April 1980 through March 1981. It is important to note that the surveys are cross sectional and not longitudinally done, thus any inherent bias of households is made worse.

[3] See Appendix B, "Limitations of Data" for further discussion of sampling and nonsampling errors.

[4] Standard errors for the estimates in the significant findings section can be found in various sections throughout this report and in the Residential Energy Consumption Surveys 1978 through 1981. For a discussion on the computation of the standard error of the reported change, see Appendix B.

Summary of Findings (Continued)

Significant Findings

The average U.S. energy consumption per household for all fuels used in the home declined 24 million Btu from 138 million Btu in 1978 to 114 million Btu in 1981. The primary cause of the decline in overall energy consumption was the amount of energy used for space heating. Although consumption for all fuels declined during this period, the drop was particularly evident from 1978 through 1980.

From 1978 through 1981, households experienced, on the average, a 28 percent decline in the amount of energy used to heat their homes. Even after adjusting for a difference in weather, space heating consumption still declined, on the average, 17 percent for natural gas heated homes and 31 percent for electrically heated homes. The largest decline in space heating consumption was among households that heated with electricity. These households experienced, on the average, a 39 percent decline from 31.6 million Btu in 1978 to 19.2 million Btu in 1981. The second largest decline, 27 percent, occurred among homes that heated with fuel oil. Among natural gas heated homes, there was, on an average, a 27 percent decline in space heating consumption from 1978 through 1980. Approximately a 10 percent increase then occurred from 1980 through 1981, giving an overall decline of about 19 percent from 1978 through 1981. The cost of space heating, however, increased from 1978 through 1981. Among households whose main heating fuel was natural gas, the cost of space heating increased, on the average, by 35 percent, while the cost among households heating with electricity only increased, on the average, by 7 percent. The largest increase in space heating costs occurred among homes where the main heating fuel was fuel oil. The following table shows that fuel oil costs increased by $309 from 1978 through 1981.

Table S1. Average Household Consumption and Expenditures for Space Heating by Main Heating Fuel

	Consumption (in million Btu)			Expenditures (in dollars)		
	1978	1980	1981	1978	1980	1981
Electricity	32(2.2)	28(1.6)	19(1.3)	269(18)	241(15)	289(20)
Natural Gas	108(3.4)	74(3.3)	62(1.7)	271 (7)	285 (5)	367 (7)
Fuel Oil/ Kerosene	121(4.8)	96(2.4)	86(2.8)	473(19)	573(20)	782(25)

Note: The value in parenthesis represents one standard error of the statistic.
Source: Tables 1, 3, 5, 11, 13, 15, 17, 23, 25, 27, 29, 35.

From 1978 through 1981, electrically heated households in the West[1] experienced the largest decline in space heating consumption with, on the average, a 58 percent decrease in electricity. However, it is important to note that there was not a steady decline. From 1978 through 1980, there was a 66 percent decrease in electricity consumption, then from 1980 through 1981, consumption increased by 21 percent. Homes heated by natural gas in the West reduced their space heating consumption by 30 percent from 1978 through 1981. In 1981, homes in the Northeast heated by electricity used 35 percent more Btu for space heating than

[1] Appendix D shows the States by region.

Summary of Findings (Continued)

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Summary of Findings (Continued)

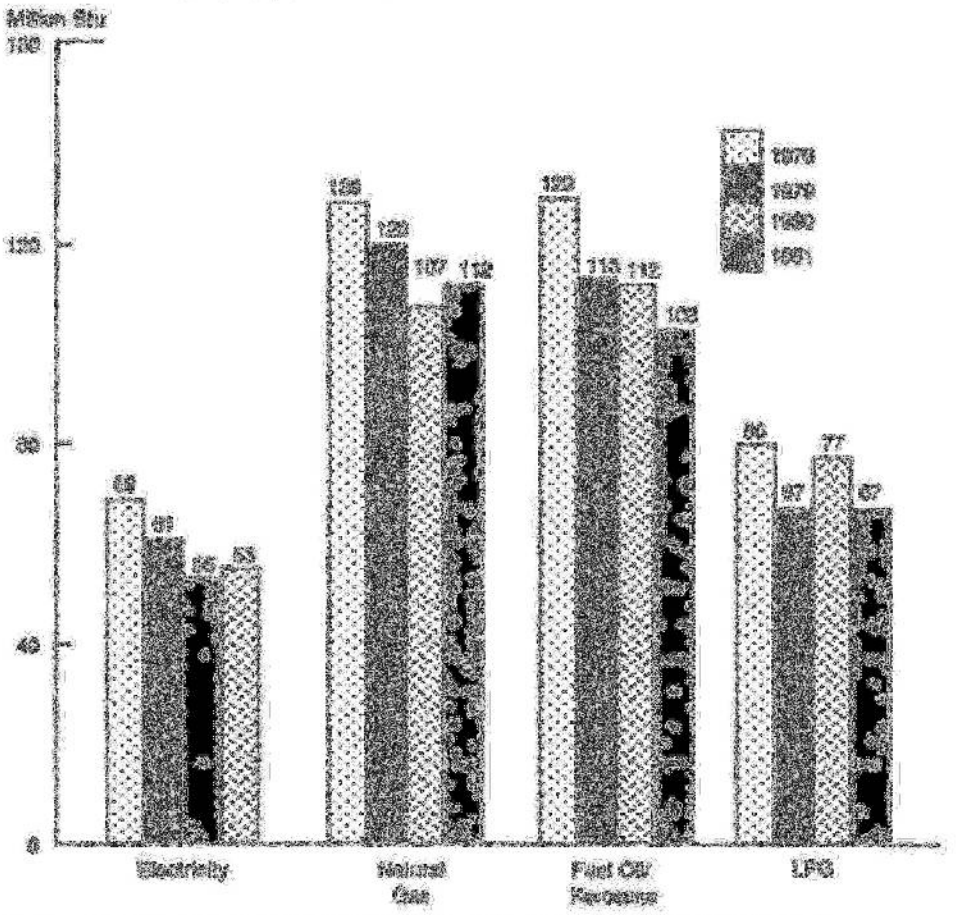
Energy End Use Trends

Average Household Consumption

The average energy consumption per household decreased from 1978 through 1981 by 17 (3) percent, while average energy expenditures during the same period increased by 41 (2) percent. Although all fuels showed a decline in consumption from 1978 through 1981, the largest decrease was in electricity consumption.

Figure 1 shows that among households whose main heating fuel was electricity there was, on the average, a 23 (5)[1] percent decline in total electricity consumption from 1978 through 1981. During the same time, the average total consumption of natural gas among households heated by natural gas declined by 12 (3) percent, while average consumption for fuel oil in those households heated by fuel oil declined by 30 (4) percent.

Figure 1. Average Household Energy Consumption by Main Heating Fuel 1978, 1979, 1980, and 1981 (Million Btu)



Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys.

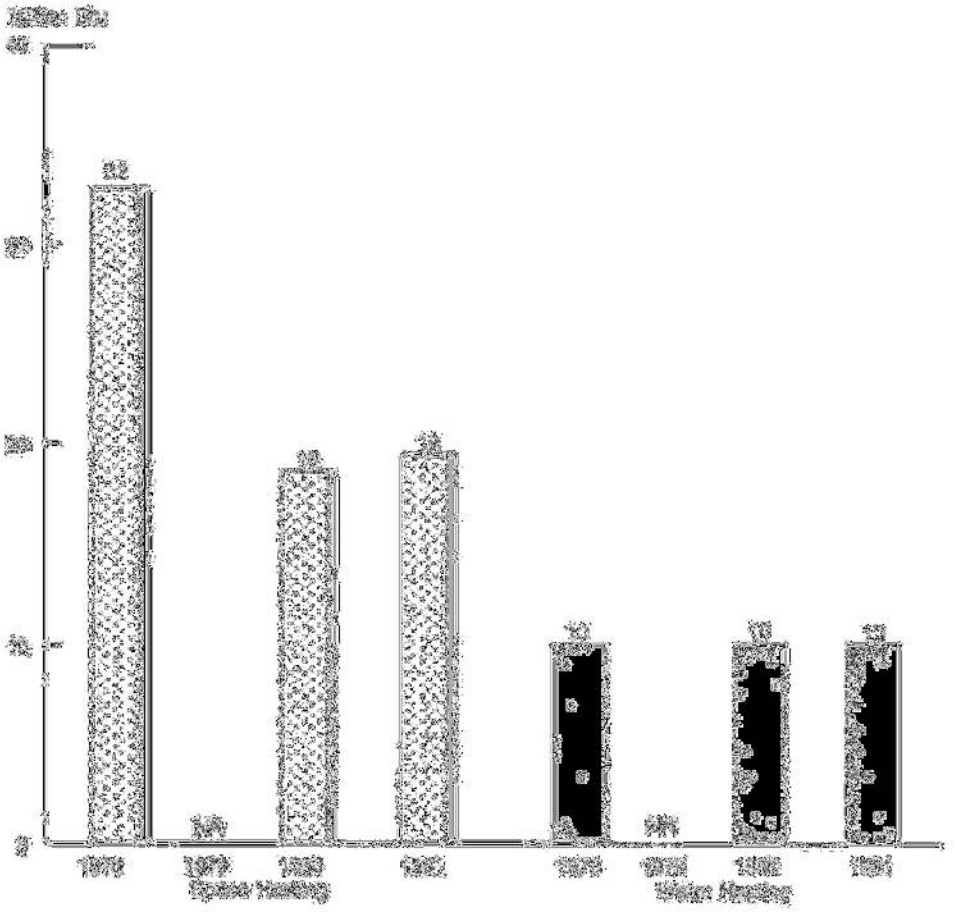
Note: Energy consumption pertains to electricity consumption for households whose main heating fuel is electricity, natural gas for households whose main heating fuel is natural gas, and so forth.

[1]The value in parenthesis represents one standard error of the statistic. The standard error is measure of the variability of an estimate.

Space Heating Consumption

The decrease in consumption from 1978 through 1982 is primarily attributed to a decline in the amount of energy used for space heating, rather than a change in the amount of energy used for other end uses such as cooking, water heating, and miscellaneous use. Additionally, it appears that the greatest portion of this decline occurred from 1981 through 1982. Figure 4 shows that from 1978 through 1981, there was approximately a 22 (X) percent decrease in electricity used for space heating among homes heated by electricity, while during this same time, there was no significant change in the amount of electricity used for water heating.

Figure 4. Average Household Electricity Consumption for Space Heating and Water Heating When Main Heating Fuel is Electricity (Million Btu)



Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys.

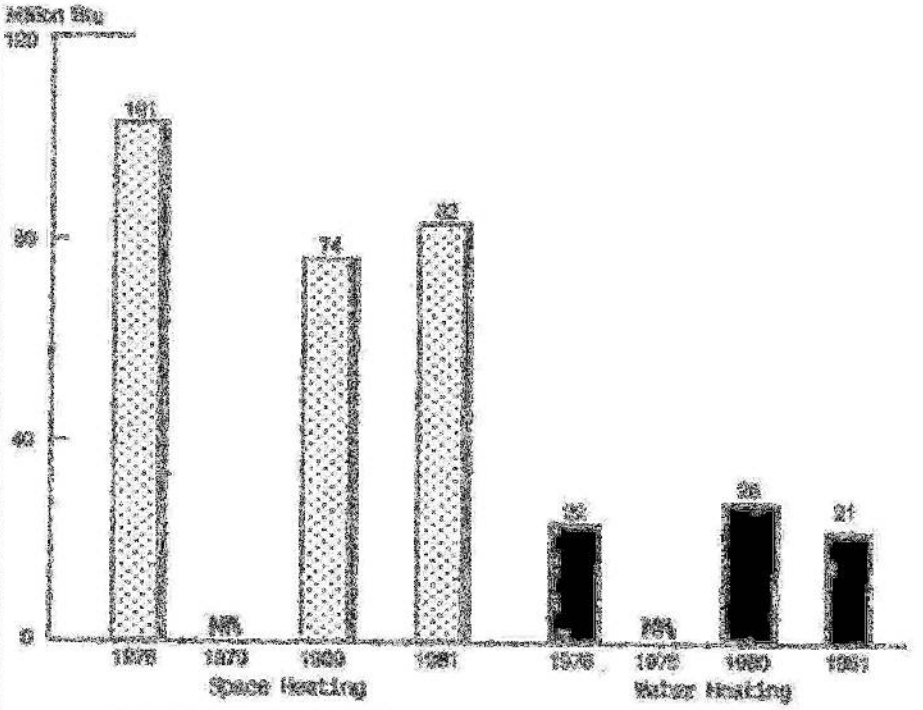
[1] Miscellaneous use refers to other uses such as lighting, cooking appliances use.

Residential Energy Consumption and Expenditures by End Use for 1978, 1979, and 1980, Energy Information Administration.

Summary of Findings (Continued)

Among homes heated by natural gas, approximately 101 (3.4) million Btu of natural gas was used for space heating in 1978. Figure 3 shows that like electricity, the largest decrease in gas consumption was in space heating with a 15 (2) percent decline from 1978 through 1981. However, unlike electricity, the estimated amount of natural gas used for water heating did not remain stable. From 1978 through 1980, water heating consumption increased by approximately 18 (3) percent and then decreased by approximately 17 (2) percent from 1980 through 1981.[3] The average consumption for household's heated with

Figure 3. Average Household Natural Gas Consumption for Space Heating and Water Heating When Main Heating Fuel is Natural Gas (Million Btu)

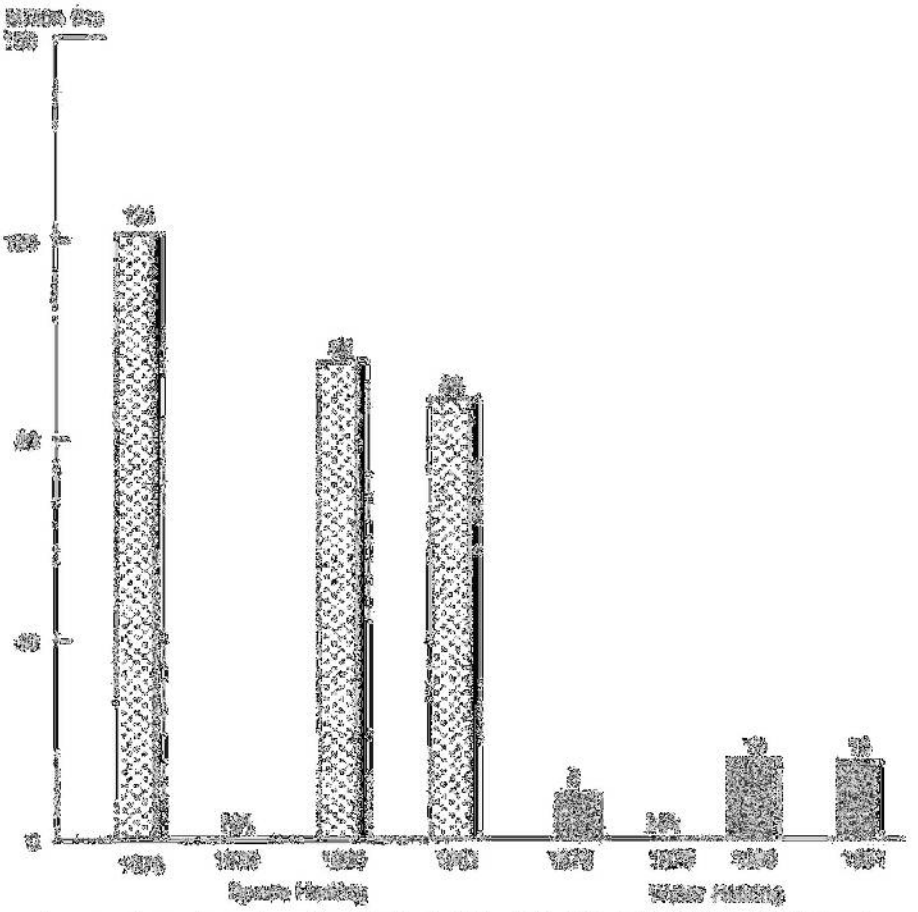


Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys.

[3] See Appendix C "Limitations of the Data" for a discussion on the variability of the amount of natural gas consumed for water heating.

fuel oil or kerosene during the most period (1978 through 1980) also showed a decrease in the second used for space heating but an increase in the second used for water heating (Figure 4).

Figure 4. Average Household Fuel Oil or Kerosene Consumption for Space Heating and Water Heating When Main Heating Fuel is Fuel Oil or Kerosene (Million Btu)



Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys.

The differences in the number of heating degree-days for 1978, 1980, and 1981 may have influenced energy consumption levels, particularly for space heating. The following table shows average household consumption for space heating per heating degree-day.[1] The data suggest that even after controlling for the weather, electricity consumption might declined by 21 (2) percent, natural gas consumption declined by 17 (2) percent, and fuel oil or kerosene consumption declined by 28 (4) percent. This suggests that factors other than weather may have also influenced the decrease in consumption from 1978 through 1981.

[1] Heating degree-days are base 65 degrees Fahrenheit. See appendix A, "Methodology" for a discussion of how consumption was adjusted for heating degree-days.

Table T1. Average Household Energy Consumption for Space Heating per Heating Degree-Day by Main Heating Fuel (Thousand Btu)

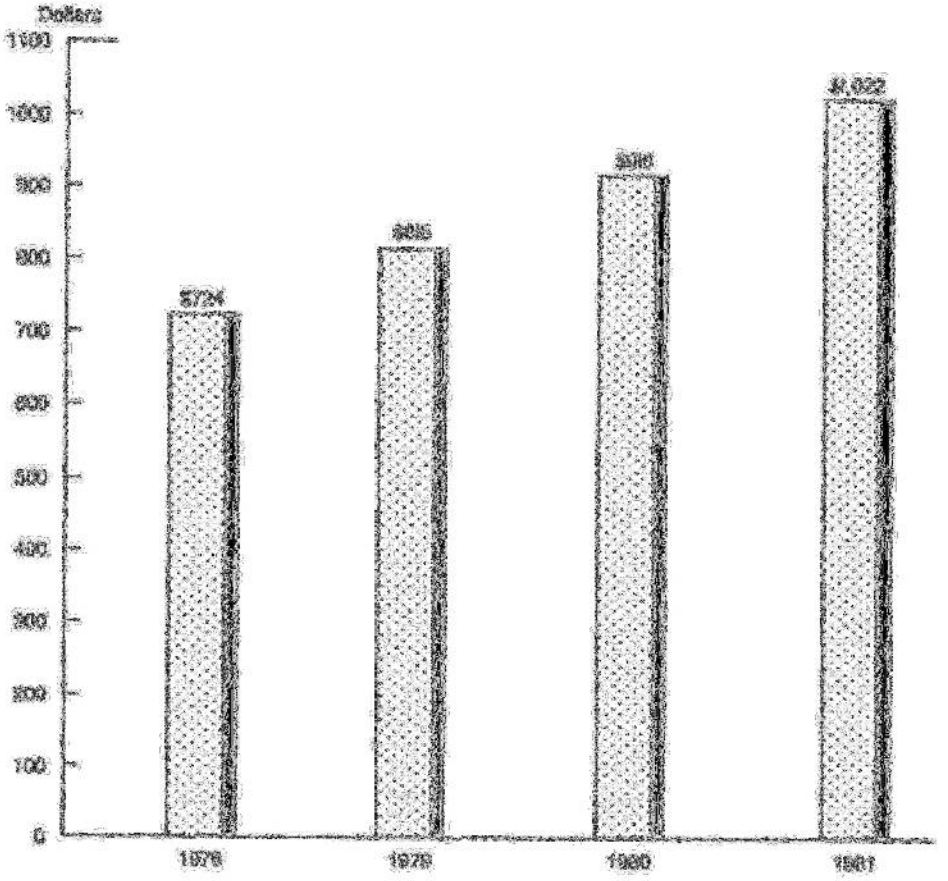
Year	Electricity	Natural Gas	Fuel Oil/ Kerosene
1978	7.3 (.4)	20.4 (.5)	22.7 (.7)
1980	4.6 (.2)	15.6 (.2)	17.6 (.4)
1981	5.2 (.2)	17.0 (.3)	16.7 (1.0)

Note: The value in parenthesis represents one standard error of the statistic.
Source: Energy Information Administration, 1978, 1980, 1981, Residential Energy Consumption Surveys.

Average Household Expenditures

From 1978 through 1981, average household energy consumption decreased while the cost of energy steadily increased. Figure 5 shows that in 1978, the average household spent approximately $734 (13) for all fuels. This amount increased to $916 (14) in 1980 and $1,022 (17) in 1981. The average cost for space heating increased 28 (3) percent from $315 (8) to $403 (12) between 1978 and 1981.

Figure 5. Average Household Energy Expenditures for 1978, 1979, 1980, and 1981 (Dollars)



Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys.
Note: 1979 figures are included in the overall energy expenditures. The data, however, were incomplete for separate end-use estimates.

Summary of Findings (Continued)

Among homes that were heated by natural gas, the average cost for space heating decreased by approximately 37 [illegible] percent, from $[illegible] [illegible] in 1978 to $[illegible] [illegible] in 1981. The greatest proportion of this increase occurred from 1980 through 1981. The average electricity cost for space heating among homes heated by electricity increased by 7 (5) percent from $[illegible] [illegible] in 1978 to $[illegible] [illegible] in 1981. (This increase was not statistically significant.) The largest increase in costs occurred among homes heated by fuel oil or kerosene. In these homes, the average household's space heating expenditures increased 45 [illegible] percent from $[illegible] [illegible] in 1978 to $[illegible] [illegible] in 1981. This increase occurred primarily from 1978 through 1980 (Table T2).

Table T2. Average Household Consumption and Expenditures for Space Heating by Main Heating Fuel (Percent Difference 1978-1981, 1978-1980, 1980-1981)

	Consumption (Percent Difference)			Expenditures (Percent Difference)		
	1978-1981	1978-1980	1980-1981	1978-1981	1978-1980	1980-1981
Electricity	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Natural Gas	[illegible]	[illegible]	[illegible]	[illegible]	+5 [illegible]	[illegible]
Fuel Oil/ Kerosene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Note: The value in parenthesis represents one standard error of the statistic.
Source: Tables 1, 4, 5, 11, 14, 12, 15, 23, 25, 27, 28, 35.

Electricity Consumption and Expenditures

Space Heating

From 1978 through 1981, there was approximately a 30 [illegible] percent decline in electricity consumption for space heating in the West among households where the main heating fuel was electricity. This decline occurred from 1978 through 1980 with a 44 [illegible] percent reduction in consumption. Then, from 1980 through 1981, electricity used for space heating increased by approximately 22 [illegible] percent. Table E1 shows that during the same period (1978 through 1981) there was about a 37 [illegible] percent decrease in the amount of electricity consumed for space heating in the North Central region and a 34 (11) percent decrease in the South. Electricity consumption for space heating did not significantly change in the Northeast from 1978 through 1981.

Table E1. Average Household Electricity Consumption and Expenditures for Space Heating When Main Heating Fuel Is Electricity by Region

	Consumption (Million Btu)			Expenditures (Dollars)		
	1978	1980	1981	1978	1980	1981
Northeast	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
North Central	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
South	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
West	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Note: The value in parenthesis represents one standard error of the statistic.
Source: Tables 2, 11, 14, 24, 32, 34.

Summary of Findings (Continued)

Table E2 shows that in the 1978, 1980, and 1981 surveys, electricity consumption for space heating consistently increased as the heated square footage of the house increased. Additionally, from 1978 through 1981 in all size categories, there was a decrease in consumption. However, Table E2 shows that there was no consistent trend by dwelling size in the percent of change for electricity. The statistically significant change in the amount of electricity used for space heating ranged from 31 (10) percent to 52 (19) percent.

Table E2. Average Household Electricity Consumption for Space Heating When Main Heating Fuel is Electricity, by Square Footage of Home (Million Btu)

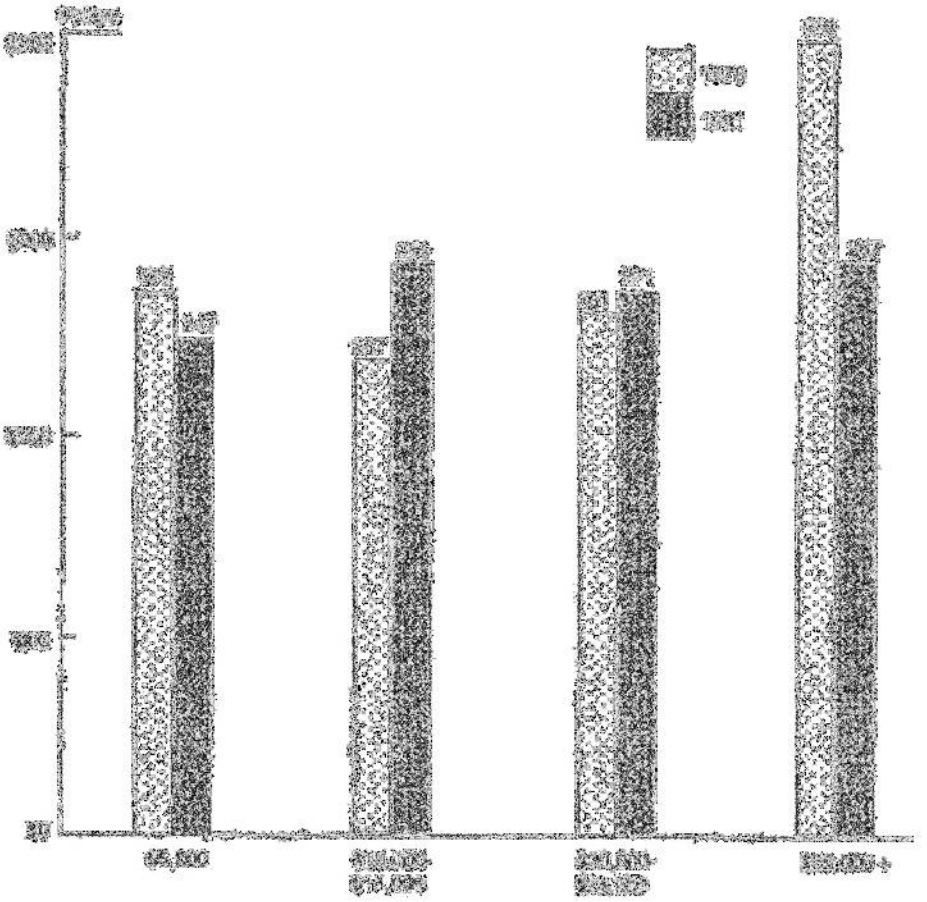
Square Feet	1978	1980	1981	Percent Change Between 1978-1981
1-799	20.3 (2.9)	11.8 (1.5)	15.7 (1.4)	23 (12)
800-999	26.7 (2.7)	14.5 (1.3)	15.9 (1.4)	40 (8)
1,000-1,199	28.3 (3.2)	16.0 (2.0)	19.0 (1.4)	33 (3)
1,200-1,399	29.6 (4.2)	19.4 (2.6)	17.2 (2.2)	42 (11)
1,400-1,799	39.4 (3.2)	19.9 (2.4)	18.9 (3.5)	52 (19)
1,800-2,399	40.5 (4.7)	26.6 (1.7)	28.0 (2.6)	31 (10)
2,400 or More	60.9 (6.5)	27.6 (2.3)	32.2 (3.9)	47 (8)

Note: The value in parentheses is one standard error of the statistic.
Source: Tables 1, 13, 25.

Energy expenditures, particularly for space heating, varied by income, and by geographic region. In 1978, the average space heating cost for electrically heated homes in the Northeast was approximately $347 (57). By 1981, this cost had almost doubled to $644 (81). However, other regions in the United States experienced a decline in electricity costs for space heating, with the West experiencing the largest decrease in costs.

Electricity costs for space heating increased from 1978 through 1981 by 84 (4%) percent for households in the highest income bracket ($50,000 or more). This 4 (2%) percent increase in electricity costs for households in the lowest income bracket (less than $5,000) was not statistically significant. As with other energy costs, the cost of heating with electricity increased from 1978 through 1981. Figure 8 shows electricity expenditures for 1978 and 1981 by selected categories of income.

Figure 8. Average Household Electricity Expenditures for Space Heating for 1978 and 1981 by Selected Level of Income (Continued)



Source: Energy Information Administration, 1978 and 1981 Residential Energy Consumption Survey.

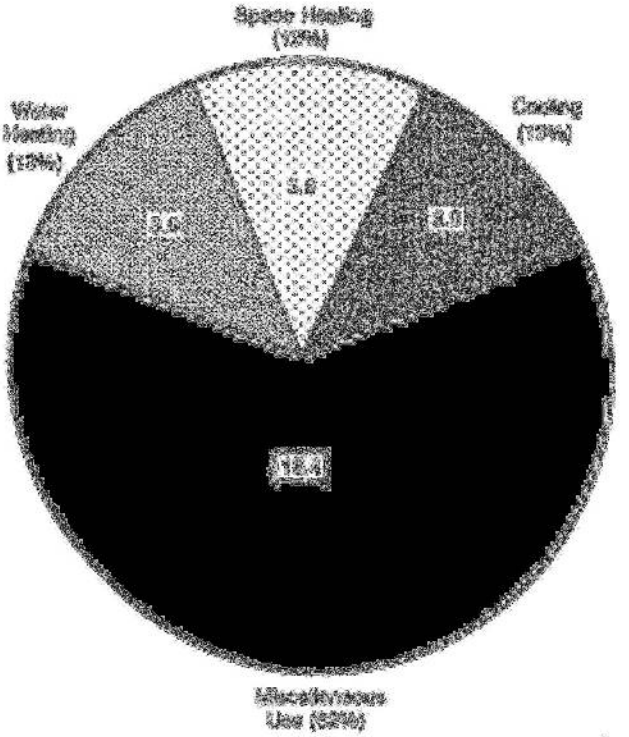
Residential Energy Consumption and Expenditures by End Use for 1978, 1980, and 1981
Energy Information Administration

End Use

In addition to the trends in consumption and expenditures, the patterns of energy use within a given time period are also of interest. Figures 7 through 11 describe the distribution of electricity consumption and expenditures by end use.

Figure 7 shows that in 1981, among households that used electricity but did not necessarily heat with it, approximately 62 (.8) percent of the average household electricity consumed was for miscellaneous use. Approximately 12 (.7) percent of household electricity consumption was used for space heating, while water heating accounted for approximately 13 (.5) percent and cooling accounted for 13 (.6) percent. This pattern was the same for 1978 and 1980.

Figure 7. Average Household Electricity Consumption for All Households That Use Electricity by End Use for 1981 (Million Btu)

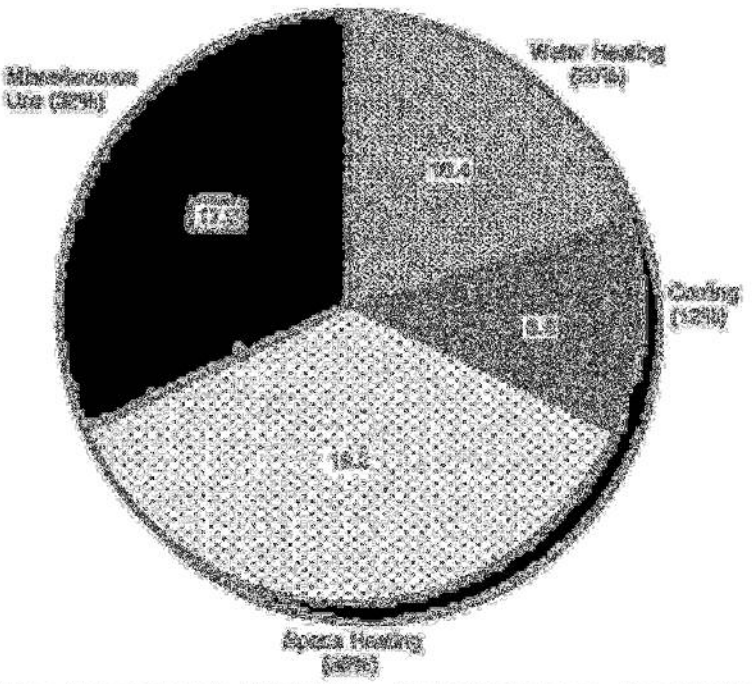


Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

Figures 8 through 10 show that this pattern of electricity consumption changes when electricity is the main heating fuel. The average household consumption for electricity was 33.4 (2) million Btu for those households that heated with electricity in 1981. Approximately 36 (1) percent was used for space heating and 32 (.9) percent was used for miscellaneous use. Approximately 12 (1) percent of electricity was used for cooling and 20 (.8) percent was used for water heating.

Summary of Findings (Continued)

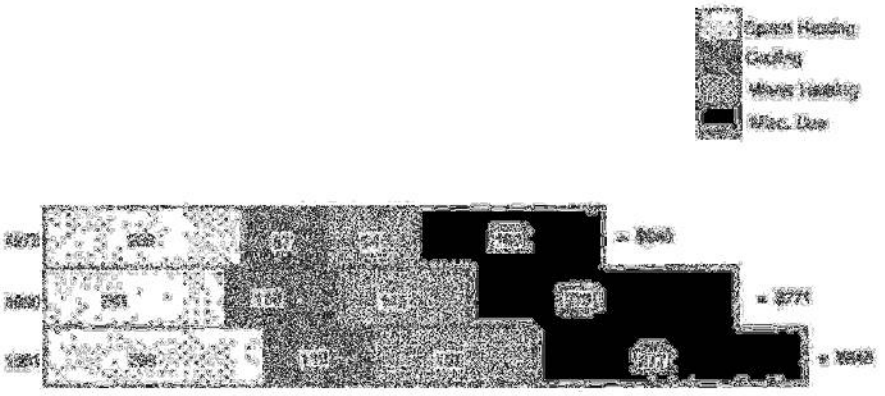
Figure 10. Average Household Electricity Consumption When Main Heating Fuel Is Electricity by End Use for 1981 (Million Btu)



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

Figure 11 shows the distribution for 1978, 1980, and 1981 of the average household electricity expenditures by end use for households whose main heating fuel is electricity.

Figure 11. Average Household Electricity Expenditures When Main Heating Fuel Is Electricity by End Use for 1978, 1980, and 1981 (Dollars)



Natural Gas Consumption and Expenditures

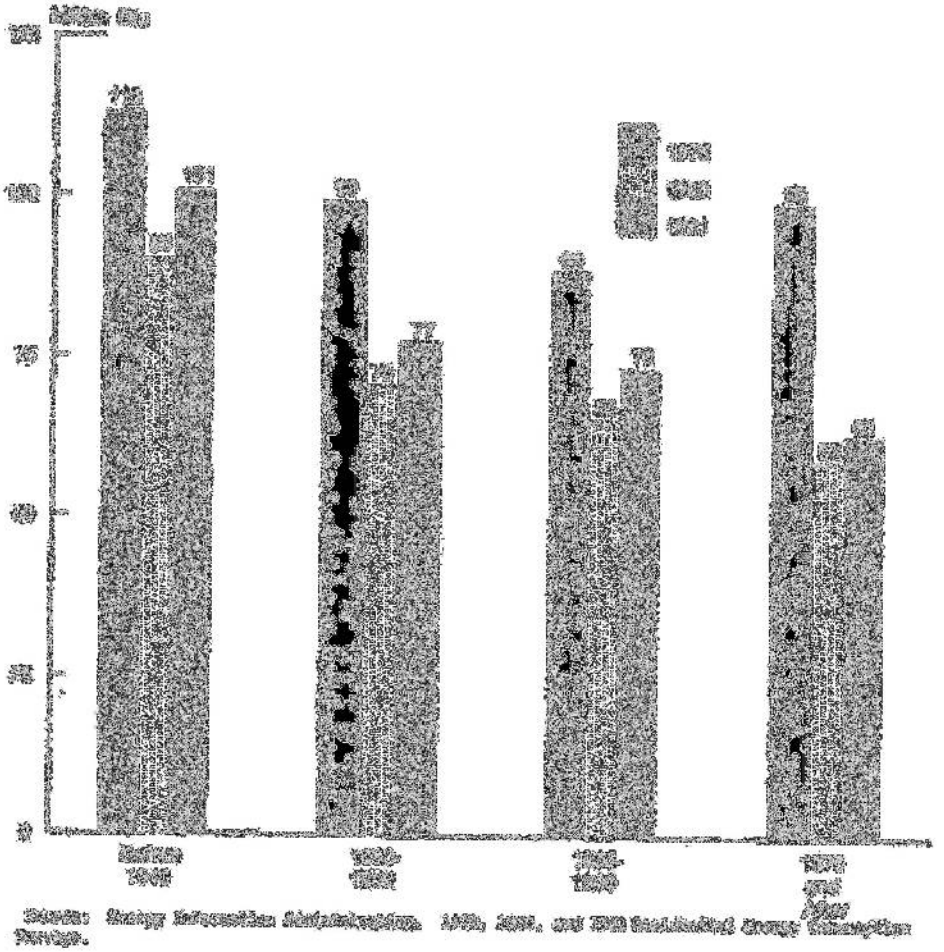
Space Heating

Among these households in the four-plus-rate heating fuel use category, there was approximately a 19 (7) percent decrease in natural gas used for space heating from 1978 through 1981 compared with a 24 (7) percent decrease in the fourth thermal region. (The 16 (7) percent decrease in the Southeast and the 11 (6) percent decrease in natural gas consumption in the South from 1978 through 1981 were not statistically significant.) However, in the Northeast between 1978 and 1981, there was a significant decline in natural gas consumption for space heating. Households in this region experienced, on the average, a 32 (6) percent decrease in consumption.

Between 1978 and 1981 households at 1,000 to 1,499 square feet and households at 2,400 or more square feet both experienced approximately the same percentage decrease (21 percent) in consumption for space heating.

Energy consumption also varied by the age of the home. Figure 12 shows natural gas consumption for space heating by the year the house was constructed. Those establishments before 1970 and heated by natural gas used 24 (6) percent less energy in 1981 than they did in 1978; older homes (constructed before 1970) experienced a 17 (5) percent decrease in natural gas consumption.

Figure 12. Average Natural Gas Consumption for Space Heating When Main Heating Fuel Is Natural Gas by Selected Year Home Was Built: United States



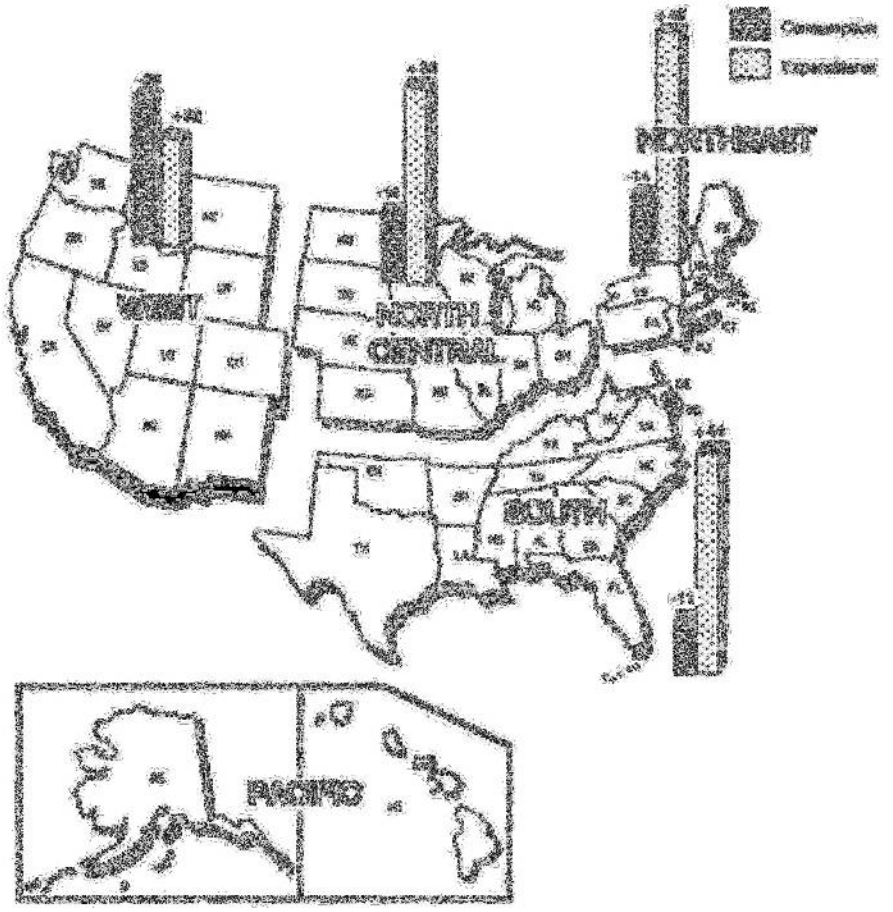
Source: Energy Information Administration, 1978, 1981, and 1984 Residential Energy Consumption Surveys.

Residential Energy Consumption and Expenditures by End Use for 1978, 1981, and 1984, Energy Information Administration

Summary of Findings (Continued)

Natural gas expenditures for space heating increased in all regions of the United States from 1978 through 1981. Households in the Northeast experienced a 46 (3) percent increase in space heating costs; the South, a 44 (4) percent increase; the North Central region, a 39 (3) percent increase; and the West, a 22 (6) percent increase. Figure 13 shows the percentage change between 1978 and 1981 in natural gas consumption and expenditures by region.

Figure 12. Percent Change Between 1978 and 1981 of Average Household Consumption and Expenditures for Space Heating When Main Heating Fuel is Natural Gas by Region



Note: Alaska and Hawaii were not included in the 1978 survey.

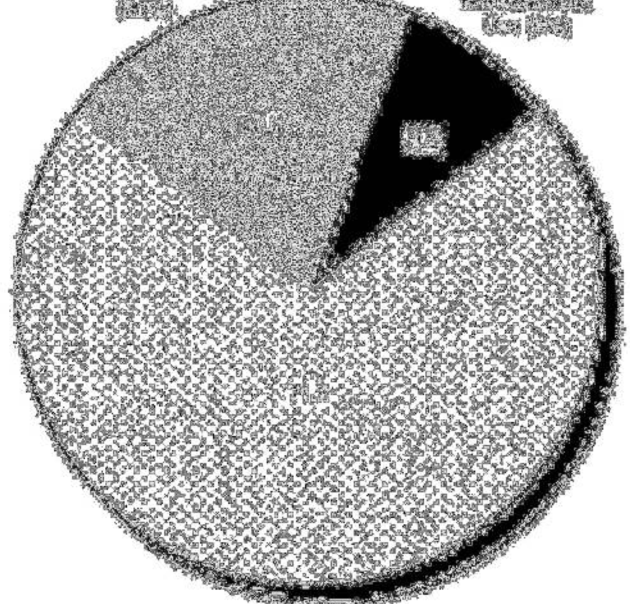
Summary of Findings (Continued)

End Use

The distribution of natural gas among space heating, water heating, and miscellaneous use was similar for households that used natural gas but did not necessarily heat with it and for households that used natural gas as the main heating fuel. The similarity in distribution patterns between the two types of households was because most households that used natural gas, used it for the main heating fuel.

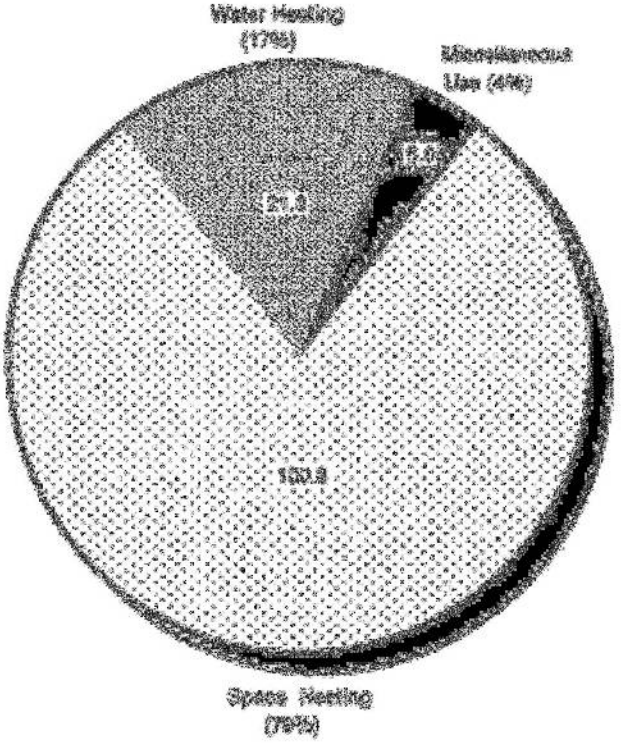
Figures 14 through 16 show the distribution of natural gas consumption for 1978, 1980, and 1981 among households whose main heating fuel was natural gas. In 1981, households that heated with natural gas used, on the average, [illegible] million Btu of which approximately [illegible] percent was used for space heating, [illegible] percent for water heating and [illegible] percent for miscellaneous use.

Figure 14. Average Household Natural Gas Consumption for All Households That Use Natural Gas by End Use for 1981 (Million Btu)



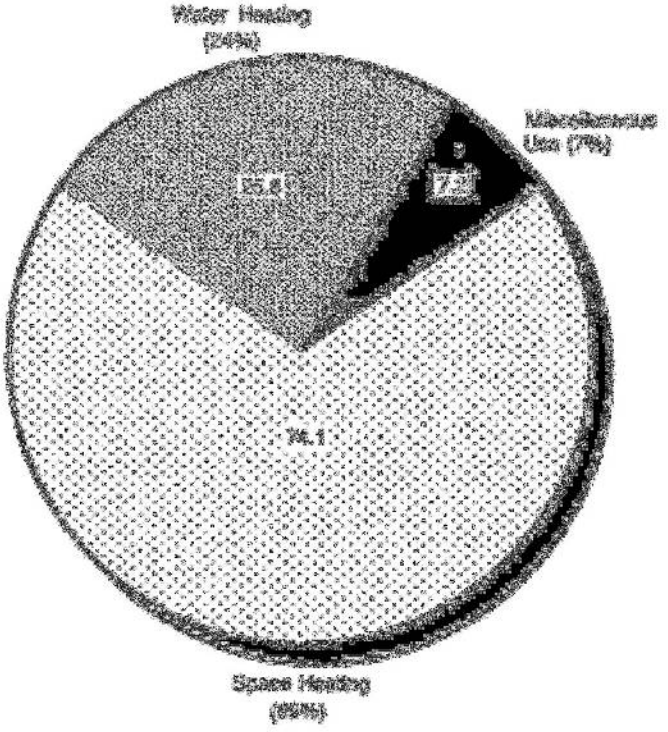
Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

Figure 15. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1978 (Million Btu)



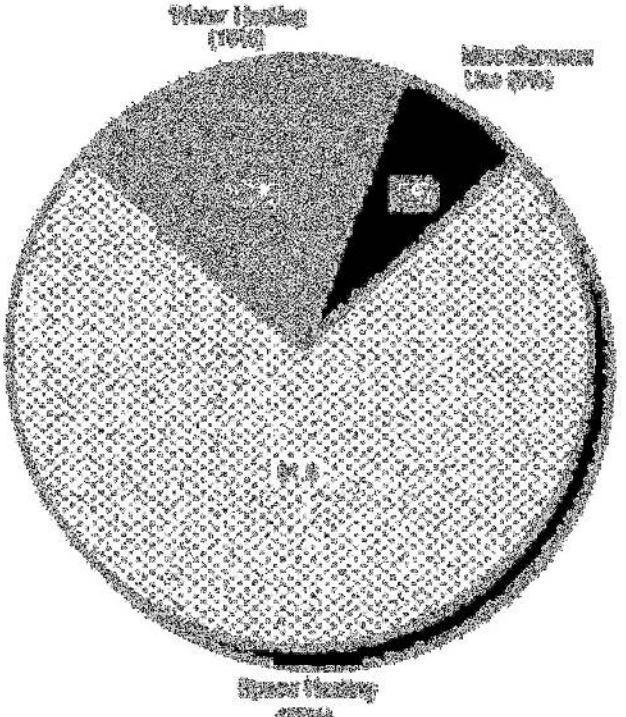
Source: Energy Information Administration, 1978 Residential Energy Consumption Survey.

Figure 16. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1980 (Million Btu)



Source: Energy Information Administration, 1980 Residential Energy Consumption Survey.

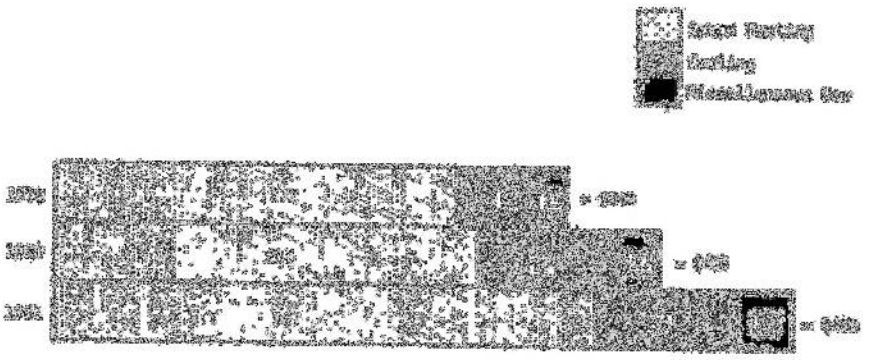
Figure 17. Average Household Natural Gas Consumption When Main Heating Fuel Is Natural Gas by End Use for 1981 (Million Btu)



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

Figure 18 shows the average household expenditures for natural gas by end use when the main heating fuel is natural gas for 1978, 1980, and 1981.

Figure 18. Average Household Natural Gas Expenditures When Main Heating Fuel Is Natural Gas by End Use for 1978, 1980, and 1981 (Dollars)



Residential Energy Consumption and Expenditures by End Use for 1981, 1980, and 1978, Energy Information Administration

Table 1. Average Household Electricity Consumption When Main Heating Fuel Is Electricity by End Use by Selected Housing Characteristics for 1978

[illegible]	[illegible]	[illegible]			
		[illegible]	[illegible]	[illegible]	[illegible]
NATIONAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Table 2. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Sociodemographic Characteristics for 1978

Sociodemographic Characteristics	Number of Households (Millions)	End Use			
		Space Heating (Million Btu)	Cooling (Million Btu)	Water Heating (Million Btu)	Miscellaneous (Misc (Million Btu)
NATIONAL	12.1 (0.2)	33.6 (0.2)	7.6 (0.0)	25.2 (0.2)	82.6 (0.4)
GEOGRAPHIC REGION					
NORTHEAST	2.4 (0.5)	32.6 (5.4)	5.2 (0.3)	7.7 (1.3)	34.0 (2.1)
NORTH CENTRAL	1.1 (0.3)	46.2 (4.2)	4.0 (0.7)	12.8 (1.6)	63.7 (5.6)
SOUTH	6.7 (0.9)	28.7 (0.1)	12.4 (1.2)	9.7 (0.7)	39.6 (3.3)
WEST	2.0 (0.6)	31.6 (1.9)	9.5 (0.5)	12.1 (1.2)	53.2 (2.1)
HEATING DEGREE DAYS					
0-1,999	2.3 (0.7)	6.7 (0.9)	15.3 (1.4)	4.7 (1.5)	19.7 (3.5)
2,000-2,999	3.3 (0.5)	31.5 (2.3)	10.6 (1.5)	9.6 (2.3)	29.5 (5.6)
3,000-3,999	1.6 (0.4)	39.5 (3.0)	10.5 (2.7)	15.7 (1.2)	53.9 (3.9)
4,000-4,999	2.4 (0.4)	36.2 (1.2)	4.2 (1.4)	29.6 (2.8)	89.5 (2.5)
5,000-5,999	0.2 (0.0)	50.2 (7.6)	3.2 (0.3)	13.5 (2.1)	52.0 (3.9)
6,000-6,999	1.5 (0.4)	45.4 (2.9)	5.5 (0.6)	11.7 (1.4)	51.4 (2.5)
7,000-7,999	1.3 (0.3)	40.3 (12.6)	6.3 (0.6)	9.6 (2.1)	17.6 (4.0)
8,000 OR MORE	Q	Q	Q	Q	Q
INCOME					
LESS THAN $5,000	1.2 (0.2)	25.5 (2.5)	5.2 (0.3)	5.3 (0.7)	15.2 (1.2)
$5,000-$7,999	1.6 (0.2)	29.1 (2.0)	6.1 (0.7)	6.2 (0.7)	16.9 (1.2)
$8,000-$14,999	2.7 (0.5)	35.5 (2.2)	7.1 (1.1)	8.7 (1.0)	17.5 (1.3)
$15,000-$19,999	2.3 (0.3)	38.3 (2.0)	7.5 (1.0)	11.2 (0.9)	25.6 (1.4)
$20,000-$24,999	1.6 (0.3)	38.2 (3.7)	9.0 (1.7)	13.0 (0.8)	32.1 (2.3)
$25,000-$34,999	1.6 (0.3)	34.6 (4.1)	9.9 (0.9)	15.0 (0.8)	35.9 (1.5)
$35,000 OR MORE	1.1 (0.2)	47.1 (7.0)	15.9 (2.0)	19.9 (1.0)	55.3 (2.7)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	2.2 (0.3)	25.6 (3.4)	4.3 (0.9)	6.0 (0.6)	19.4 (1.3)
TWO	4.5 (0.7)	29.2 (3.0)	5.1 (1.4)	7.8 (0.5)	18.3 (1.2)
THREE	2.1 (0.2)	32.7 (2.5)	6.9 (1.0)	11.3 (0.5)	22.6 (1.4)
FOUR	1.9 (0.2)	35.6 (3.2)	6.4 (1.4)	16.5 (0.9)	34.2 (1.2)
FIVE OR MORE	1.2 (0.2)	40.3 (2.9)	7.7 (1.4)	21.9 (1.2)	39.0 (1.9)

"Q" = Data withheld because of a large variance.
NOTE: Because of rounding, data may not sum to totals.
Numbers in parentheses indicate one standard deviation. See Appendix C for a detailed discussion.
SOURCE: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1978 Residential Energy Consumption Survey.

Table 8. Average Household Natural Gas Consumption When Main Heating Fuel Is Natural Gas by End Use by Selected Housing Characteristics for 1978

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE: SPACE HEATING (MILLION BTU)	END USE: WATER HEATING (MILLION BTU)	END USE: APPLIANCES AND COOKING (MILLION BTU)
TOTAL	[illegible]	[illegible]	[illegible]	[illegible]
TYPE OF HOUSING				
SINGLE-FAMILY DETACHED	[illegible]	[illegible]	[illegible]	[illegible]
SINGLE-FAMILY ATTACHED	[illegible]	[illegible]	[illegible]	[illegible]
TWO TO FOUR UNITS	[illegible]	[illegible]	[illegible]	[illegible]
FIVE OR MORE UNITS	[illegible]	[illegible]	[illegible]	[illegible]
MOBILE HOME	[illegible]	[illegible]	[illegible]	[illegible]
OTHER	[illegible]	Q	Q	Q
YEAR HOUSE BUILT				
BEFORE 1940	[illegible]	[illegible]	[illegible]	[illegible]
1940-1949	[illegible]	[illegible]	[illegible]	[illegible]
1950-1959	[illegible]	[illegible]	[illegible]	[illegible]
1960-1964	[illegible]	[illegible]	[illegible]	[illegible]
1965-1969	[illegible]	[illegible]	[illegible]	[illegible]
1970-1974	[illegible]	[illegible]	[illegible]	[illegible]
1975 OR LATER	[illegible]	[illegible]	[illegible]	[illegible]
HEATED SQUARE FOOTAGE				
1-999	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1,000-1,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] OR MORE	[illegible]	[illegible]	[illegible]	[illegible]

Table 4. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Sociodemographic Characteristics for 1978

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLIONS)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	43.4 (1.9)	104.8 (1.4)	21.0 (0.7)	8.0 (0.8)
GEOGRAPHIC REGION				
NORTHEAST	7.8 (0.6)	123.4 (2.6)	26.1 (1.3)	8.6 (0.5)
NORTH CENTRAL	15.3 (1.2)	136.4 (1.8)	19.3 (1.0)	8.1 (0.3)
SOUTH	15.1 (1.4)	65.4 (2.4)	20.9 (1.1)	8.8 (0.6)
WEST	9.5 (0.6)	75.0 (2.4)	18.4 (2.1)	5.7 (0.3)
HEATING DEGREE DAYS				
0-1,999	2.3 (0.9)	38.1 (2.9)	25.9 (3.6)	6.0 (0.8)
2,000-2,999	4.8 (0.6)	54.9 (4.1)	24.0 (1.6)	6.4 (0.9)
3,000-3,999	5.8 (1.4)	70.8 (2.6)	20.2 (1.7)	3.8 (0.9)
4,000-4,999	1.6 (1.0)	79.1 (14.7)	19.7 (0.4)	3.8 (1.8)
5,000-5,999	6.4 (1.2)	115.9 (4.2)	22.8 (1.6)	7.2 (0.5)
6,000-6,999	7.4 (1.9)	128.9 (4.3)	23.6 (1.4)	6.4 (0.3)
7,000-7,999	8.3 (1.9)	132.6 (5.9)	21.8 (2.9)	8.1 (0.4)
8,000 OR MORE	1.3 (0.1)	140.5 (8.0)	20.5 (2.1)	3.9 (0.4)
INCOME				
LESS THAN $5,000	4.4 (0.7)	79.7 (4.0)	19.0 (1.3)	8.3 (0.3)
$5,000-$9,999	6.0 (0.6)	90.9 (3.4)	19.3 (1.3)	5.2 (0.4)
$10,000-$14,999	7.8 (0.6)	91.5 (4.4)	20.1 (1.2)	8.2 (0.4)
$15,000-$19,999	8.4 (0.5)	105.1 (8.3)	24.3 (1.3)	4.2 (0.3)
$20,000-$24,999	6.8 (0.5)	111.5 (5.1)	25.6 (1.3)	3.8 (0.5)
$25,000-$34,999	5.4 (0.5)	117.6 (5.9)	28.4 (1.1)	4.4 (0.6)
$35,000 OR MORE	3.9 (0.4)	140.9 (10.6)	28.5 (1.8)	7.3 (1.4)
NUMBER OF HOUSEHOLD MEMBERS				
ONE	9.3 (0.7)	77.9 (4.4)	7.8 (0.4)	3.9 (0.3)
TWO	13.6 (0.6)	99.6 (3.3)	18.1 (0.6)	4.7 (0.3)
THREE	7.8 (0.5)	108.3 (4.7)	23.9 (0.8)	8.6 (0.4)
FOUR	6.3 (0.4)	110.4 (4.4)	30.4 (0.9)	5.9 (0.5)
FIVE OR MORE	5.9 (0.8)	114.9 (4.3)	46.5 (1.6)	8.6 (0.5)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESES INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 8. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel Is Fuel Oil or Kerosene by End Use by Selected Housing Characteristics for 1978

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	[illegible] (MILLION BTU)
TOTAL	[illegible]	[illegible]	[illegible]	[illegible]
HOUSING STRUCTURE				
SINGLE-FAMILY DETACHED	[illegible]	[illegible]	[illegible]	[illegible]
SINGLE-FAMILY ATTACHED	[illegible]	[illegible]	[illegible]	[illegible]
TWO TO FOUR UNITS	[illegible]	[illegible]	[illegible]	[illegible]
FIVE OR MORE UNITS	[illegible]	[illegible]	[illegible]	[illegible]
MOBILE HOME	[illegible]	[illegible]	[illegible]	[illegible]
YEAR HOUSE BUILT				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Source: [illegible]

Table 6. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Socio-Demographic Characteristics for 1978

Socioeconomic Characteristics	Number of Households (Million)	End Use		
		Space Heating (Million Btu)	Water Heating (Million Btu)	Miscellaneous Use (Million Btu)
NATIONAL	14.6 (0.1)	120.7 (0.8)	8.3 (0.1)	4
GEOGRAPHIC REGION				
NORTHEAST	8.6 (0.8)	136.0 (6.3)	14.0 (2.3)	5
NORTH CENTRAL	3.1 (0.8)	145.9 (12.4)	9.3 (1.6)	6
SOUTH	4.2 (0.7)	75.8 (6.6)	5.2 (0.8)	3
WEST	0.8 (0.2)	105.4 (7.9)	8.1 (0.8)	4
HEATING DEGREE DAYS				
0-4,999	3.8 (0.1)	39.4 (3.4)	4.9 (0.3)	4
5,000-5,999	0	0	0	0
6,000-7,999	3.8 (0.6)	61.9 (8.9)	3.1 (1.0)	3
8,000-8,999	1.6 (0.8)	76.8 (5.4)	5.4 (1.0)	5
9,000-9,999	7.2 (1.2)	168.9 (6.4)	11.2 (2.2)	8
10,000-10,999	3.7 (1.0)	131.0 (7.6)	6.1 (2.0)	6
11,000-11,999	1.7 (0.6)	284.8 (22.0)	7.8 (3.7)	8
12,000 OR MORE	0.8 (0.5)	195.6 (66.3)	6.7 (2.5)	6
INCOME				
LESS THAN $5,000	0.8 (0.2)	133.8 (9.5)	6.6 (1.0)	5
$5,000-$9,999	2.4 (0.6)	109.6 (9.0)	7.6 (1.5)	4
$10,000-$14,999	3.8 (0.5)	108.5 (7.8)	7.8 (1.1)	4
$15,000-$19,999	4.8 (0.3)	117.7 (11.0)	11.2 (0.7)	5
$20,000-$24,999	2.8 (0.2)	121.9 (10.9)	8.2 (1.5)	4
$25,000-$34,999	2.3 (0.1)	138.2 (8.8)	8.4 (1.6)	4
$35,000 OR MORE	1.6 (0.2)	163.5 (25.0)	8.8 (2.0)	5
NUMBER OF HOUSEHOLD MEMBERS				
ONE	2.9 (0.4)	118.2 (7.0)	5.3 (1.0)	3
TWO	5.5 (0.6)	121.0 (5.8)	6.9 (1.0)	4
THREE	3.9 (0.3)	113.6 (8.3)	6.0 (0.7)	4
FOUR	1.8 (0.4)	118.9 (13.7)	10.9 (2.2)	6
FIVE OR MORE	0.4 (0.1)	132.5 (8.3)	15.3 (3.6)	9

"0" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESES INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED EXPLANATION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

Table 7. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Housing Characteristics for 1978

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLIONS)	END USE: SPACE HEATING (MILLION BTU)	END USE: WATER HEATING (MILLION BTU)	END USE: MISCELLANEOUS USE (MILLION BTU)
AVERAGE	3.1 (6.3)	47.3 (4.4)	9.9 (1.9)	3.0 (6.4)
HOUSING STRUCTURE				
SINGLE-FAMILY DETACHED	1.9 (6.3)	74.3 (11.4)	11.7 (5.3)	3.2 (6.4)
SINGLE-FAMILY ATTACHED	Q	Q	Q	Q
TWO TO FOUR UNITS	Q	Q	Q	Q
FIVE OR MORE UNITS	Q	Q	Q	Q
MOBILE HOME	0.9 (13.4)	55.6 (12.4)	8.2 (4.7)	3.8 (6.8)
YEAR HOUSE BUILT				
BEFORE 1940	[illegible]	[illegible]	[illegible]	[illegible]
1940-1949	Q	Q	Q	Q
1950-1959	[illegible]	[illegible]	[illegible]	[illegible]
1960-1964	[illegible]	[illegible]	[illegible]	[illegible]
1965-1969	[illegible]	[illegible]	[illegible]	[illegible]
1970-1974	[illegible]	[illegible]	[illegible]	[illegible]
1975 OR LATER	[illegible]	[illegible]	[illegible]	[illegible]
HEATED SQUARE FOOTAGE				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Q	Q	Q	Q
[illegible] OR MORE	Q	Q	Q	Q

*Q = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESES INDICATES THE RELATIVE STANDARD ERROR. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 6. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Socio-demographic Characteristics for 1978

Socio-demographic characteristics	Number of households (million)	LPG use		
		Space heating (million gals)	Water heating (million gals)	Miscellaneous use (million gals)
NATIONAL	3.1 (0.8)	67.3 (6.0)	9.7 (1.8)	3.9 (0.4)
GEOGRAPHIC REGION				
NORTHEAST	*	*	*	*
NORTH CENTRAL	0.8 (0.4)	128.1 (83.8)	14.3 (1.8)	6.8 (1.8)
SOUTH	1.8 (0.5)	46.6 (5.9)	8.1 (2.1)	3.1 (0.5)
WEST	0.3 (0.2)	68.6 (24.6)	10.4 (7.4)	1.1 (1.2)
HEATING DEGREE DAYS				
0-1,999	0.2 (0.1)	19.5 (3.7)	6.4 (6.2)	2.5 (1.6)
2,000-2,999	1.9 (0.6)	64.2 (18.6)	9.5 (1.3)	3.4 (0.7)
3,000-3,999	0.8 (0.3)	88.3 (3.5)	7.8 (1.1)	3.9 (0.9)
4,000-4,999	*	*	*	*
5,000-5,999	0.5 (0.2)	84.2 (25.7)	13.6 (3.8)	5.5 (2.2)
6,000-6,999	0.4 (0.2)	123.8 (37.3)	25.7 (6.8)	5.8 (1.6)
7,000-7,999	*	*	*	*
8,000 OR MORE	*	*	*	*
INCOME				
LESS THAN $5,000	0.8 (0.3)	30.1 (7.6)	4.6 (2.8)	3.8 (0.6)
$5,000-$9,999	1.2 (0.5)	58.2 (18.9)	6.3 (2.8)	2.7 (2.7)
$10,000-$14,999	0.7 (0.3)	58.3 (8.4)	12.1 (2.3)	6.6 (0.7)
$15,000-$19,999	0.6 (0.2)	85.2 (16.8)	13.6 (5.5)	3.6 (1.2)
$20,000-$24,999	0.4 (0.2)	76.6 (25.6)	13.1 (6.6)	3.9 (4.9)
$25,000-$34,999	*	*	*	*
$35,000 OR MORE	*	*	*	*
NUMBER OF HOUSEHOLD MEMBERS				
ONE	0.5 (0.1)	77.1 (18.7)	3.9 (1.4)	2.4 (1.0)
TWO	1.0 (0.3)	95.5 (6.8)	6.2 (2.6)	2.5 (1.0)
THREE	0.3 (0.1)	78.2 (24.4)	11.9 (4.3)	3.6 (2.6)
FOUR	0.5 (0.2)	61.0 (13.7)	13.9 (3.2)	5.4 (0.8)
FIVE OR MORE	0.8 (0.5)	80.6 (22.9)	17.0 (4.6)	5.8 (1.0)

"*" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBERS IN PARENTHESES INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 8. Average Household Energy Expenditures by End Use by Selected Housing Characteristics for 1978

Household Characteristics	Total Expenditures (Dollars)	End Use: Space Heating (Dollars)	End Use: Air Conditioning	End Use: Water Heating (Dollars)	End Use: Appliances, Lighting, and [illegible]
All households	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 10. Average Household Energy Expenditures by End Use by Selected Sociodemographic Characteristics for 1978

SOCIODEMOGRAPHIC CHARACTERISTICS	TOTAL EXPENDITURES (DOLLARS)	END USE: SPACE HEATING (DOLLARS)	END USE: COOLING (DOLLARS)	END USE: WATER HEATING (DOLLARS)	END USE: MISCELLANEOUS USE (DOLLARS)
NATIONAL	784 (13)	315 (4)	82 (3)	92 (2)	267 (6)
GEOGRAPHIC REGION					
NORTHEAST	987 (40)	486 (30)	38 (3)	104 (6)	296 (15)
NORTH CENTRAL	821 (28)	397 (17)	44 (6)	89 (3)	288 (9)
SOUTH	676 (15)	259 (10)	106 (7)	100 (3)	286 (5)
WEST	669 (24)	187 (24)	9 (1)	86 (3)	197 (11)
HEATING DEGREE DAYS					
0-1,999	691 (36)	113 (21)	179 (19)	102 (12)	282 (24)
2,000-2,999	852 (91)	165 (16)	78 (12)	78 (6)	238 (18)
3,000-3,999	649 (37)	222 (17)	84 (15)	95 (4)	250 (9)
4,000-4,999	673 (44)	232 (16)	88 (13)	94 (6)	255 (24)
5,000-5,999	821 (31)	469 (34)	48 (6)	96 (7)	289 (17)
6,000-6,999	758 (34)	373 (22)	29 (5)	93 (7)	269 (16)
7,000-7,999	782 (57)	388 (30)	17 (4)	74 (4)	249 (22)
8,000 OR MORE	915 (81)	491 (44)	20 (7)	92 (24)	303 (26)
INCOME					
LESS THAN $5,000	582 (15)	254 (15)	50 (2)	86 (4)	204 (9)
$5,000-$9,999	697 (18)	299 (22)	34 (4)	78 (3)	226 (7)
$10,000-$14,999	659 (17)	280 (29)	46 (4)	88 (3)	244 (8)
$15,000-$19,999	769 (22)	328 (24)	55 (5)	105 (8)	290 (8)
$20,000-$24,999	830 (20)	336 (15)	70 (7)	102 (6)	327 (8)
$25,000-$34,999	875 (23)	361 (10)	71 (6)	113 (8)	320 (11)
$35,000 OR MORE	1040 (50)	465 (36)	120 (35)	132 (7)	349 (14)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	487 (12)	258 (11)	30 (3)	35 (1)	166 (6)
TWO	667 (14)	305 (9)	52 (4)	69 (5)	244 (6)
THREE	738 (15)	325 (11)	59 (5)	100 (3)	284 (6)
FOUR	853 (19)	330 (13)	64 (3)	126 (4)	329 (8)
FIVE OR MORE	909 (24)	332 (15)	56 (5)	168 (6)	345 (10)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESES INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

Table 11. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Housing Characteristics for 1978

[illegible]	Main Heating Fuel		
	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]
[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Summary of Findings (Continued)

Table 12. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Sociodemographic Characteristics for 1978

SOCIODEMOGRAPHIC CHARACTERISTICS	MAIN HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
NATIONAL	269 (10)	272 (7)	475 (19)
GEOGRAPHIC REGION			
NORTHEAST	387 (37)	387 (13)	541 (24)
NORTH CENTRAL	492 (45)	328 (8)	536 (47)
SOUTH	225 (20)	140 (9)	399 (85)
WEST	276 (31)	231 (11)	397 (51)
HEATING DEGREE DAYS			
0-1,999	87 (30)	184 (20)	132 (11)
2,000-2,999	132 (36)	226 (7)	246 (46)
3,000-3,999	398 (18)	173 (16)	323 (29)
4,000-4,999	388 (25)	198 (27)	294 (38)
5,000-5,999	396 (40)	329 (17)	512 (59)
6,000-6,999	457 (80)	332 (18)	545 (32)
7,000-7,999	751 (76)	362 (19)	692 (85)
8,000 OR MORE	*	384 (16)	596 (177)
INCOME			
LESS THAN $5,000	276 (29)	229 (16)	482 (59)
$5,000-$9,999	249 (23)	246 (11)	432 (34)
$10,000-$14,999	237 (22)	289 (9)	426 (37)
$15,000-$19,999	296 (26)	276 (11)	468 (44)
$20,000-$24,999	281 (27)	306 (13)	490 (45)
$25,000-$34,999	296 (37)	311 (16)	545 (33)
$35,000 OR MORE	396 (46)	389 (15)	629 (70)
NUMBER OF HOUSEHOLD MEMBERS			
ONE	229 (22)	223 (11)	466 (30)
TWO	247 (20)	266 (8)	478 (31)
THREE	306 (23)	278 (10)	450 (35)
FOUR	296 (28)	298 (11)	670 (82)
FIVE OR MORE	324 (27)	326 (14)	526 (37)

"*" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESES INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 12. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Housing Characteristics for 1980

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLIONS)	END USE: SPACE HEATING [illegible]	END USE: [illegible]	END USE: [illegible]	END USE: APPLIANCES AND [illegible]
TOTAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
HOUSING STRUCTURE					
SINGLE-FAMILY DETACHED	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SINGLE-FAMILY ATTACHED	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TWO TO FOUR UNITS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
FIVE OR MORE UNITS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MOBILE HOME	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
YEAR HOUSE BUILT					
BEFORE 1940	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] OR LATER	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
HEATED FLOOR SPACE					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] OR MORE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Table 14. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Sociodemographic Characteristics for 1980

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLIONS)	END USE			
		SPACE HEATING (MILLION BTU)	COOLING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	24.3 (2.6)	18.2 (1.6)	7.3 (0.5)	15.6 (0.4)	19.6 (0.6)
GEOGRAPHIC REGION					
NORTHEAST	1.6 (0.4)	24.3 (3.0)	1.7 (0.3)	19.8 (0.7)	17.9 (1.3)
NORTH CENTRAL	5.1 (0.4)	24.5 (2.4)	4.1 (0.7)	17.3 (1.0)	19.4 (2.3)
SOUTH	7.7 (0.8)	14.9 (2.0)	11.0 (0.9)	13.9 (0.6)	20.6 (0.7)
WEST	9.9 (0.6)	17.8 (1.3)	5.8 (0.4)	9.2 (0.7)	18.9 (1.1)
HEATING DEGREE DAYS					
0-1,999	3.8 (1.1)	4.9 (2.0)	13.5 (1.2)	8.9 (0.5)	19.5 (1.3)
2,000-2,999	1.2 (0.3)	11.9 (1.5)	10.6 (2.2)	9.1 (1.7)	18.1 (2.4)
3,000-3,999	1.7 (0.4)	16.9 (2.4)	8.3 (0.9)	10.3 (1.2)	18.8 (1.4)
4,000-4,999	4.8 (0.9)	25.2 (1.8)	4.5 (1.0)	16.2 (0.9)	21.3 (1.2)
5,000-5,999	3.8 (0.5)	27.2 (2.6)	3.9 (0.5)	19.6 (1.7)	19.9 (0.6)
6,000-6,999	5.3 (0.5)	25.5 (3.7)	1.6 (0.2)	18.6 (1.2)	20.9 (0.8)
7,000-7,999	0.4 (0.1)	34.9 (4.5)	0.3 (0.1)	19.6 (0.5)	16.2 (3.2)
8,000 OR MORE	3.3 (0.1)	32.6 (0.9)	0.2 (0.0)	13.3 (1.9)	22.5 (0.3)
INCOME					
LESS THAN $5,000	1.5 (0.3)	15.6 (3.2)	2.3 (0.5)	6.6 (0.5)	12.6 (0.9)
$5,000-$9,999	2.3 (0.3)	14.6 (2.0)	4.1 (0.5)	6.5 (0.5)	14.2 (0.9)
$10,000-$14,999	4.9 (0.5)	20.5 (1.5)	6.4 (0.5)	9.5 (0.5)	16.8 (1.2)
$15,000-$19,999	3.9 (0.5)	17.4 (1.2)	5.9 (1.0)	15.7 (0.6)	19.9 (0.9)
$20,000-$24,999	3.7 (0.3)	25.5 (2.5)	7.2 (1.2)	19.3 (0.9)	20.8 (1.3)
$25,000-$34,999	2.9 (0.3)	18.8 (2.2)	8.5 (1.1)	11.2 (1.0)	22.6 (1.5)
$35,000 OR MORE	1.0 (0.3)	21.9 (2.5)	13.7 (1.8)	14.6 (1.0)	25.9 (1.6)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	3.4 (0.4)	15.5 (1.4)	4.7 (0.8)	5.4 (0.4)	12.4 (0.9)
TWO	6.8 (0.8)	17.1 (2.0)	6.7 (0.9)	8.3 (0.4)	16.9 (0.9)
THREE	5.3 (0.2)	20.7 (1.4)	8.2 (0.8)	18.5 (0.7)	23.4 (1.0)
FOUR	5.5 (0.2)	20.6 (1.6)	10.7 (1.1)	19.3 (0.8)	23.2 (0.9)
FIVE OR MORE	3.7 (0.2)	20.5 (2.0)	9.4 (1.2)	19.9 (1.1)	27.9 (1.2)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED EXPLANATION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, SHORT-TERM END USE DIVISION, 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

Table 15. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Housing Characteristics for 1980

			[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

Table 16. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Socio-demographic Characteristics for 1980

SOCIOECONOMIC/DEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLIONS)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	49.6 (1.8)	74.1 (1.5)	25.8 (0.5)	7.8 (0.4)
GEOGRAPHIC REGION				
NORTHEAST	8.8 (0.9)	99.9 (2.9)	25.1 (0.7)	8.6 (0.5)
NORTH CENTRAL	9.6 (0.6)	99.1 (2.2)	27.6 (0.6)	7.5 (0.4)
SOUTH	11.6 (0.9)	37.8 (2.0)	23.5 (1.3)	7.6 (0.7)
WEST	11.1 (0.8)	45.5 (1.5)	25.5 (0.8)	6.5 (0.4)
HEATING DEGREE DAYS				
0-1,999	5.4 (1.1)	23.5 (1.3)	25.6 (1.6)	5.5 (1.2)
2,000-2,999	5.8 (1.2)	49.4 (2.2)	25.7 (1.9)	5.6 (1.1)
3,000-3,999	5.0 (0.7)	58.6 (3.1)	24.6 (2.5)	6.1 (1.0)
4,000-4,999	3.3 (0.7)	69.3 (3.2)	22.6 (2.0)	5.1 (0.8)
5,000-5,999	8.3 (0.9)	93.4 (2.4)	22.5 (1.2)	7.9 (0.7)
6,000-6,999	15.1 (1.0)	109.4 (2.5)	27.1 (0.6)	7.5 (0.4)
7,000-7,999	4.6 (0.6)	124.3 (4.6)	26.9 (1.5)	6.7 (0.6)
8,000 OR MORE	1.5 (0.4)	107.1 (7.4)	22.2 (2.1)	5.4 (1.4)
INCOME				
LESS THAN $5,000	5.5 (0.5)	66.9 (4.2)	23.5 (1.3)	5.9 (0.5)
$5,000-9,999	7.3 (0.4)	68.7 (2.6)	23.1 (0.8)	6.8 (0.5)
$10,000-14,999	6.9 (0.5)	69.4 (3.1)	23.5 (1.0)	6.7 (0.6)
$15,000-19,999	6.6 (0.4)	78.1 (2.5)	25.8 (1.0)	6.8 (0.5)
$20,000-24,999	6.6 (0.4)	79.5 (2.2)	29.4 (1.3)	7.5 (0.5)
$25,000-34,999	8.7 (0.4)	76.3 (2.2)	28.5 (0.7)	7.9 (0.2)
$35,000 OR MORE	8.4 (0.4)	87.9 (2.4)	29.2 (1.1)	9.1 (0.5)
NUMBER OF HOUSEHOLD MEMBERS				
ONE	8.2 (0.5)	68.5 (2.5)	24.4 (0.5)	6.4 (0.5)
TWO	24.4 (0.6)	76.5 (2.5)	23.5 (0.5)	6.8 (0.2)
THREE	6.3 (0.5)	74.3 (2.2)	26.4 (0.7)	8.2 (0.5)
FOUR	7.7 (0.5)	80.2 (2.5)	31.8 (0.9)	7.6 (0.5)
FIVE OR MORE	3.0 (0.4)	89.9 (5.2)	43.9 (1.2)	9.6 (1.0)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES THE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

Table 17. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Housing Characteristics for 1980

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLIONS)	END USE: SPACE HEATING (MILLION BTU)	END USE: WATER HEATING (MILLION BTU)	END USE: MISCELLANEOUS USE (MILLION BTU)
NATIONAL	[illegible]	[illegible]	[illegible]	[illegible]
HOUSING STRUCTURE				
SINGLE-FAMILY DETACHED	[illegible]	[illegible]	[illegible]	[illegible]
SINGLE-FAMILY ATTACHED	[illegible]	[illegible]	[illegible]	[illegible]
TWO TO FOUR UNITS	[illegible]	[illegible]	[illegible]	[illegible]
FIVE OR MORE UNITS	[illegible]	[illegible]	[illegible]	[illegible]
MOBILE HOME	[illegible]	[illegible]	[illegible]	[illegible]
YEAR HOUSE BUILT				
BEFORE 1940	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1975 OR LATER	[illegible]	[illegible]	[illegible]	[illegible]
HEATED SQUARE FOOTAGE				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Table 18. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Socio-demographic Characteristics for 1990

Socioeconomic Characteristics	Number of Households (Million)	End Use		
		Space Heating (Million Btu)	Water Heating (Million Btu)	Miscellaneous Use (Million Btu)
NATIONAL	13.4 (0.7)	76.6 (0.9)	16.4 (1.2)	Q
GEOGRAPHIC REGION				
NORTHEAST	8.5 (0.5)	104.8 (2.7)	23.4 (1.6)	Q
NORTH CENTRAL	1.9 (0.2)	58.6 (4.2)	3.5 (0.9)	Q
SOUTH	3.1 (0.4)	76.5 (4.8)	6.9 (2.0)	Q
WEST	0.5 (0.1)	63.9 (4.5)	1.2 (0.7)	Q
HEATING DEGREE DAYS				
0-1,999	Q	Q	Q	Q
2,000-2,999	Q	Q	Q	Q
3,000-3,999	1.0 (0.2)	75.5 (5.6)	1.4 (1.2)	Q
4,000-4,999	3.2 (0.4)	69.8 (3.7)	10.4 (1.9)	Q
5,000-5,999	5.4 (0.7)	96.9 (5.1)	22.5 (3.6)	Q
6,000-6,999	2.9 (0.5)	105.9 (4.9)	15.0 (2.2)	Q
7,000-7,999	1.4 (0.2)	103.4 (2.3)	25.9 (3.6)	Q
8,000 OR MORE	0.4 (0.2)	100.6 (7.6)	7.8 (2.0)	Q
INCOME				
LESS THAN $5,000	2.6 (0.2)	70.8 (5.9)	10.4 (1.3)	Q
$5,000-$9,999	2.8 (0.2)	95.2 (5.9)	22.6 (3.0)	Q
$10,000-$14,999	2.4 (0.2)	88.8 (5.0)	15.4 (2.6)	Q
$15,000-$19,999	1.8 (0.2)	90.3 (5.3)	14.2 (2.2)	Q
$20,000-$24,999	1.4 (0.2)	68.7 (5.3)	11.8 (2.6)	Q
$25,000-$34,999	2.0 (0.2)	98.7 (4.7)	16.7 (2.2)	Q
$35,000 OR MORE	1.4 (0.2)	110.8 (5.2)	22.2 (2.3)	Q
NUMBER OF HOUSEHOLD MEMBERS				
ONE	2.7 (0.3)	74.1 (7.1)	10.7 (1.8)	Q
TWO	4.6 (0.2)	95.7 (3.8)	16.5 (2.5)	Q
THREE	3.3 (0.2)	77.4 (5.1)	14.3 (2.4)	Q
FOUR	2.2 (0.2)	71.2 (4.7)	12.6 (1.5)	Q
FIVE OR MORE	1.6 (0.2)	69.1 (6.1)	15.5 (2.5)	Q

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BASIS OF HOUSING. DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1990 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

Table [illegible]. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Housing Characteristics for [illegible]

[illegible]	[illegible]	[illegible]		
		[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

Table 29. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Socio-demographic Characteristics for 1990

Socio-demographic Characteristics	Number of Households (Million)	End Use		
		Space Heating (Million Btu)	Water Heating (Million Btu)	Miscellaneous Use (Million Btu)
National	2.7 (0.4)	68.7 (3.4)	10.9 (2.1)	6.5 (0.9)
Geographic Region				
Northeast	0.5 (0.2)	75.4 (20.2)	9.1 (3.8)	2.6 (1.4)
North Central	1.2 (0.3)	80.5 (5.2)	15.4 (3.9)	8.3 (1.9)
South	0.9 (0.3)	45.9 (3.7)	6.8 (2.4)	6.7 (1.4)
West	0.1 (0.1)	27.7 (8.7)	6.7 (2.7)	9.4 (1.5)
Heating Degree Days				
0-3,999	0.5 (0.2)	22.9 (6.2)	7.1 (3.3)	10.6 (1.8)
4,000-5,499	0.4 (0.2)	55.7 (4.2)	17.2 (3.5)	6.6 (1.8)
5,500-6,999	0.9 (0.3)	51.6 (4.5)	7.7 (2.4)	3.7 (0.9)
7,000-8,499	0.4 (0.1)	67.5 (6.7)	20.1 (2.8)	2.8 (0.9)
8,500-9,999	0.3 (0.2)	69.7 (5.3)	13.5 (2.2)	6.2 (1.1)
10,000-11,999	0.3 (0.1)	78.2 (12.7)	15.0 (2.5)	6.6 (1.3)
12,000-13,999	0.4 (0.2)	83.0 (15.7)	12.9 (1.5)	5.8 (1.1)
14,000 or more	Q	Q	Q	Q
Income				
Less than $5,000	0.3 (0.1)	34.5 (3.9)	10.9 (1.4)	6.7 (0.8)
$5,000-$9,999	0.9 (0.3)	55.5 (2.6)	8.5 (2.0)	5.8 (0.8)
$10,000-$14,999	0.7 (0.3)	69.5 (4.8)	11.9 (2.0)	6.5 (1.0)
$15,000-$19,999	0.4 (0.2)	61.2 (6.6)	9.4 (2.8)	5.7 (2.0)
$20,000-$24,999	0.5 (0.2)	71.4 (15.7)	14.1 (4.7)	6.3 (1.5)
$25,000-$34,999	0.5 (0.2)	89.6 (6.7)	14.6 (3.6)	7.4 (1.7)
$35,000 or more	0.3 (0.1)	77.2 (10.2)	14.7 (2.6)	9.5 (1.1)
Number of Household Members				
One	0.4 (0.2)	39.8 (6.8)	5.2 (1.1)	3.5 (0.8)
Two	1.2 (0.3)	62.3 (5.8)	8.3 (2.1)	5.9 (0.9)
Three	0.8 (0.2)	85.7 (6.6)	9.7 (3.7)	5.2 (1.1)
Four	0.3 (0.1)	89.6 (5.8)	15.6 (3.2)	6.5 (1.2)
Five or more	0.2 (0.1)	72.7 (12.1)	23.2 (4.6)	10.1 (1.6)

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

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

Values in parentheses indicate one standard deviation. See Appendix B for a detailed explanation.

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

Table 21. Average Household Energy Expenditures by End Use by Selected Housing Characteristics for 1980

HOUSING CHARACTERISTICS	TOTAL EXPENDITURES (DOLLARS)	END USE			
		SPACE HEATING (DOLLARS)	COOLING (DOLLARS)	WATER HEATING (DOLLARS)	APPLIANCES USE (DOLLARS)
TOTAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TYPE OF STRUCTURE					
SINGLE-FAMILY DETACHED	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SINGLE-FAMILY ATTACHED	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TWO TO FOUR UNITS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
FIVE OR MORE UNITS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MOBILE HOME	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
YEAR HOUSE BUILT					
BEFORE 1940	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1940-1949	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1950-1959	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1960-1964	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1965-1969	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1970-1974	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1975 OR LATER	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBERS IN PARENTHESES INDICATE THE STANDARD ERRORS. SEE APPENDIX [illegible] FOR A [illegible].
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

Table 22. Average Household Energy Expenditures by End Use by Selected Sociodemographic Characteristics for 1980

SOCIODEMOGRAPHIC CHARACTERISTICS	TOTAL EXPENDITURES (DOLLARS)	END USE: SPACE HEATING (DOLLARS)	COOLING (DOLLARS)	WATER HEATING (DOLLARS)	MISCELLANEOUS USE (DOLLARS)
NATIONAL	926 (24)	388 (9)	68 (3)	108 (3)	364 (6)
GEOGRAPHIC REGION					
NORTHEAST	1069 (28)	487 (24)	22 (4)	109 (3)	429 (8)
NORTH CENTRAL	919 (19)	388 (12)	39 (5)	105 (3)	386 (9)
SOUTH	876 (36)	261 (20)	126 (8)	109 (6)	376 (10)
WEST	603 (16)	170 (6)	34 (3)	101 (3)	298 (14)
HEATING DEGREE DAYS					
0-1,999	741 (28)	109 (16)	194 (20)	148 (7)	379 (14)
2,000-2,999	717 (26)	144 (9)	104 (16)	112 (9)	357 (14)
3,000-3,999	791 (25)	262 (17)	93 (7)	125 (5)	327 (13)
4,000-4,999	854 (73)	316 (20)	67 (11)	135 (16)	302 (26)
5,000-5,999	1079 (45)	459 (27)	50 (8)	169 (7)	384 (16)
6,000-6,999	998 (36)	457 (20)	19 (4)	148 (6)	378 (13)
7,000-7,999	1011 (38)	546 (19)	4 (2)	140 (8)	381 (10)
8,000 OR MORE	979 (67)	489 (49)	4 (2)	140 (10)	379 (24)
INCOME					
LESS THAN $5,000	725 (33)	347 (29)	26 (3)	120 (6)	258 (9)
$5,000-$9,999	809 (31)	348 (18)	30 (4)	132 (4)	296 (8)
$10,000-$14,999	857 (25)	339 (17)	49 (4)	135 (6)	318 (9)
$15,000-$19,999	900 (22)	358 (16)	61 (5)	145 (9)	363 (8)
$20,000-$24,999	986 (19)	367 (16)	72 (6)	154 (4)	392 (7)
$25,000-$34,999	1008 (25)	349 (18)	81 (6)	157 (6)	424 (11)
$35,000 OR MORE	1240 (36)	424 (20)	103 (9)	176 (7)	462 (17)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	606 (30)	225 (19)	48 (3)	84 (4)	220 (6)
TWO	869 (20)	354 (13)	63 (4)	130 (3)	320 (6)
THREE	961 (21)	355 (13)	72 (5)	152 (5)	388 (8)
FOUR	1062 (26)	366 (17)	75 (5)	170 (5)	453 (14)
FIVE OR MORE	1171 (33)	395 (16)	61 (5)	205 (6)	499 (13)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESES INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION. THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

Table 23. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Housing Characteristics for 1980

HOUSING CHARACTERISTICS	MAIN HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
NATIONAL	[illegible]	[illegible]	[illegible]
HOUSING STRUCTURE			
SINGLE-FAMILY DETACHED	[illegible]	[illegible]	[illegible]
SINGLE-FAMILY ATTACHED	[illegible]	[illegible]	[illegible]
TWO TO FOUR UNITS	[illegible]	[illegible]	[illegible]
FIVE OR MORE UNITS	[illegible]	[illegible]	[illegible]
MOBILE HOME	[illegible]	[illegible]	[illegible]
YEAR HOUSE BUILT			
BEFORE 1940	[illegible]	[illegible]	[illegible]
1940-1949	[illegible]	[illegible]	[illegible]
1950-1959	[illegible]	[illegible]	[illegible]
1960-1964	[illegible]	[illegible]	[illegible]
1965-1969	[illegible]	[illegible]	[illegible]
1970-1974	[illegible]	[illegible]	[illegible]
1975 OR LATER	[illegible]	[illegible]	[illegible]
HEATED SQUARE FOOTAGE			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
2,400 OR MORE	[illegible]	[illegible]	[illegible]

"*" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESES INDICATE THE RELATIVE STANDARD ERROR. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 24. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Socio-demographic Characteristics for 1980

SOCIODEMOGRAPHIC CHARACTERISTICS	MAIN HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
NATIONAL	241 (24)	285 (9)	773 (23)
GEOGRAPHIC REGION			
NORTHEAST	424 (44)	424 (20)	887 (31)
NORTH CENTRAL	359 (42)	385 (21)	704 (29)
SOUTH	220 (34)	240 (10)	650 (32)
WEST	150 (9)	163 (5)	594 (37)
HEATING DEGREE DAYS			
0-1,999	86 (14)	203 (6)	Q
2,000-2,999	184 (13)	205 (8)	Q
3,000-3,999	218 (21)	209 (22)	590 (17)
4,000-4,999	270 (32)	249 (23)	648 (24)
5,000-5,999	384 (30)	309 (16)	794 (51)
6,000-6,999	332 (48)	269 (9)	843 (37)
7,000-7,999	396 (62)	422 (24)	877 (40)
8,000 OR MORE	475 (122)	374 (15)	838 (44)
INCOME			
LESS THAN $5,000	229 (28)	261 (11)	560 (79)
$5,000-$9,999	236 (37)	283 (12)	764 (48)
$10,000-$14,999	222 (29)	271 (11)	712 (44)
$15,000-$19,999	259 (32)	266 (16)	765 (28)
$20,000-$24,999	264 (31)	304 (14)	779 (47)
$25,000-$34,999	243 (20)	246 (31)	779 (48)
$35,000 OR MORE	320 (46)	334 (20)	892 (44)
NUMBER OF HOUSEHOLD MEMBERS			
ONE	180 (23)	239 (10)	560 (27)
TWO	222 (24)	277 (6)	781 (26)
THREE	269 (29)	282 (11)	805 (30)
FOUR	279 (26)	302 (13)	741 (29)
FIVE OR MORE	330 (42)	327 (13)	898 (47)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
FIGURES IN PARENTHESES INDICATE ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

Summary of Findings (Continued)

Table 26. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Sociodemographic Characteristics for 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLIONS)	END USE: SPACE HEATING (MILLION BTU)	END USE: COOLING (MILLION BTU)	END USE: WATER HEATING (MILLION BTU)	END USE: MISCELLANEOUS USE (MILLION BTU)
NATIONAL	14.8 (1.1)	29.5 (1.7)	4.6 (0.4)	10.4 (0.4)	17.8 (0.5)
GEOGRAPHIC REGION					
NORTHEAST	1.5 (0.2)	32.2 (4.6)	1.2 (0.4)	10.1 (0.9)	16.8 (0.9)
NORTH CENTRAL	1.6 (0.3)	39.2 (4.2)	2.4 (0.3)	9.0 (0.6)	16.9 (1.3)
SOUTH	7.7 (0.7)	25.3 (2.4)	10.6 (0.6)	10.2 (0.3)	18.8 (1.0)
WEST	4.4 (0.3)	21.5 (1.6)	2.2 (0.7)	10.4 (0.4)	15.2 (0.9)
HEATING DEGREE DAYS					
0-1,999	3.6 (0.3)	4.2 (1.9)	15.2 (1.1)	8.2 (1.3)	16.7 (1.9)
1,000-2,999	1.7 (0.3)	11.7 (1.3)	7.8 (1.0)	9.3 (1.1)	16.1 (1.6)
3,000-3,999	2.1 (0.4)	18.3 (1.9)	6.4 (1.3)	10.9 (1.4)	18.9 (1.0)
4,000-4,999	2.0 (0.5)	25.9 (1.5)	3.8 (1.2)	11.1 (0.7)	19.2 (1.3)
5,000-5,999	2.6 (0.3)	30.4 (2.1)	1.7 (0.3)	10.9 (0.7)	18.4 (1.3)
6,000-6,999	1.7 (0.3)	36.5 (2.5)	1.8 (0.4)	10.4 (0.7)	17.8 (1.2)
7,000-7,999	0.6 (0.2)	30.1 (5.6)	0.3 (0.1)	9.7 (0.5)	15.7 (1.6)
8,000 OR MORE	0.4 (0.1)	42.9 (10.9)	0.4 (0.3)	9.8 (1.3)	14.8 (2.9)
INCOME					
LESS THAN $5,000	2.9 (0.4)	14.8 (1.6)	4.9 (0.9)	7.2 (0.7)	11.7 (0.6)
$5,000-$9,999	2.3 (0.3)	17.5 (1.7)	4.5 (0.6)	7.6 (0.6)	15.8 (0.7)
$10,000-$14,999	2.2 (0.3)	17.9 (1.4)	4.8 (0.5)	10.3 (0.5)	16.6 (1.3)
$15,000-$19,999	2.1 (0.3)	22.1 (2.3)	4.3 (0.5)	11.1 (0.7)	17.3 (1.2)
$20,000-$24,999	1.8 (0.3)	20.8 (3.4)	3.8 (1.0)	11.0 (0.8)	16.3 (1.1)
$25,000-$34,999	1.9 (0.3)	20.9 (2.6)	4.9 (1.4)	15.2 (1.2)	22.7 (1.5)
$35,000 OR MORE	2.1 (0.5)	20.5 (2.5)	11.6 (2.1)	15.9 (0.8)	21.3 (0.9)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	3.1 (0.3)	16.7 (1.4)	3.6 (0.3)	6.6 (0.9)	10.2 (0.7)
TWO	4.0 (0.4)	24.3 (2.2)	4.6 (0.5)	9.2 (0.5)	15.7 (0.6)
THREE	2.9 (0.3)	29.9 (3.4)	5.1 (1.3)	12.3 (0.6)	19.5 (0.7)
FOUR	2.3 (0.2)	30.5 (2.6)	7.0 (1.4)	14.0 (0.6)	21.2 (1.0)
FIVE OR MORE	1.8 (0.2)	28.4 (2.2)	7.2 (1.2)	16.2 (1.0)	26.3 (1.4)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESES INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

Table 51. Average Household Natural Gas Consumption [redacted] Fuel to Natural Gas by End Use for Selected Housing Characteristics, [redacted]

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

Table 28. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Socio-demographic Characteristics for 1981

SOCIO-DEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLIONS)	GAS USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	44.5 (1.8)	81.6 (1.7)	21.4 (0.4)	8.7 (0.2)
GEOGRAPHIC REGION				
NORTHEAST	7.9 (1.0)	105.5 (2.8)	28.4 (0.8)	9.4 (0.3)
NORTH CENTRAL	25.4 (0.8)	111.5 (2.1)	32.6 (0.7)	9.2 (0.3)
SOUTH	10.1 (0.9)	38.9 (2.1)	10.4 (0.6)	6.5 (0.7)
WEST	10.6 (0.9)	81.6 (1.7)	20.1 (0.7)	9.2 (0.4)
HEATING DEGREE DAYS				
0-1,249	5.4 (1.0)	35.8 (2.5)	29.2 (1.6)	10.5 (0.4)
1,250-2,499	9.4 (0.9)	40.9 (2.1)	31.7 (1.0)	10.7 (0.7)
2,500-3,999	9.4 (0.7)	62.3 (3.0)	37.9 (1.4)	8.4 (0.5)
4,000-5,999	2.8 (0.7)	76.6 (7.4)	30.9 (3.6)	7.6 (2.3)
6,000-7,999	7.4 (1.0)	94.8 (3.0)	23.8 (0.8)	7.4 (0.4)
8,000-9,999	9.8 (1.3)	111.3 (5.0)	20.5 (0.9)	6.8 (0.5)
10,000-11,999	4.7 (1.0)	115.8 (5.0)	20.5 (1.3)	8.2 (0.6)
12,000 OR MORE	2.8 (0.7)	112.8 (5.2)	19.3 (1.4)	8.3 (0.6)
INCOME				
LESS THAN $5,000	3.1 (0.6)	70.5 (5.2)	15.8 (2.0)	7.5 (0.7)
$5,000-$9,999	7.2 (0.9)	60.8 (4.2)	17.4 (1.2)	8.3 (0.4)
$10,000-$14,999	6.7 (0.3)	76.9 (3.0)	19.3 (0.7)	7.9 (0.3)
$15,000-$19,999	5.5 (0.3)	81.1 (3.1)	19.8 (0.7)	7.9 (0.3)
$20,000-$24,999	5.3 (0.4)	79.3 (3.3)	20.9 (0.9)	8.3 (0.7)
$25,000-$34,999	8.2 (0.4)	88.2 (2.2)	24.5 (0.9)	8.6 (0.4)
$35,000 OR MORE	7.9 (0.6)	92.7 (3.7)	28.4 (1.4)	10.0 (0.6)
NUMBER OF HOUSEHOLD MEMBERS				
ONE	8.5 (0.5)	72.6 (3.9)	9.6 (0.5)	5.9 (0.4)
TWO	14.9 (0.6)	80.2 (2.6)	18.6 (0.6)	9.2 (0.3)
THREE	8.5 (0.5)	87.1 (3.9)	25.3 (0.6)	8.9 (0.6)
FOUR	8.1 (0.5)	85.3 (2.4)	28.6 (0.7)	10.6 (0.6)
FIVE OR MORE	5.1 (0.4)	88.3 (3.3)	30.9 (1.3)	10.8 (1.0)

"0" = DATA ESTIMATED BECAUSE OF A LARGE VARIANCE.
NOTE: NUMBER OF HOUSEHOLDS, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESES REPRESENTS ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED EXPLANATION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

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[illegible]

Table 30. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Socio-demographic Characteristics for 1981

Socio-demographic characteristics	Number of households (million)	End use		
		Space heating (million Btu)	Water heating (million Btu)	Miscellaneous use (million Btu)
NATIONAL	12.6 (0.6)	87.9 (2.2)	15.1 (1.2)	R
CENSUS REGION				
NORTHEAST	7.9 (0.8)	94.4 (3.3)	22.2 (1.4)	R
NORTH CENTRAL	1.7 (0.2)	94.1 (4.2)	9.7 (0.7)	R
SOUTH	2.2 (0.4)	69.7 (10.3)	6.5 (1.5)	R
WEST	0.8 (0.1)	67.7 (6.2)	R	R
HEATING DEGREE DAYS				
0-1,999	0.4 (0.2)	35.6 (8.0)	6.1 (0.1)	R
2,000-3,999	R	R	R	R
4,000-5,999	0.6 (0.3)	57.6 (14.4)	R	R
6,000-6,999	0.3 (0.1)	75.8 (9.2)	5.9 (1.6)	R
7,000-7,999	0.9 (0.1)	93.8 (6.0)	21.5 (4.9)	R
8,000-8,999	2.3 (0.5)	59.6 (8.3)	27.3 (5.1)	R
9,000-9,999	2.1 (0.3)	89.7 (3.5)	14.1 (3.0)	R
10,000 OR MORE	1.6 (0.5)	92.0 (8.0)	4.0 (1.1)	R
INCOME				
LESS THAN $5,000	1.3 (0.2)	78.9 (7.0)	21.1 (7.0)	R
$5,000-$9,999	2.2 (0.3)	83.3 (4.5)	15.0 (2.7)	R
$10,000-$14,999	2.1 (0.2)	89.9 (7.5)	14.8 (1.0)	R
$15,000-$19,999	1.5 (0.1)	91.9 (5.6)	15.5 (3.0)	R
$20,000-$24,999	1.6 (0.3)	87.5 (6.0)	15.9 (3.3)	R
$25,000-$34,999	2.6 (0.2)	89.9 (4.0)	13.9 (2.2)	R
$35,000 OR MORE	1.3 (0.2)	111.3 (7.6)	20.3 (2.9)	R
NUMBER OF HOUSEHOLD MEMBERS				
ONE	2.6 (0.3)	87.9 (10.8)	7.0 (2.3)	R
TWO	4.3 (0.6)	89.7 (5.4)	13.4 (1.5)	R
THREE	2.1 (0.2)	77.6 (5.3)	11.6 (2.4)	R
FOUR	1.9 (0.2)	88.4 (3.0)	22.0 (3.0)	R
FIVE OR MORE	1.6 (0.2)	108.2 (9.5)	32.8 (4.2)	R

"R" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBERS IN PARENTHESES INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 21. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Housing Characteristics for 1981

[illegible]	[illegible]	End Use		
		[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Table 32. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Socio-demographic Characteristics for 1981

Socioeconomic/Demographic Characteristics	Number of Households (Million)	End Use		
		Space Heating (Million Btu)	Water Heating (Million Btu)	Miscellaneous (2) (Million Btu)
NATIONAL	5.7 (0.0)	80.2 (4.8)	8.2 (4.0)	9.2 (0.5)
GEOGRAPHIC REGION				
NORTHEAST	8.2 (0.2)	95.8 (37.2)	10.6 (5.7)	2.6 (3.6)
NORTH CENTRAL	7.0 (0.2)	86.7 (6.3)	11.2 (1.1)	2.5 (0.4)
SOUTH	5.1 (0.0)	57.0 (4.4)	8.0 (1.0)	9.1 (0.6)
WEST	8.4 (0.2)	87.9 (38.6)	14.7 (3.0)	3.2 (0.2)
HEATING DEGREE DAYS				
0-2,799	8.7 (0.1)	88.8 (5.2)	3.2 (1.3)	4.8 (0.6)
2,800-4,999	8.8 (0.3)	56.6 (4.3)	10.7 (2.1)	2.0 (0.7)
5,000-6,199	8.8 (0.2)	49.2 (4.2)	8.7 (2.0)	1.8 (0.2)
6,200-7,199	8.4 (0.2)	58.8 (6.4)	8.2 (2.2)	2.5 (1.2)
7,200-8,199	8.8 (0.1)	88.8 (6.2)	12.8 (2.2)	8.3 (0.6)
8,200-9,999	8.3 (0.1)	222.6 (80.8)	7.8 (4.2)	7.2 (1.2)
10,000-11,999	8.8 (0.1)	80.8 (13.8)	18.8 (4.8)	8.1 (2.1)
12,000 OR MORE	8.7 (0.2)	78.2 (12.4)	14.8 (2.8)	1.8 (0.8)
INCOME				
LESS THAN $5,000	8.8 (0.2)	42.8 (5.8)	6.8 (2.8)	2.4 (0.8)
$5,000-$7,999	8.7 (0.2)	88.8 (6.2)	8.2 (1.8)	1.9 (0.2)
$8,000-$14,999	8.8 (0.1)	87.8 (8.8)	7.8 (2.2)	2.8 (0.8)
$15,000-$19,999	8.8 (0.1)	88.8 (11.8)	10.2 (2.8)	3.8 (0.8)
$20,000-$24,999	8.8 (0.2)	82.8 (20.8)	4.2 (2.7)	3.8 (1.8)
$25,000-$34,999	8.8 (0.1)	81.2 (8.8)	7.8 (2.8)	2.8 (1.2)
$35,000 OR MORE	8.8 (0.2)	78.2 (15.8)	18.8 (2.8)	1.8 (0.7)
NUMBER OF HOUSEHOLD MEMBERS				
ONE	8.8 (0.2)	87.7 (8.8)	8.8 (2.8)	2.2 (0.8)
TWO	8.8 (0.2)	88.8 (4.8)	8.8 (1.2)	2.2 (0.8)
THREE	8.8 (0.2)	78.8 (8.2)	8.2 (2.8)	2.8 (0.8)
FOUR	8.8 (0.2)	82.8 (12.2)	8.8 (2.7)	3.2 (1.0)
FIVE OR MORE	8.8 (0.1)	88.8 (28.8)	18.2 (3.8)	8.8 (0.8)

"0" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT ADD UP TO TOTALS.
FIGURES IN PARENTHESES INDICATE ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED EXPLANATION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Table 34. Average Household Energy Expenditures by End Use by Selected Sociodemographic Characteristics for 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	TOTAL EXPENDITURES (DOLLARS)	END USE: SPACE HEATING (DOLLARS)	END USE: COOLING (DOLLARS)	END USE: WATER HEATING (DOLLARS)	END USE: MISCELLANEOUS USE (DOLLARS)
NATIONAL	1022 (17)	403 (12)	72 (4)	150 (3)	396 (7)
GEOGRAPHIC REGION					
NORTHEAST	1426 (35)	675 (32)	26 (4)	220 (20)	507 (15)
NORTH CENTRAL	1042 (32)	467 (23)	48 (4)	157 (4)	307 (12)
SOUTH	922 (30)	258 (19)	148 (9)	150 (8)	367 (10)
WEST	739 (22)	226 (8)	31 (5)	115 (4)	358 (15)
HEATING DEGREE DAYS					
0-1,999	982 (47)	238 (30)	305 (16)	157 (15)	371 (17)
2,000-2,999	755 (26)	186 (8)	65 (9)	112 (6)	378 (14)
3,000-3,999	850 (17)	302 (24)	84 (8)	142 (16)	342 (36)
4,000-4,999	932 (61)	345 (30)	78 (15)	140 (13)	368 (23)
5,000-5,999	1187 (56)	520 (25)	48 (6)	176 (7)	449 (22)
6,000-6,999	1158 (50)	556 (32)	25 (8)	163 (6)	412 (18)
7,000-7,999	1128 (40)	532 (27)	26 (8)	146 (19)	424 (39)
8,000 OR MORE	1030 (58)	501 (38)	7 (3)	158 (20)	363 (14)
INCOME					
LESS THAN $5,000	763 (29)	338 (23)	39 (6)	100 (6)	281 (22)
$5,000-$9,999	906 (27)	346 (19)	47 (8)	127 (7)	308 (16)
$10,000-$14,999	959 (31)	384 (19)	55 (8)	140 (8)	366 (11)
$15,000-$19,999	986 (26)	396 (23)	54 (8)	154 (6)	383 (9)
$20,000-$24,999	1043 (28)	393 (23)	75 (3)	161 (8)	421 (12)
$25,000-$34,999	1106 (30)	389 (28)	88 (7)	166 (6)	464 (21)
$35,000 OR MORE	1333 (53)	483 (26)	142 (11)	195 (8)	516 (19)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	767 (23)	358 (25)	43 (3)	79 (5)	285 (18)
TWO	956 (21)	401 (26)	74 (5)	125 (3)	358 (6)
THREE	1076 (28)	426 (19)	65 (6)	164 (4)	438 (9)
FOUR	1157 (26)	396 (16)	88 (10)	203 (6)	477 (8)
FIVE OR MORE	1287 (24)	436 (15)	75 (7)	250 (9)	531 (11)

"W" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESES INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

Table [illegible]. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Housing Characteristics, 1987

[illegible]	Main Heating Fuel		
	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Summary of Findings (Continued)

Table 36. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Socio-demographic Characteristics for 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	MAIN HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
NATIONAL	328 (33)	387 (7)	790 (23)
GEOGRAPHIC REGION			
NORTHEAST	544 (61)	596 (32)	841 (36)
NORTH CENTRAL	442 (71)	476 (15)	808 (39)
SOUTH	222 (32)	367 (18)	549 (85)
WEST	235 (35)	208 (8)	562 (83)
HEATING DEGREE DAYS			
0-1,999	77 (32)	169 (11)	318 (46)
2,000-2,999	198 (27)	181 (6)	Q
3,000-3,999	304 (33)	356 (16)	537 (157)
4,000-4,999	319 (59)	330 (30)	670 (75)
5,000-5,999	398 (37)	473 (18)	683 (64)
6,000-6,999	388 (38)	479 (17)	846 (73)
7,000-7,999	542 (100)	527 (25)	828 (46)
8,000 OR MORE	601 (114)	485 (25)	811 (44)
INCOME			
LESS THAN $5,000	247 (32)	320 (16)	738 (48)
$5,000-$9,999	271 (26)	364 (18)	705 (46)
$10,000-$14,999	288 (43)	387 (15)	749 (80)
$15,000-$19,999	364 (36)	384 (12)	727 (51)
$20,000-$24,999	271 (38)	366 (15)	792 (51)
$25,000-$34,999	296 (36)	373 (29)	745 (85)
$35,000 OR MORE	307 (28)	412 (22)	901 (74)
NUMBER OF HOUSEHOLD MEMBERS			
ONE	258 (39)	328 (18)	750 (42)
TWO	274 (32)	398 (11)	774 (31)
THREE	283 (41)	387 (17)	649 (69)
FOUR	288 (41)	375 (16)	721 (46)
FIVE OR MORE	376 (35)	391 (18)	853 (81)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

Table 37. Percent of Average Household Electricity Consumption Used for Space Heating When Main Heating Fuel is Electricity by Selected Housing Characteristics for 1978, 1980, 1981

HOUSING CHARACTERISTICS	PERCENT OF ELECTRICITY USED FOR SPACE HEATING BY YEAR		
	1978	1980	1981
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

[illegible]

Table 38. Percent of Average Household Electricity Consumption When Main Heating Fuel is Electricity by Selected Socio-demographic Characteristics for 1978, 1980, 1981

Socioeconomic Characteristics	Percent of Electricity Used for Space Heating by Year		
	1978	1980	1981
National	49 (2.0)	53 (2.6)	56 (2.4)
Geographic Region			
Northeast	58 (4.8)	64 (5.8)	68 (5.6)
North Central	64 (3.0)	63 (3.6)	65 (3.5)
South	33 (2.8)	39 (3.0)	43 (3.3)
West	39 (5.0)	35 (3.8)	42 (5.3)
Heating Degree Days			
0-1,999	14 (2.5)	11 (2.0)	17 (3.0)
2,000-2,999	35 (3.0)	33 (3.0)	36 (3.3)
3,000-3,999	39 (2.5)	37 (3.0)	38 (2.9)
4,000-4,999	45 (3.0)	41 (3.0)	39 (3.0)
5,000-5,999	56 (3.0)	49 (3.0)	46 (3.0)
6,000-6,999	57 (3.0)	63 (3.0)	60 (3.0)
7,000-7,999	60 (3.0)	67 (3.0)	68 (3.0)
8,000 or more	Q	69 (3.0)	69 (3.0)
Income			
Less than $5,000	44 (3.0)	48 (3.0)	52 (3.0)
$5,000-$7,499	37 (3.0)	36 (4.0)	44 (5.0)
$7,500-$9,999	43 (3.0)	33 (3.0)	39 (3.0)
$10,000-$14,999	43 (3.0)	39 (3.0)	41 (3.0)
$15,000-$19,999	41 (3.0)	38 (3.0)	39 (3.0)
$20,000-$24,999	45 (3.0)	43 (3.0)	43 (3.0)
$25,000 or more	49 (2.0)	53 (2.0)	57 (2.0)
Number of Household Members			
One	48 (3.0)	57 (3.0)	65 (3.0)
Two	45 (3.0)	45 (3.0)	47 (3.0)
Three	44 (3.0)	41 (3.0)	43 (3.0)
Four	42 (3.0)	39 (3.0)	43 (3.0)
Five or more	41 (3.0)	37 (3.0)	43 (3.0)

"Q" = Data withheld because of a large variance.
Notes: Regions of Standard, data may not sum to totals.
Figures in parentheses indicate one standard deviation. See Appendix B for a detailed explanation.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy and Use Division, the 1978, 1980, 1981 Residential Energy Consumption Survey.

Summary of Findings (Continued)

Table 38. Percent of Average Household Natural Gas Consumption Used for Space Heating When Main Heating Fuel is Natural Gas by Selected Housing Characteristics for 1978, 1980, 1981

[redacted]	[redacted]		
	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

Table 40. Percent of Average Household Natural Gas Consumption Used for Space Heating When Main Heating Fuel is Natural Gas by Selected Socio-demographic Characteristics for 1978, 1980, 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	PERCENT OF NATURAL GAS USED FOR SPACE HEATING BY YEAR		
	1978	1980	1981
NATIONAL	74 (0.4)	67 (0.4)	72 (0.5)
GEOGRAPHIC REGION			
NORTHEAST	81 (2.0)	79 (1.6)	76 (0.4)
NORTH CENTRAL	86 (0.9)	84 (0.4)	79 (0.4)
SOUTH	71 (2.0)	62 (1.0)	67 (1.9)
WEST	57 (2.0)	59 (2.0)	63 (1.0)
HEATING DEGREE DAYS			
0-1,999	56 (5.0)	45 (1.0)	38 (5.0)
2,000-3,999	67 (3.0)	57 (2.0)	64 (1.0)
4,000-5,999	76 (2.0)	66 (2.0)	75 (0.5)
6,000-7,999	80 (2.0)	72 (2.0)	73 (2.0)
8,000-9,999	81 (2.0)	72 (1.0)	77 (1.0)
10,000-11,999	83 (1.0)	79 (0.0)	79 (2.0)
12,000-13,999	82 (1.0)	77 (1.0)	78 (1.0)
14,000 OR MORE	86 (1.0)	79 (1.0)	83 (1.0)
INCOME			
LESS THAN $5,000	81 (2.0)	72 (1.0)	76 (0.0)
$5,000-$9,999	79 (1.0)	73 (1.0)	77 (1.0)
$10,000-$14,999	79 (1.0)	78 (1.0)	78 (1.0)
$15,000-$19,999	78 (1.0)	68 (1.0)	75 (1.0)
$20,000-$24,999	78 (1.0)	68 (1.0)	78 (1.0)
$25,000-$34,999	78 (2.0)	69 (1.0)	78 (1.0)
$35,000 OR MORE	82 (2.0)	75 (0.0)	69 (2.0)
NUMBER OF HOUSEHOLD MEMBERS			
ONE	80 (2.0)	78 (1.0)	80 (1.0)
TWO	83 (1.0)	72 (1.0)	76 (1.0)
THREE	79 (2.0)	68 (1.0)	73 (2.0)
FOUR	72 (1.0)	64 (1.0)	68 (1.0)
FIVE OR MORE	78 (2.0)	63 (2.0)	64 (2.0)

"W" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF WEIGHTING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, RSE 1978, 1980, 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 41. Percent of Average Household Fuel Oil or Kerosene Consumption Used for Space Heating When Main Heating Fuel is Fuel Oil or Kerosene by Selected Heating Characteristics for 1978, 1987, 1990

[illegible]	[illegible]		
	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]
Housing Type			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
Year House Built			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

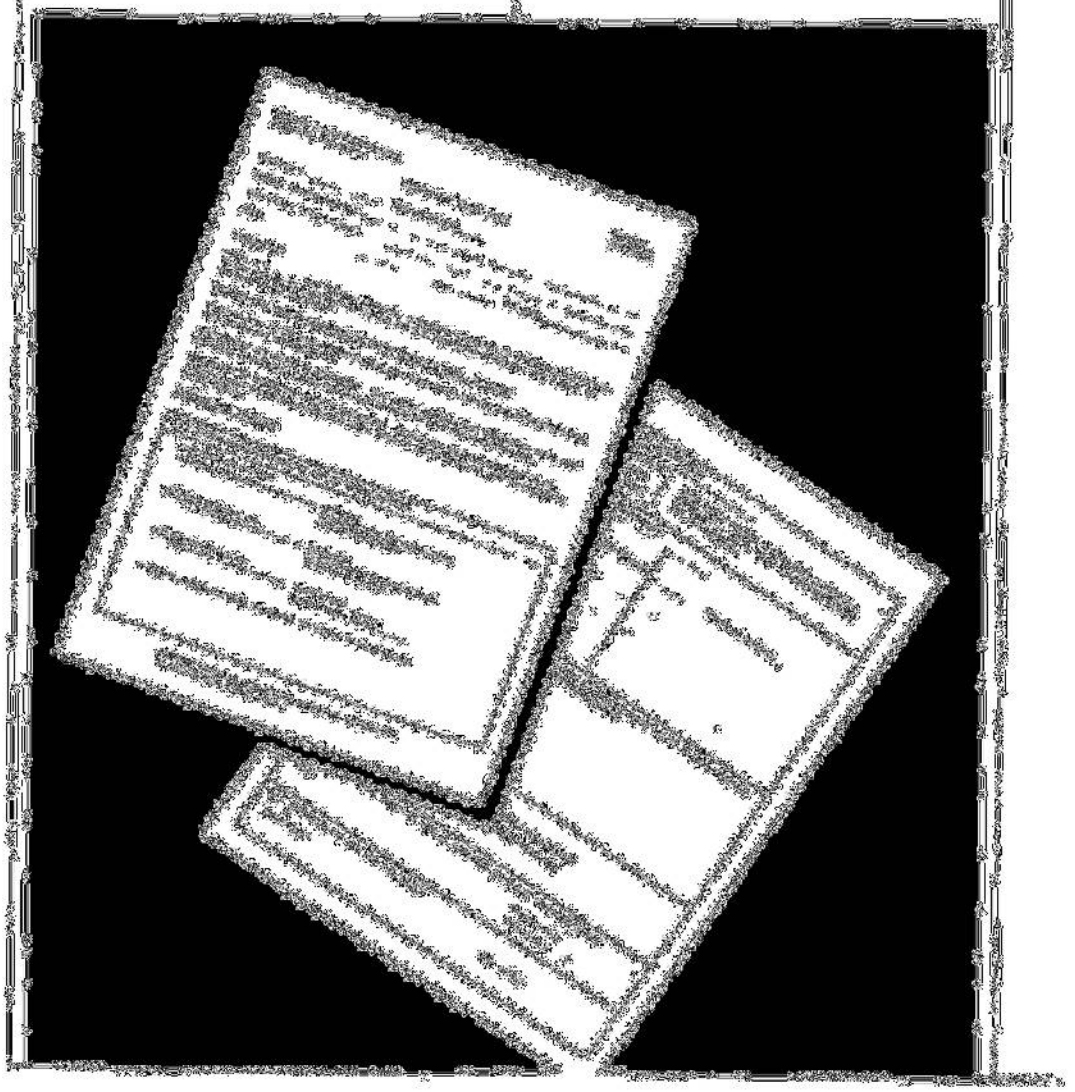
Table 42. Percent of Average Household Fuel Oil or Kerosene Consumption Used for Space Heating When Main Heating Fuel is Fuel Oil or Kerosene by Selected Sociodemographic Characteristics for 1978, 1980, 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	PERCENT OF FUEL OIL OR KEROSENE USED FOR SPACE HEATING BY YEAR		
	1978	1980	1981
NATIONAL	91 (1.0)	85 (1.5)	86 (1.3)
GEOGRAPHIC REGION			
NORTHEAST	91 (4.5)	87 (1.0)	90 (1.8)
NORTH CENTRAL	97 (1.0)	76 (1.9)	97 (1.0)
SOUTH	97 (1.0)	78 (3.9)	76 (2.4)
WEST	103 (6.2)	92 (1.9)	97 (2.0)
HEATING DEGREE DAYS			
0-1,999	98 (1.0)	Q	104 (1.0)
2,000-2,999	Q	Q	Q
3,000-3,999	96 (3.8)	90 (3.5)	Q
4,000-4,999	97 (3.8)	89 (4.0)	91 (3.8)
5,000-5,999	91 (2.0)	81 (3.0)	81 (3.8)
6,000-6,999	95 (1.9)	87 (1.0)	88 (2.8)
7,000-7,999	96 (2.8)	87 (2.0)	87 (3.8)
8,000 OR MORE	100 (1.0)	93 (4.0)	95 (2.8)
INCOME			
LESS THAN $5,000	97 (1.0)	86 (3.9)	88 (6.0)
$5,000-$9,999	90 (1.8)	82 (2.0)	87 (2.8)
$10,000-$14,999	96 (1.0)	82 (1.0)	86 (1.0)
$15,000-$19,999	91 (1.9)	87 (2.9)	84 (2.0)
$20,000-$24,999	96 (1.0)	89 (2.9)	86 (3.8)
$25,000-$34,999	93 (1.0)	87 (1.0)	74 (2.9)
$35,000 OR MORE	95 (1.0)	84 (1.9)	84 (3.9)
NUMBER OF HOUSEHOLD MEMBERS			
ONE	97 (0.8)	86 (2.8)	92 (1.8)
TWO	99 (1.8)	85 (1.6)	89 (1.9)
THREE	94 (3.0)	87 (1.0)	88 (2.8)
FOUR	92 (1.8)	88 (1.0)	80 (4.8)
FIVE OR MORE	89 (1.0)	83 (1.9)	76 (2.9)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESES INDICATES THE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED EXPLANATION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION. THE 1978, 1980, 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Appendix A

Summary of the Data



Appendix A

The data contained in this report come from three residential energy consumption and expenditure surveys conducted by the Energy Information Administration, U.S. Department of Energy. The subsamples were collected from a sample of households during 1979, 1980, and 1981. Households were selected using a multiple stage probability sampling design.

The housing characteristics information was collected in personal interviews with adult residents of a representative national sample of households. Figures on actual total consumption and expenditures were obtained from the householdâ€™s fuel suppliers. Estimates for end-use data are residual, rather than metered, data.

Although the three surveys were very similar in questionnaire concepts and data collection, there were, nevertheless, several differences. Table A1 highlights these differences.

Table A1. Comparison of Three Residential Energy Consumption and Expenditures Surveys

1979 RECS	1980 RECS [1]	1981 RECS [1]
Sample design was specifically created for RECS needs. Instead stratified as all purpose design.	Sample design created for multivariate of residential energy consumption and related housing characteristics.	Same as 1980
Target population does not include households in Alaska, Hawaii, or on U.S. military bases.	Target population includes all households in the United States, including Alaska, Hawaii, and U.S. military bases.	Same as 1980
Unit respondent's estimate of square footage for dwelling.	Unit interviewer's measurement of square footage for dwelling.	Same as 1980
Heating degree-days calculated using a base of 65.	Heating degree-days calculated using bases of 50° F through 80° F.	Same as 1980
Weather data obtained using long-term averages adjusted by Census Division for April 1978 through March 1979.	Weather data obtained using recorded daily highs and lows at the National Climatic and Atmospheric Administration's (NOAA) climatic weather stations.	Same as 1980
Geographic units were four Census regions: Northeast, North Central, South, West.	The four geographic regions were further divided into nine Census divisions.	Same as 1980

[1] Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 through March 1981, Part 1: National Data (Washington D.C., May 1983). Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 through March 1981, Part 2: Regional Data (Washington D.C., December 1983). Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 through June 1982 (Washington D.C., September 1984).

Appendix A (Continued)

Table A2. Number of Households by Main Heating Fuel by Survey Year (Million Households)

Main Heating Fuel	1978	1980	1981
All Households	76.6 (0)	81.6 (0)	83.1 (0)
Households Where Main Heating Fuel is Electricity	12.1(1.2)	14.3(1.0)	14.2(1.1)
Households Where Main Heating Fuel is Natural Gas	41.8(1.9)	44.6(1.5)	46.2(1.5)
Households Where Main Heating Fuel is Fuel Oil or Kerosene	16.9(1.3)	13.4(0.7)	12.2(0.6)
Households Where Main Heating Fuel is LPG	3.1(0.5)	3.7(0.4)	3.7(0.4)

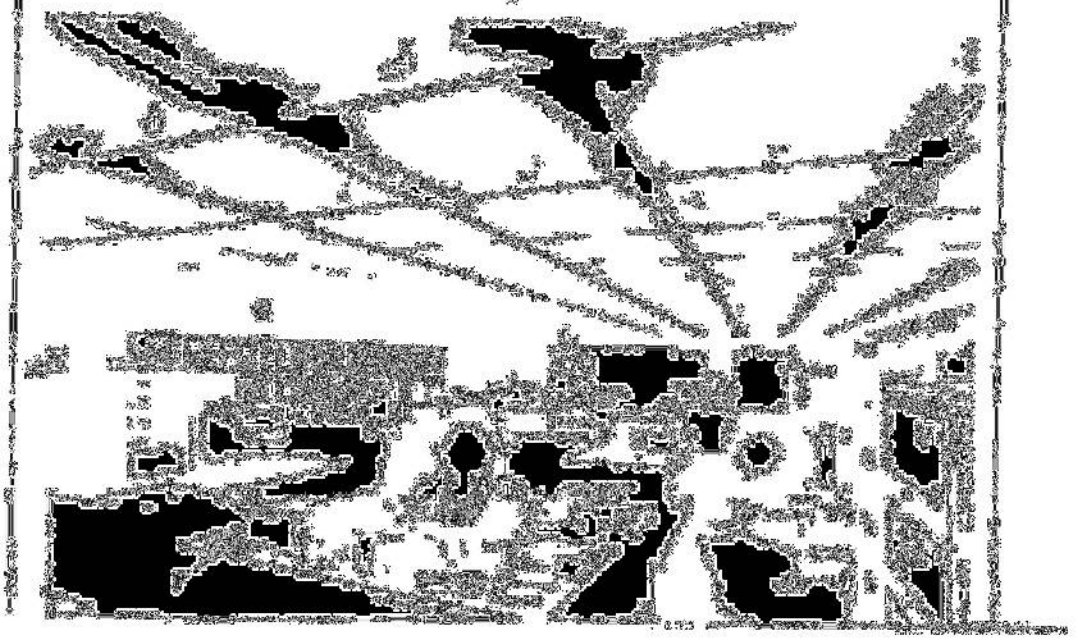
Household consumption data for natural gas, electricity, fuel oil/kerosene, and liquefied petroleum gas (LPG) were collected from the suppliers. Kerosene was combined with fuel oil. Figures for natural gas and electricity were based on actual consumption, while fuel oil/kerosene and LPG figures were based on the amount delivered to households rather than on the amount consumed. Both consumption and expenditure information for the three surveys was annualized for April 1978 through March 1979, April 1980 through March 1981, and April 1981 through March 1982. In this report, consumption figures are reported in million Btu except when consumption is adjusted for heating degree-days (HDD). These figures are reported in thousand Btu. Expenditure figures are reported in dollars.

Four end uses were examined: space heating, water heating, cooling[2], and miscellaneous use. Miscellaneous use includes cooking, lighting, dishwashing, clothes drying, pool heating, and other uses. Consumption and expenditure estimates for the four end uses were addressed in terms of selected housing characteristics and selected sociodemographic characteristics. Housing characteristics included dwelling structure, the age of the structure, and heated square footage of the dwelling. Sociodemographic characteristics included the geographic region, number of heating degree-days, income, and number of household members. The base for the number of heating degree-days was 65 degrees Fahrenheit. Income refers to family income immediately before the survey year.

[2]Cooling applies only to electricity consumption. The small amount of natural gas used for air-conditioning was included in the miscellaneous use for natural gas.

Appendix B

Methodology



Appendix B

The analysis of residential energy consumption and expenditures by end use categories was carried out in three steps. The first step was to use a regression technique to develop a regression equation that predicts energy consumption. Energy expenditures were estimated based on the results from consumption.

Twelve equations were developed. For each of the three surveys, a separate equation was developed for each of the four main energy sources: electricity, natural gas, fuel oil, and LPG. In each equation, the dependent variable was energy consumption (or expenditure) in each of the following uses. These are, for the 1978 survey, heating (consumption was from April 1978 to March 1979 for the 1980 survey, consumption was from April 1979 to March 1980, and so forth).

For electricity, the theoretical model that was used for all surveys was

Total Consumption = Space Heating Component + Water Heating Component + Air-Conditioning + Miscellaneous Appliances

The space heating component consisted of all electricity used in electric space heating equipment. Similarly, for water heating and air-conditioning, the components consisted of all electricity used in electric water heating equipment and electric air-conditioning equipment. The miscellaneous component consisted of all electricity not used specifically for any of the above end uses. This miscellaneous use included refrigerators, cooking, lighting, entertainment, clothes drying as well as many other uses. In many households, the miscellaneous component equaled the total consumption.

As it was also electricity used for many miscellaneous uses during the summer will contribute to the space heating component. In this report, this secondary effect of miscellaneous consumption will be ignored. The water heating component only includes electricity used for heating water for both uses. It did not include energy used for heating water on a range or any appliance for cooking or drinking purposes. The impact of electricity was included in the miscellaneous component.

The theoretical model used for natural gas, fuel oil, and LPG consisted of only three components: space heating, water heating, and miscellaneous use. The air-conditioning component was added to the electricity equation.

The independent variables used in the regression equations were grouped together into sets of independent variables corresponding to the components. The components were estimated by using the binary equations formed from the independent variables in the corresponding sets and their estimated regression coefficients.

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[1] For a more detailed explanation of the regression procedure see Chapter 3 and 4 of "Residential Energy Consumption Surveys: Estimation of Energy Consumption and Use, 1978-1981," Washington, D.C., October 1983.

Many of the independent variables were multiple interaction terms. For instance, in the 1980 survey, the equation for the space heating component of the natural gas model contained an independent variable that was the product of an indicator variable for natural gas main space heating, times the heated square footage of the dwelling, times the heating degree-days. The water heating component of the electricity model for the 1981 survey contained an independent variable that was the product of an indicator variable for electric water heating, times the number of household members.

All independent variables involved indicator variables for a type of equipment or appliance except some of the variables used in the miscellaneous component for electricity. The use of electricity for small appliances, lighting, and various other small uses was represented by independent variables such as heated square footage, number of household members, and number of rooms.

The sets of independent variables that were used varied from survey to survey. For a given survey, they varied from fuel to fuel. Some appliances only used electricity, hence, the indicator variable for that appliance was only used in the electricity components. Even if the differences between the indicator variables for electric main space heating and the ones for natural gas, fuel oil, and LPG main space heating are discounted, the independent variables used in the space heating components were still different. Some of this difference is due to the type of equipment used with the different fuels and some is due to the differences in the populations of households that used the different fuels. Additionally, more households used natural gas for space heating than used electricity, fuel oil, or LPG (Table A1). Hence, it was possible to use more independent variables when fitting the space heating component for natural gas.

Only a few independent variables were used in the water heating component for any fuel. In addition, relatively few households used fuel oil or LPG as their water heating fuel. Therefore, the accuracy of the estimated water heating component for fuel oil and LPG may be limited.

One reason that the set of independent variables varied from survey to survey was that the amount and type of information changed from survey to survey. For instance, a reliable estimate of the square footage was not available for the 1978 survey; more accurate weather data was available for the 1980 and 1981 surveys; and the questions concerning appliance stock, heating equipment, and insulation characteristics were changed for each survey.

We did not attempt to interpret the coefficients of the independent variables in the regression equation. The fact that the set of independent variables changed from survey to survey would prevent any comparisons between surveys. Additionally, many of the independent variables were highly colinear. An example of this is the set of interaction terms used in the natural gas space heating component for the 1981 survey. This set included three interaction terms involving an indicator variable for natural gas main space heating, multiplied by different measures of dwelling size. These measures were heated square footage, number of rooms, number of doors and windows. Hence, the effect of dwelling size on the space heating component of the natural gas component was divided between several of the independent variables.

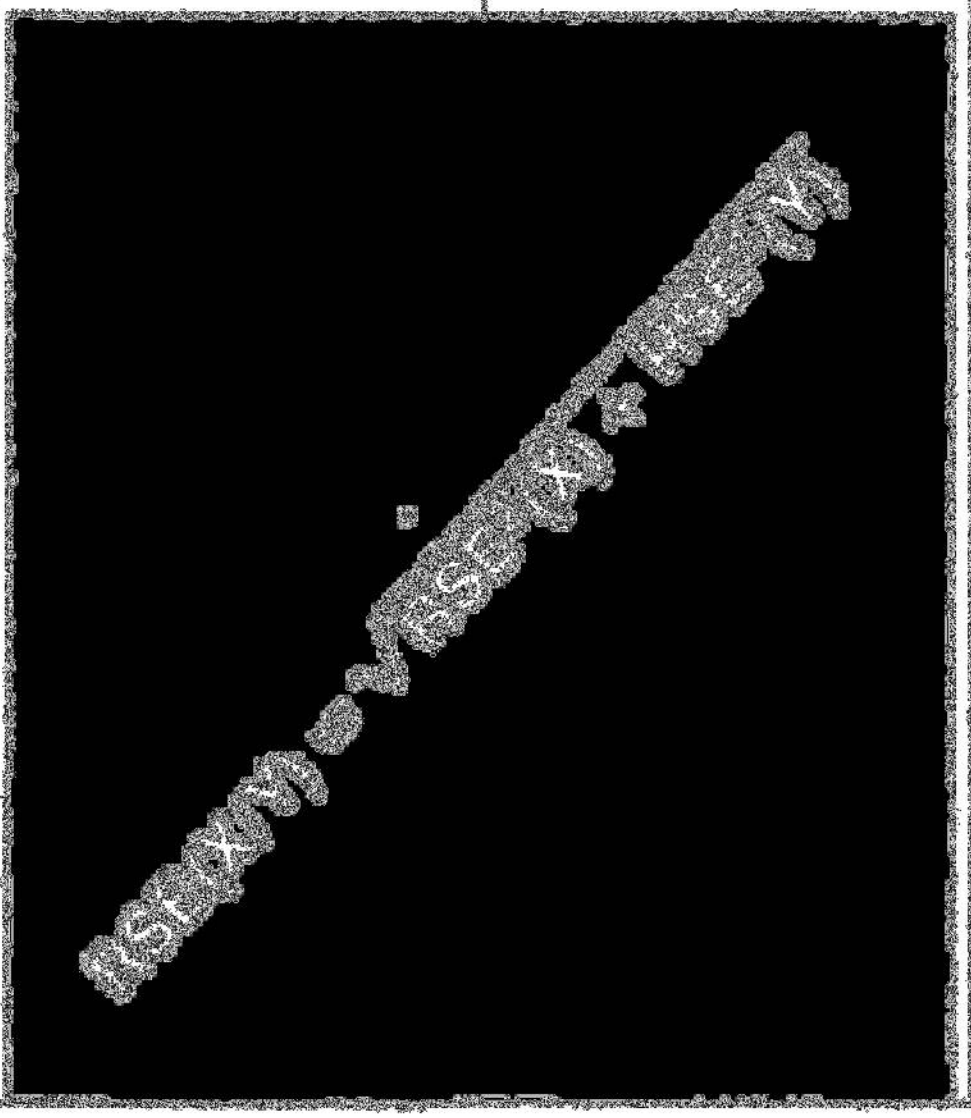
As previously outlined, the fitted regression equations were split into components. The components represent end-use categories that were easily interpreted. The problem of colinearity is greatly reduced by summing terms that were highly colinear.

Appendix B (Continued)

[redacted]

Appendix C

Limitations of the Data



Appendix E

Table C1. Number of Sample Households That Use Each Fuel and Percent of Households with Usable[a] Fuel Records by Fuel Used and by Type of Housing Structure[b]

Type of Fuel Use	Total Households in Sample Using the Fuel	Mobile Home	Single-Family	Units in Buildings With Two to Four Units	Units in Buildings With Five or More Units
Electricity					
Number of Households	4,863	393	4,348	197	833
Percent with Usable Fuel Records	80.8	80.2	88.8	87.3	52.1
Natural Gas					
Number of Households	3,850	118	2,650	344	537
Percent with Usable Fuel Records	71.7	68.7	88.2	86.5	13.8
Fuel Oil or Kerosene					
Number of Households	1,122	70	724	139	189
Percent with Usable Fuel Records	48.7	37.1	64.2	20.7	0
LPG					
Number of Households	627	144	462	16	2
Percent with Usable Fuel Record	61.3	35.9	63.8	56.3	50.0

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

[b]Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 through March 1982, Part II: National Data, DOE/EIA-0321/1 (Washington, D.C.), Table A11.

For those households whose annual energy consumption data were missing or unusable, the consumption amounts were imputed. The imputation procedure for the 1978 and 1980 surveys assumes that the regression equations developed from data on households with usable data can also be used to predict the energy consumption for households whose consumption needs to be imputed. In particular, this assumes that the results on fuel oil consumption for units in buildings with five or more units will not be drastically different from the results for the other housing types. If this assumption is not valid, then the resulting annual consumption estimates and end-use consumption estimates will be biased.

Appendix C (Continued)

Beginning with the 1981 survey, adjustments were made to the imputation procedures for electricity and natural gas consumption. These adjustments take into account some differences between energy consumption patterns for households living in master-metered buildings and those living in buildings with individual meters. Future surveys will expand and refine these adjustments.

Additional problems with the annual data that may result in biases in the estimates are nonresponse and misreporting. The annual estimates are derived under the assumption that the nonrespondents and neighboring respondents have similar energy characteristics. While there may be differences between neighboring households, any systematic difference between neighboring respondents and nonrespondents will result in biased estimates.

The RECS data did not cover vacant units and vacation or second residential units. This represents an undetermined fraction of the total energy used in the residential sector. The results in this report give estimates for average end-use consumption only for occupied primary residences. If the vacant units and secondary units were included in the averages, then it is expected that the results would be lower.

The sample design for the 1978 survey did not cover Alaska, Hawaii, and residential housing units on military bases. The 1980 and 1981 survey did cover these residential units. Residences on military bases were not classified as residential units. The results for the 1978 survey were biased by this undercoverage. This affects comparisons between the 1978 results and the results for 1980 and 1981.

The effect of not covering Alaska and Hawaii, in the 1978 survey was examined by analyzing the results for the 1980 and 1981 surveys. The results of the analysis tentatively showed that dropping Hawaii and Alaska would increase the average electricity consumption in the West Census region by approximately .8 percent, decrease the average natural gas consumption by approximately 1 percent, increase the average fuel oil and kerosene consumption by approximately 4 percent, and decrease the average LPG consumption by approximately 6 percent. The effects on the national averages were approximately a .1 percent decrease, a .1 percent increase, a .4 percent increase, and a .3 percent decrease for electricity, natural gas, fuel oil/kerosene, and LPG, respectively.

In comparing the results for 3 years, the changes in the population will affect the interpretation of the results. For instance, when comparing the results across surveys for units built during or after 1975, the population in 1978 includes units built in 1975 through the summer of 1978. The population in 1980 includes units built in 1975 through the summer of 1980. If the type of units built in 1975 through the summer of 1978 vary from the type of units built from the summer of 1978 through the summer of 1980, then the change in population housing characteristics will cloud the interpretation of any comparisons in energy consumption between the 1978 survey and the 1980 survey.

The disaggregation technique used the regression results to estimate only the percentage of each fuel consumed by each end use. Implicit in this technique was the assumption that if a household used more fuel or less fuel on the average for one end use, it would do so for all end uses by the same percentage. For example, if a household decreased its electricity bill by raising the thermostat setting in the winter, then, during the summer, the household will have also decreased its usage of air conditioning. The percentage of the decrease would have been the same for both end uses. If in changing

that many household did not conform to this behavior pattern. If there were systematic deviations from this pattern, the results given in this report will be biased. In future studies, EIA plans to use billing period data to help overcome this problem.

The regression equations for the components were developed using only the households with usable consumption data. The results are applied to all households. This carries with it the assumption that the population of households with and without usable consumption data conformed to the same linear regression model. The assumption was most tenuous when applying the results to fuel oil consumption for households living in buildings with five or more units. If this assumption was not valid, then end-use estimates could be biased, even if the total consumption estimate was not biased.

The end-use estimates for expenditures were calculated by applying the same percentages to expenditures as were applied to consumption. This assumes that the average cost per unit of energy does not vary from billing period to billing period. If the utility rate structure is such that the average cost is lower for bills with large consumption amounts than it is for bills with small consumption amounts, then the cost of heating or cooling may be overestimated. If the rate structure has the opposite effect, then the cost of heating or cooling may be underestimated. In the future, incorporating the billing period data into the estimation procedure will help alleviate this problem.

Additional biases in the end-use estimates can result from the choice of independent variables used in the regression procedure. The components where the regression technique was the least subject to these potential biases, were the space heating components for all fuels and the appliance component for electricity. The regression technique most subject to the potential biases was the water heating and appliance components for fuel oil/kerosene and LPG.

The questionnaire has been improved with each survey. Consequently, the data available to use in constructing independent variables has been improved. Hence, the end-use estimates should be more accurate for the 1981 survey than for the 1980 survey which, in turn, should be more accurate than the estimates for the 1978 survey.

An example of improved data is the square footage data. The data for the 1978 survey was an estimate provided by the respondent. These estimates were not used in the regression procedure because of inaccuracy in reporting by the respondent. The square footage data for the 1980 and 1981 surveys were based on measurements taken by the interviewers.

Only limited weather data was available for the 1978 survey. The question on the fuel used for air conditioning was improved for the 1981 survey. Questions on the number and types of appliances have been improved with each survey.

The listed standard errors reflect only the sampling variation and the number of households with usable utility data. They did not take into account errors made in disaggregating the annual energy consumption for individual households. One way to account for the disaggregation errors, is to perform a separate regression analysis for each half-sample using only the observations that fall in the half-sample. The end-use estimates for each half-sample would then be based on the regression for that half-sample. This would involve a considerable amount of work.

Appendix C (Continued)

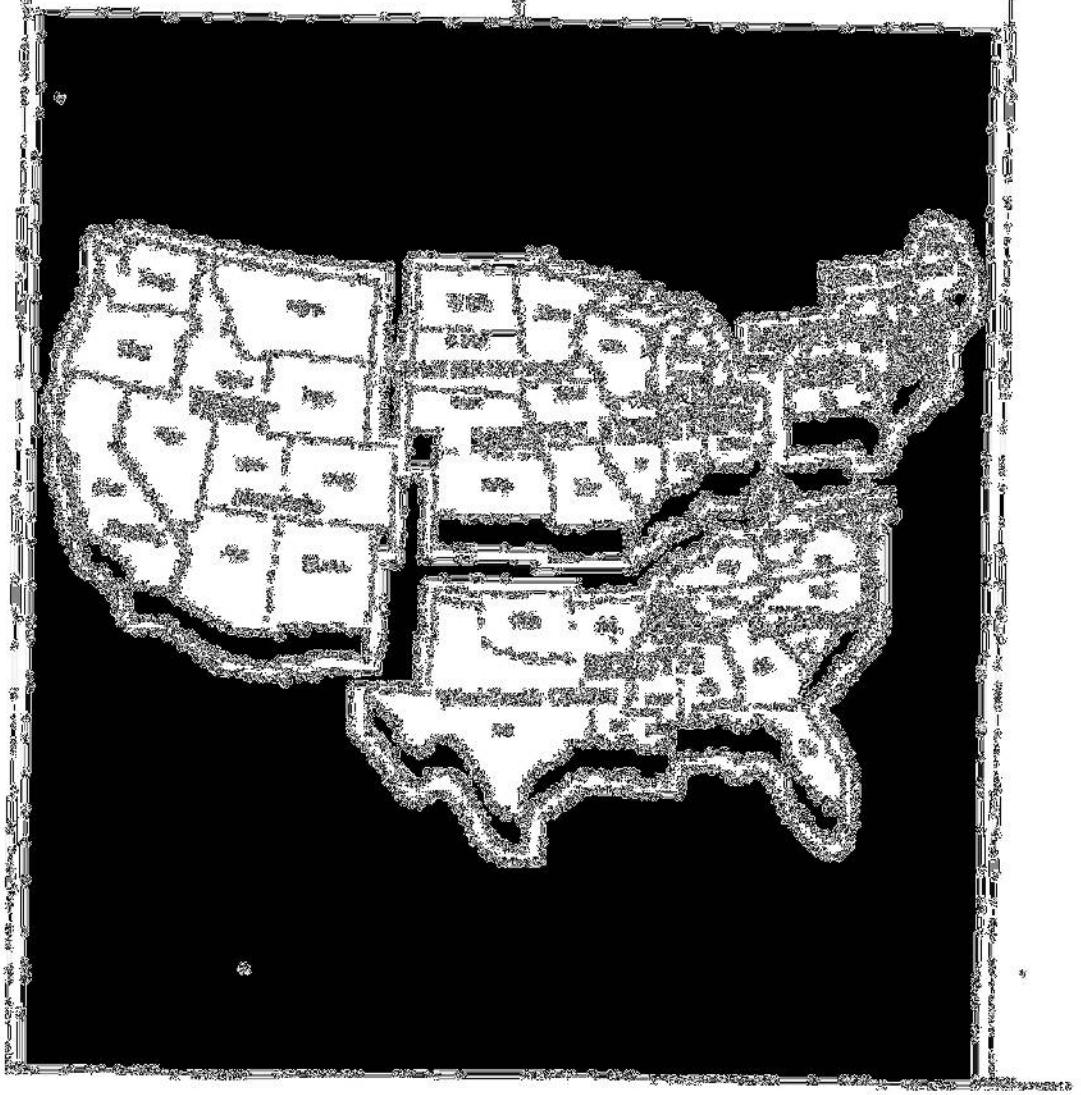
As a test of the effect of the disaggregation scheme, separate sub-area estimates for each [illegible] were prepared for [illegible] for the 1981 survey. Sub-sample estimates of the variance were prepared for the [illegible] for the national [illegible] and the averages for each [illegible]. The standard errors using the separate [illegible] estimates for each [illegible] were higher than the standard errors while the [illegible] estimates were based on the full sample regression analysis. Standard errors were, on the average, [illegible] percent higher for the space heating component, [illegible] percent higher for the water heating component, and [illegible] percent higher for the appliance component.

It was [illegible], based on the [illegible] of the [illegible] estimates of the variance for the [illegible], that the [illegible] of the standard errors was [illegible] in the [illegible] where the disaggregation [illegible] was the [illegible]. Hence, the [illegible] would be [illegible] for the water heating component [illegible]. [illegible], the [illegible] would be [illegible] for the space heating component for all [illegible] and [illegible] for the appliance component [illegible]. Additionally, the standard errors of the [illegible] estimates would be [illegible] in areas where the [illegible] were [illegible] over [illegible], [illegible] of households with [illegible] consumption [illegible], such as [illegible] in large buildings.

The procedure for [illegible] the end-use estimates has been improved with each survey. Hence, it can be [illegible] that the standard error estimates for the [illegible] survey will be [illegible] than the standard error estimates [illegible] for the 1980 and 1981 surveys.

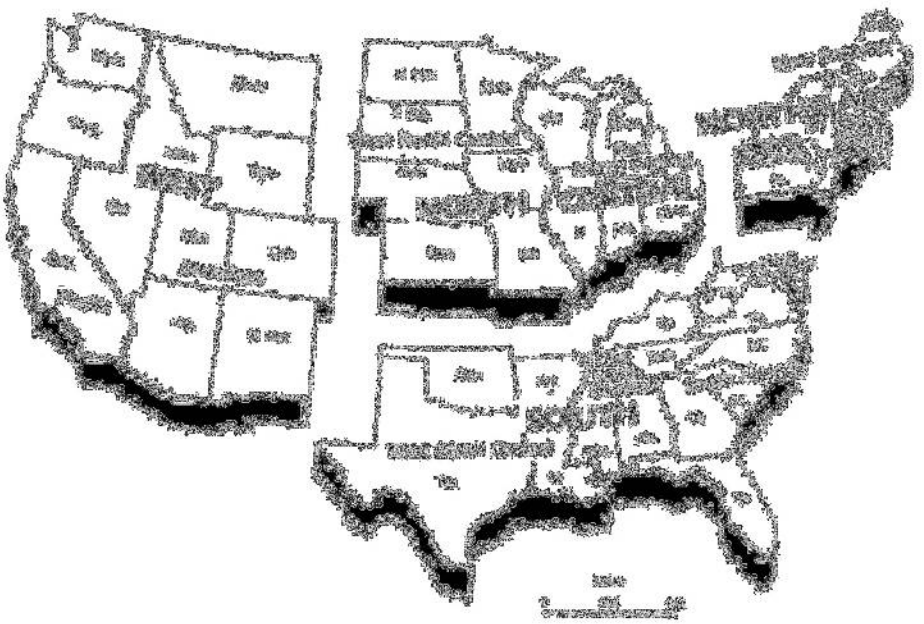
Appendix B

U.S. Census Regions and Divisions



Appendix D

U.S. Census Regions and Divisions



Residential Energy Consumption and Expenditures by End Use for 1993, with and 1993 Energy Information Administration

Glossary

Glossary

Air-Conditioning: Cooling of air by a refrigeration unit. This does not include fans, blowers, or evaporative cooling systems not connected to a refrigeration unit. Air-conditioning units that are not currently in working condition or are not used, but are in place in the housing unit, are included in this survey.

"Number of rooms that can be air-conditioned" refers to the number of rooms the air-conditioning equipment is capable of cooling when the equipment is used. Question 32 "How many rooms in your home (apartment) are cooled by air-conditioning?" refers to rooms that would be cooled if the air-conditioning equipment were used. There may, therefore, be rooms in the data set of a household with air-conditioning equipment that cooled zero rooms.

"All rooms air-conditioned" means that 100 percent of the rooms are air-conditioned. "Some rooms air-conditioned" means that fewer than 100 percent are air-conditioned.

"Central air-conditioning system" refers to a system that air-conditions a number of rooms in a home. See also Central System for the Building. For a definition of rooms, see Number of Rooms.

All-Electric Home: Uses electricity for space heating, water heating, and cooking. Other fuels may be used for supplementary heating or other purposes.

Appliances Used: Appliances purchased and used by the household. Appliances purchased by the household but not used are not counted. Air-conditioning units are an exception. Air-conditioning is counted as present whether or not it is used. (See Air-Conditioning.) Appliances located in the household for their regular use are included. Appliances temporarily out of working condition but generally used by the household are included only if a repair person has been called or the appliance has been taken to a repair shop. "Swimming pool heater" applies only to swimming pools that are for the exclusive use of the housing unit. Swimming pools in apartment buildings, condominiums, or cooperatives that are for the use of many residents (households) are not included. "Rooms" includes basement and recreation rooms, but does not include hallways. "An evaporative cooler (swamp cooler)" is an air-cooling unit that draws air into coolers, cools air by saturating the air with water vapor. (See also Refrigerators.)

April 1978 through March 1979, April 1980 through March 1981, April 1981 through March 1982: The annual consumption period is a 365-day period beginning as close as possible to April 1. For natural gas and electricity, the actual beginning date for a household may vary from April 1 in either direction by several weeks depending on the household's billing cycle. For fuel oil or kerosene and LPG, the beginning date is always April 1, but the quantity represents deliveries received by the household during the 365-day period, not gallons consumed. The expenditures for fuel oil or kerosene and LPG represent expenditures for the amount of fuel delivered to the home, not the amount of fuel consumed. (See Delivery.)

Basement: An enclosed space in which a person can walk upright under all or part of the building. A "crawl space" is the space between the ground and the floor of a house. An "enclosed" crawl space is one not accessible from the outside of the house because the walls of the space prevent it from being entered. A crawl space "open to the outside" is accessible from outside the house even though it may be covered by a trellis or latticework, or some kind of material that leaves space for circulation of air.

Glossary (Continued)

Bathroom: A "complete" bathroom has a flush toilet, a bathtub or shower, and a sink or washbasin with running water. A "half-bath" has a flush toilet or a bathtub or shower but does not have all the facilities for a complete bathroom.

Billing Period: The time between meter readings. It does not refer to the time the bill was sent or when the payment was to have been received. In some cases, the billing period is the same as the billing cycle that corresponds closely (within several days) to meter-reading dates. For fuel oil and LPG, the billing period is the number of days between fuel deliveries.

Btu (British Thermal Unit): A Btu is the amount of energy required to raise the temperature of 1 pound of water 1 degree Fahrenheit at or near 39.2 degrees Fahrenheit and 1 atmosphere of pressure. One Btu is about equal to the heat given off by a blue-tip match.

Btu conversion factors for this survey are

Electricity	3,412 Btu/kilowatt-hour
Natural Gas	1,027 Btu/cubic foot
Fuel Oil No. 1	135,000 Btu/gallon
Kerosene	135,000 Btu/gallon
Fuel Oil No. 2	138,690 Btu/gallon
LPG (propane)	21,548 Btu/pound
	91,330 Btu/gallon
	3,519 Btu/cubic foot
	88,640 Btu/cubic meter
Wood	20 million Btu/cord

Other conversion factors used include:

1 therm = 100,000 Btu
1 barrel = 42 gallons

Almost all LPG reported by the fuel suppliers was propane. Hence, the LPG conversion factors are those for propane.

Built-in Electric Units: Individual resistance electric heating units are permanently installed in the floors, walls, ceilings, or baseboards and are part of the electrical installation of the building. Electric heating devices that are plugged into an electric socket or outlet are not considered built in.

Central System for the Building: A central system serving one or more buildings of two or more housing units each that is used for main heating, water heating, or air-conditioning. A system that is for the respondent's living quarters only is not a central system for the building.

Central Warm-Air Furnace: A central furnace providing warm air through ducts leading to the various rooms. Heat pumps are not included in this category. A "forced-air" furnace is one in which a fan is used to force the air through the ducts. In a "gravity" furnace, air is circulated by gravity. The warm air rises through ducts and the cold air falls through ducts that return it to the furnace to be reheated. This completes the circulation cycle.

Glossary (Continued)

Consumption Is the amount of electricity or natural gas used by the household during the 365-day period. For fuel oil, kerosene, and LPG, the quantity represents fuel purchased, not fuel consumed. If the level of fuel in the tank was the same at the beginning and end of the annual period, then the quantity consumed would be the same as the quantity purchased. Measurements or imputes of the level of fuel in the tank were not included in the data collection.

Cooling Degree-Days Refers to the number of degrees per day the daily average temperature is above 65 degrees Fahrenheit. Normally, cooling is not required in a building when the outdoor average daily temperature is below 65 degrees. Cooling degree-days are determined by subtracting the base of 65 from the daily average temperature. For example, a day with an average temperature of 85 degrees has 20 cooling degree-days (85-65 = 20), while one with an average temperature of 65 degrees or lower has none. The average daily temperature is the mean of the maximum and minimum temperatures for a 24-hour period. The cooling degree-days for RECS households in the 48 States and the District of Columbia were assigned according to the NOAA division in which each household was located (see NOAA Division). Cooling degree-day totals for Alaskan and Hawaiian households were assigned by appropriate nearby weather stations.

Doors (Outside doors) go from a heated area to the outside or to an unheated area, such as a porch or garage. Doors to a heated hallway in an apartment building, doors permanently sealed shut, and doors to an unheated attic or basement were not counted because these doors are not usually fitted with storm doors. The [illegible] survey counted doors to an unheated attic or basement, but this rule was not followed in the [illegible] survey. Double doors were counted as one door. A pair of sliding glass doors was counted as one door in this survey. A pair of sliding glass doors was counted as two doors in the [illegible] survey. "Standard" doors include doors with and without glass panels.

Electricity See "Fuels."

End Use Refers to the amount of energy used for space heating, space cooling, water heating, and miscellaneous use. Miscellaneous use includes energy used for lighting, cooking, and appliances.

Estimated Bills Are calculated by the fuel supplier when the meter is not read. The estimate may be based on one or more of the following factors: past usage, usage by similar households, and weather data.

Expenditures Refers to the cost for electricity or natural gas consumed during the 365-day period. Expenditures include State and local taxes, but exclude merchandise, repairs, or special service charges. For households on a budget plan, the expenditures are for the actual consumption. Fuel oil, kerosene, and LPG expenditures are for the amount of fuel purchased, which may differ from the amount of fuel consumed (see Consumption). For households that do not pay directly to their fuel supplier, the expenditures for fuels are estimated and included in the tables.

The reader should also be aware that the consumption and expenditures data include households that do not pay directly for the energy used.

Glossary (Continued)

Family Income: Is the total combined income for the calendar year prior to the survey of all members of the family from all sources before taxes and deductions. It includes wages, salaries, tips, commissions, and income from Social Security, pensions, interest, dividends, rent, public assistance, and unemployment insurance. This includes the total income for all family members who lived in the household during the calendar year prior to the survey, 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.

Fireplace: Is any masonry or prebuilt installed fireplace. Fireplaces in mobile homes are included. A fireplace must have a permanent chimney built into the wall of the house. A freestanding fireplace that can be detached from its chimney is a heating stove. A fireplace insert is classified as a fireplace.

Floor, Wall, or Pipeless Furnace: A "floor furnace" is located below the floor and delivers heated air to the room immediately above or, if under a partition, to the room on each side. A "wall furnace" is installed in a partition or in an outside wall and delivers heated air to the rooms on one or both sides of the wall. A "pipeless furnace" is installed in a basement and delivers heated air through a large register in the floor of the room or hallway immediately above.

Fuels: Refers to the primary fuel delivered to the residential site. It may be converted at the site to some other energy form. "Electricity" is included in this report as a fuel.

"Coal" includes coke.

"Electricity" refers to metered electric power supplied by a central utility company to a residence via underground or aboveground power lines. It does not refer to electricity generated onsite for the exclusive use of the residence. In this case, the fuel used for the generator will be indicated. The Btu equivalent for electricity is the energy value of electricity as received by the household (3,412 Btu per kilowatt-hour). Electrical energy losses that occur in the generation and transmission of electricity are not included in the conversion of electricity into Btu for this report. If these losses were to be included, in general, the conversion rate would be about 10,339 Btu per kilowatt-hour.

"Fuel Oil" is No. 1, No. 2, or No. 4 grade fuel oil or residual oil that is burned for space- or water-heating purposes. No. 1 distillate fuel oil is a form of heating oil used mostly as a blending stock to assure that heavier grades of fuel flow under severe cold weather conditions. No. 2 distillate collectively refers to No. 2 heating oil and No. 2 diesel fuel. Although these products are not precisely identical, they are essentially interchangeable in most applications. No. 2 fuel oil is the most common form of heating oil. No. 4 distillate is a blend of No. 2 and No. 5 or No. 6 residual fuel oil used in large stationary diesel engines and boilers equipped with fuel preheating equipment. Residual fuel oil refers to the heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are boiled off in refinery operations.

Glossary (Continued)

"Kerosene" refers to a distillate gasoline of oil, or coal, with the generic name "petroleum." Kerosene is similar to No. 1 distillate fuel oil and is used for space heating or water heating or lighting equipment using wicks. It is sometimes sold under the names "range oil" or "stove oil."

"LPG or liquefied petroleum gas" refers to any fuel gas supplied to a residence in liquid form such as propane or butane. It is usually delivered by tank truck and stored near the residence in a tank or cylinder until used. Propane was the most common liquefied petroleum gas supplied to RECS households. Household use of LPG solely for nonspace gas heating is not considered sufficient use to mark the household as an LPG user.

"Natural gas" is utility gas supplied by underground pipelines to individual housing units by a natural gas utility company. It does not refer to privately owned gas wells operated by the household.

Heating degree-days: The number of degrees per day the daily average temperature is below 65 degrees Fahrenheit. Normally, heating is not required in a building when the outdoor average daily temperature is above 65 degrees. Heating degree-days are determined by subtracting the average daily temperature below 65 degrees from the base 65. For example, a day with an average temperature of 50 degrees has 15 heating degree-days (65 - 50 = 15), while one with an average temperature of 64 or higher has zero. The average daily temperature is the mean of the maximum and minimum temperatures for a 24-hour period.

The heating degree-days for RECS households in the 48 States and the District of Columbia were assigned according to the ZIP code in which each household is located (from Weil Publishing). Heating degree-days for Alaska and Hawaiian households were obtained by approximate weather matches.

Heat pump (heating and cooling): A year-round heating/air-conditioning system in which refrigeration equipment supplies both heating and cooling through ducts leading to individual rooms. It generally consists of a compressor, both indoor and outdoor coils, and a thermostat.

When the heat pump is operated in a cooling function, the heat pump is either the main or secondary heating equipment depending on how often the heat pump operates. If it operates like a check valve and then the furnace comes on, the heat pump is secondary for additional heating equipment. If the heat pump is sufficient to provide the desired warmth, the heat pump is the main heating equipment.

Hot-deck imputation: A procedure by which the household fills in missing or unreliable values in the missing item. A household in close proximity that has the same values on the matching variables, and also "donor" household supplies the value for the missing item. (See Appendix).

Household: A group of up to 20 persons occupying the same housing unit. "Occupy" means the housing unit was the person's usual or permanent place of residence at the time of the first field contact. The household includes babies, lodgers, boarders, employed persons who live in the housing unit, and persons who usually live in the household, but are away traveling or in a hospital. The household does not include persons who are usually members of the household but who were away from home on college vacation or members of the armed forces at the time of the interview.

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 correctional or penal institutions, mental institutions, homes for the aged or needy, homes or hospitals for the chronically ill or handicapped, nursing homes, convents or monasteries, or other places in which residents may remain for long periods of time. By definition, the count of households is the same as the count of occupied housing units.

Householder: The person (or one of the persons) in whose name the home is owned or rented. If there is no lease or similar agreement or if the person who owns the home or pays the rent does not live in the housing unit, the householder is the person responsible for paying the household bills or generally in charge.

Housing Structure: One of four structure types used to categorize the building in which the housing unit was located.

A "single-family housing unit" refers to a structure that provides living space for one household or family. The structure may be detached, attached on one side (semidetached), or attached on two sides. Attached houses are considered single-family houses as long as the house itself is not divided into more than one housing unit and has an independent, outside entrance. A single-family house is contained within walls that go from the basement to the roof.

A "house or building with two to four housing units" is divided into living quarters for two, three, or four families or households. This category also includes houses originally intended for occupancy by one family or for some other use that have since been converted to a separate dwelling for two to four families. Typical arrangements in these types of living quarters are separate apartments, downstairs and upstairs, or one apartment on each of three or four floors.

A "building with five or more housing units" refers to a building containing living quarters for five or more separate households or families.

A "mobile home or trailer" refers to a structure that has all the facilities of a dwelling unit, but is built on a movable chassis. It may be placed on a permanent or temporary foundation and contain one or more rooms. If additional rooms are added to the structure, it is still considered a mobile home.

Housing Unit: A structure or part of a structure where a household (family or individual) lives or could live. It has direct access from the outside of the building or through a common hall. Housing units do not include group quarters such as prisons, hospitals, dormitories, nursing homes, fraternity houses, or convents where 10 or more unrelated persons live. Hotel rooms, motel rooms, mobile homes, or trailers are considered housing units if occupied.

Imputation: Is a statistical method used to estimate the response to specific questions for which answers are missing. In general, it is a procedure for filling in missing data values.

Glossary (Continued)

Insulation: Refers to any material that, when placed between the interior of the building and the outdoor environment, reduces the rate of heat loss to the environment or heat gain from the environment. The four forms of insulation, illustrated in a drawing shown to respondents, are listed below:

"Blankets or batts"—rolls or pieces of insulation that are nailed or stapled between the rafters or wall joists (beams). It is usually made of fiberglass or rock wool.

"Loose particles or loose fill"—loose insulation comes in a bag and is poured between joists (beams). Loose insulation can also be blown into open spaces. Loose fill can be glass fiber, rock-wool fibers, cellulose fiber, or vermiculite.

"Rigid foam or firm plastic"—rigid boards (such as styrofoam) that can be cut to size and either taped, nailed, or glued into place.

"Sprayed-in urethane foam" is not shown separately as a category because the description used in the survey was inaccurate. Urethane foam is not sprayed in because it expands so much that confined areas may be broken apart by the force of the expanding substance. The more general category of "sprayed foam" will be used in the future to include all types of foam insulation.

"Floor insulation" is insulation between the bottom floor and the unheated basement or crawl space. Carpeting or carpeting pads are not insulation.

Main Cooking Fuel: In the answer to the question: "Thinking of all the different kinds of cooking done here, including cooking in the oven, on a range, and with small appliances, which fuel is used most?"

Main Heating Equipment: (See description of specific heating equipment.) Main heating equipment, if temporarily out of order, is reported as the main heating equipment. If two types of heating equipment are used, the main equipment is the one used more. If both are used equally, the main equipment is the one that appears first on the list in the question.

Main Heating Fuel: The fuel mentioned by the respondent in response to the question: "What is the main fuel used for heating this home (apartment)?"

Master Metered: The method used by utility companies (e.g., electricity and natural gas) to measure the total volume of energy used by several individual customers collectively.

NIECS: The National Interim Energy Consumption Survey, the first developmental survey in the planned series of Residential Energy Consumption Surveys. The NIECS surveyed 4,081 households in October and November 1978. Fuel suppliers provided data on consumption and expenditures for the period April 1978 through March 1979.

NOAA Divisions: One of the 344 weather divisions designated by the National Oceanic and Atmospheric Administration (NOAA) encompassing the 48 contiguous States. These divisions usually follow county borders to encompass counties with similar weather conditions. The NOAA division does not follow county borders when weather conditions vary considerably within a county such as is likely to happen when the county borders the ocean or contains high mountains. A State contains an average of seven NOAA divisions; a NOAA division contains an average of nine counties.

Glossary (Continued)

Nominal Dollars: Is the value of dollars for the year specified. Sometimes called "current dollars," nominal dollars have not been modified to remove the effects of inflation.

Number of Rooms: Whole rooms are rooms such as living rooms, dining rooms, bedrooms, kitchens, lodger's rooms, finished basements or attic rooms, recreation rooms, and permanently enclosed sun porches that are used year-round. Rooms used for offices by a person living in the unit are included in this survey. Bathrooms, halls, foyers or vestibules, balconies, closets, alcoves, pantries, strip or pullman kitchens, laundry or furnace rooms, unfinished attics or basements, open porches, and unfinished space used for storage are not included.

A partially divided room, such as a dinette next to a kitchen or a living room, is a separate room only if there is a partition from floor to ceiling, but not if the partition consists solely of shelves or cabinets. If a room is used by occupants of more than one unit, the room is included with the unit from which it is most easily reached.

Rooms are counted as year-round living space if they are completely enclosed with permanently installed walls, windows, and a roof and can be heated.

Occupied Housing Unit: A unit someone was living in as his or her usual or permanent place of residence at the time of the first field contact.

Owner/Renter: Own/rent refers to the structure itself, not the land on which it is located. The household is classified "renter" even if the rent is paid by someone not living in the unit. "Rent free" means the unit is not owned or being bought and no money is paid or contracted for rent. Such units are usually provided in exchange for services rendered or as an allowance or favor from a relative or friend not living in the unit. "Rent free" also includes occupants who pay only for utilities. Unless shown separately, "rent free" households are grouped together with "renters."

Quadrillion: Equals 1,000,000,000,000,000 or 10^{15}.

Region: The States are divided into 10 groups as follows:

Region	States
Northeast	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey
North Central	Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas
South	Delaware, Pennsylvania, Maryland, Virginia, West Virginia, District of Columbia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida
West	Colorado, Utah, Wyoming, Montana, Idaho, New Mexico, Hawaii, Arizona, California, Nevada, Alaska, Oregon, Washington

Glossary (Continued)

Residential: Refers to occupied housing units including mobile homes, single-family housing units (attached and detached), and apartments. The definition of housing units is the same as that used by the U.S. Bureau of the Census. (See **Household** and **Housing Unit** for further definition.)

Residential Energy Consumption Survey (RECS) 1980, 1981: The Residential Energy Consumption Survey that contacted 4,241 households in 1980 and 6,029 households in 1981. This survey provided data on consumption and expenditures for the period April 1980 through March 1981 and April 1981 through March 1982.

Room: (See **Number of Rooms.**)

Refrigerator: With or freezer section are included in the non-**Refrigerator** category. "Frost-free" means that frost does not build up on the inside of the freezer section or the main section.

Room Heaters Burning Gas, Oil, Kerosene: Are electrically ignited, unvented, radiant gas heaters, space heaters, or other **appropriate** room heaters that may or may not be connected to a flue, vent, or chimney.

Screened Survey: The Residential Energy Consumption Survey that contacted 5,053 households in October and November 1978. Paid respondents provided data on consumption and expenditures for the period April 1979 through March 1980. This survey was named the Screened Survey because it was used to screen households for participation in the Household Transportation Panel.

Secondary Heating Equipment: Equipment used in addition to the main equipment. Description of the secondary heating equipment is the same as for the main heating equipment.

Square Feet: The floor area of the housing unit that is enclosed from the weather. Basements are included whether or not they contain finished space. Garages are included if they have a wall in common with the house. Attics that have finished space and decks that have heated space are included. Crawl spaces are not included even if they are enclosed from the outdoors. Sheds and other buildings that are not attached to the house are not included. "Measured" square feet means that the measurement of the dimensions of the home did not rely on the respondent's memory but was an actual measurement by the interviewer using a metallic, retractable, 50-foot tape measure.

"Heated square feet" are that portion of the measured square feet that is heated during most of the season. Rooms that are closed during the heating season to save on fuel are not counted as heated square footage. Attached garages that are adjacent and enclosed cannot be measured and should not be counted as heated square feet.

Steam or Hot Water System with Radiators or Convectors: A central heating system supplying steam or hot water to ornamental radiators, baseboard radiators, heating pipes embedded in the walls or ceilings, or heating coils or equipment that are part of a combined heating/air-conditioning or heating/air-conditioning system. This category also includes radiant heating through hot water pipes buried in a concrete slab floor.

Storm Doors and Windows: Storm doors made of double or insulating glass and no openings. Glass or plexiglass glazed over a sliding glass door or window for ventilation is counted as a storm door. A plastic sheet covering the door is not counted as a storm door.

Glossary (Continued)

Storm windows are made of double or insulating glass, such as thermopane. Glass or plexiglass placed over windows on either the interior or exterior side are counted as storm windows. Plastic sheets covering windows are not counted.

Note: Responses of "don't know" for storm doors, windows, and/or attic insulation were treated the same as "do not have." For example, a respondent who indicated that his or her house had storm windows (some or all) and storm doors (some or all), but who did not know if it had attic insulation, was counted in the "have one or two of these" category.

Water-Heating Fuel: The answer to the question, "Which fuel is used most for heating water?" Households that did not have running water in their home were also asked this question. The fuel is used for heating water for bathing and washing. The hot water may have been available anywhere in the same building as the respondent's living quarters. This may have been in a hallway, in a room used by several units in the building, in the basement, or in an enclosed porch, provided the respondent's household had access to it.

Windows: All windows in the year-round living space. Windows in the basement, attic, garage, and porch are counted only if those areas are heated. Windows in doors are not counted. Each window that opens separately is counted as one window. Windows fixed in place are also counted. Panes of glass in a large window are not counted individually unless they open separately. Skylights and stained-glass windows are counted as windows.

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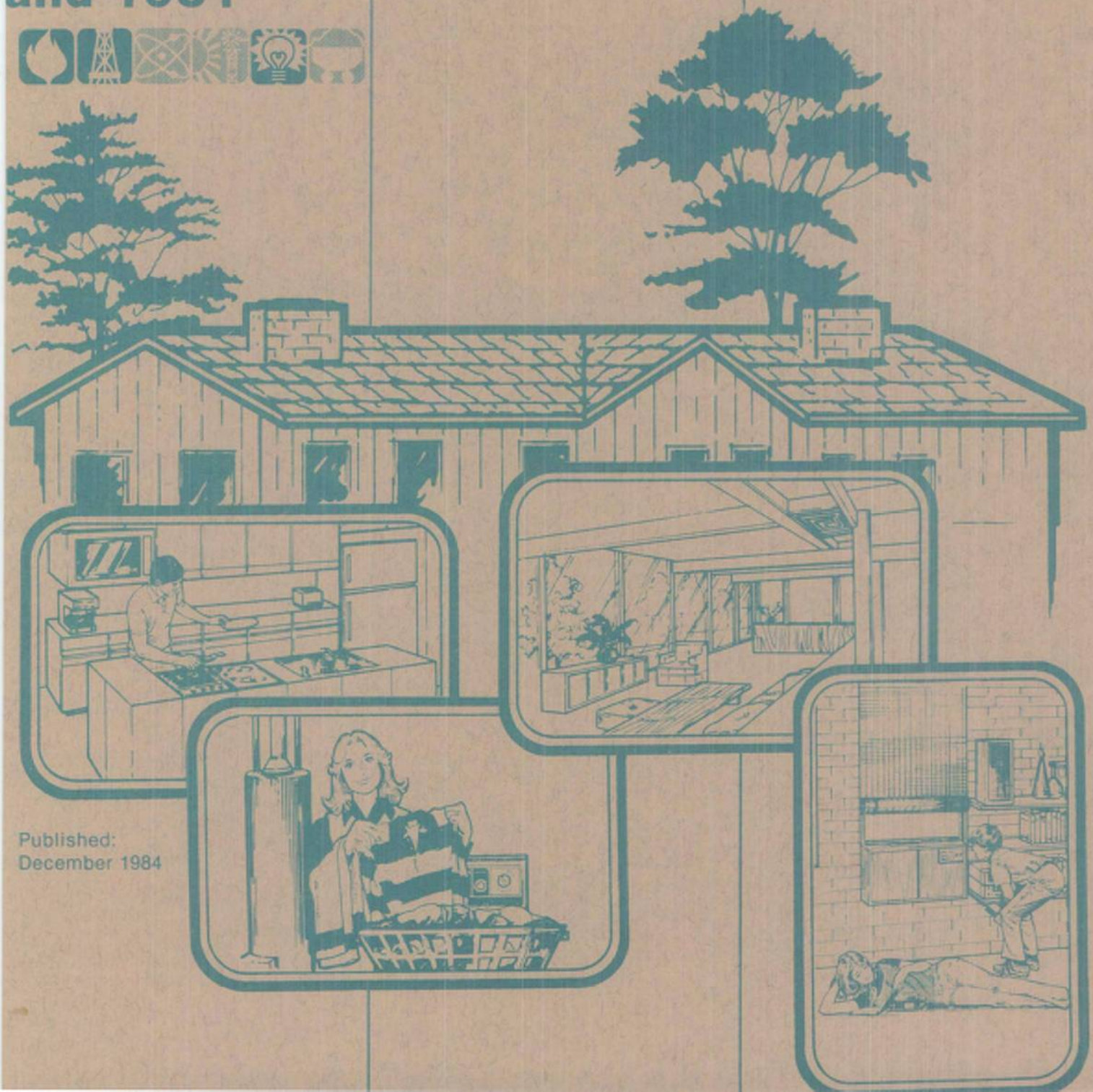

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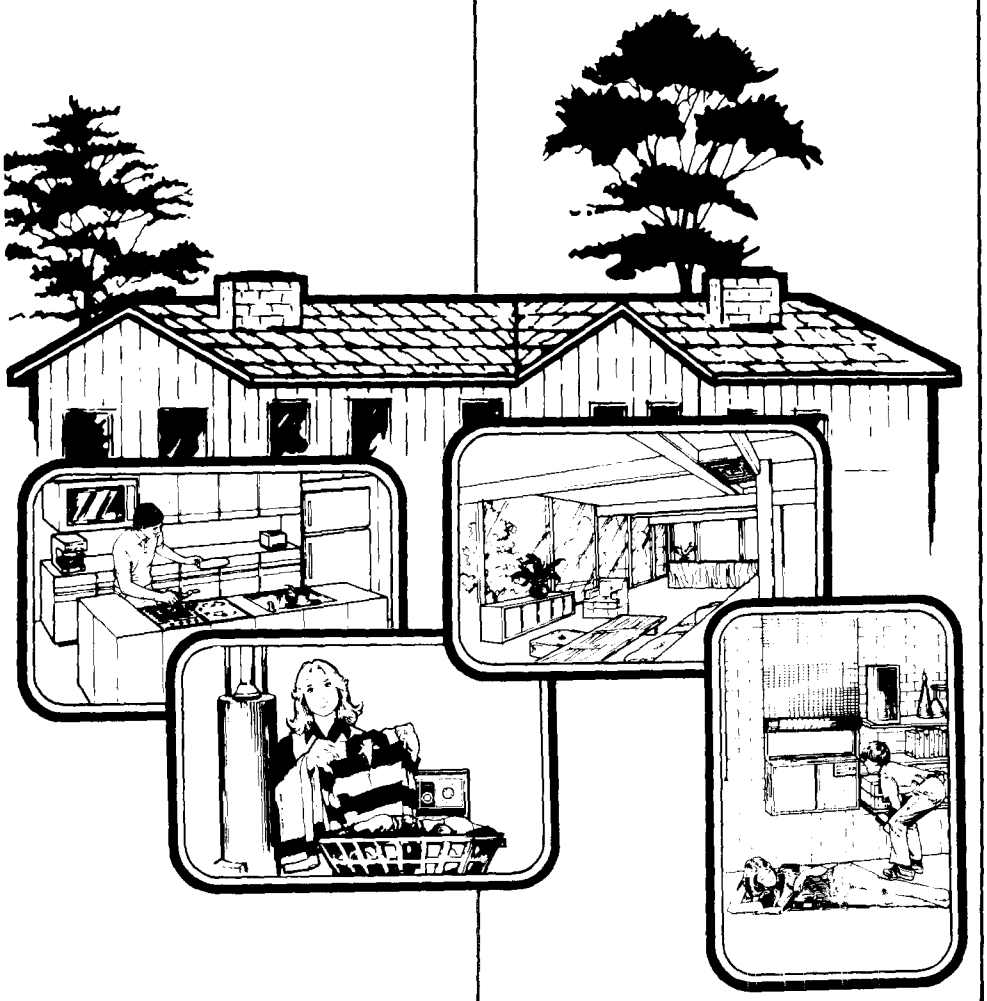

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Summary of Findings

Introduction

There is an increasing interest in information on the amount and cost of residential energy that is used for space heating, air conditioning, water heating, and appliance use. This report, an elaboration of a previous report,[1] is the first to examine trends in average household energy usage by end use.

The end-use estimates of the average household consumption and expenditures are statistical estimates based on the 1978, 1980, and 1981 Residential Energy Consumption Surveys (RECS)[2] conducted by the Energy Information Administration (EIA) rather than on metered observations. The end-use estimates were obtained by developing a set of equations that predict the percentage of energy used for each broad end-use category. The equations were applied separately to each household and to each fuel. The resulting household end-use estimates were averaged to produce estimates of the average end-use consumption and expenditures on a national and regional basis. (Households in Alaska and Hawaii were included in the 1981 survey but not included in the 1978 survey, resulting in a change in sample population in the West from 1978 through 1981.) The accuracy and potential biases of these end-use estimates vary depending on the fuel type, on the year of the survey, and on the type of end use.[3]

The three RECS surveys were cross sectional surveys, thus, they did not have any households in common. Because households were not followed over time, only comparisons of the average consumption and expenditures for similar populations at different times can be made. One problem with this approach is that the population is changing over time. This is particularly true when considering only households living in dwellings that have been built since 1975. The reader should be cautioned that throughout this report 1978 refers to the period April 1978 through March 1979; 1980 refers to April 1980 through March 1981; and 1981 refers to April 1981 through March 1982. Data for April 1979 through March 1980 were not included in this report because there was an insufficient listing of appliances.

The figures and tables presented show the amount and the type of energy consumed, plus the cost of this energy. National averages are given as well as averages for various categories including region, size and age of dwelling, number of heating degree-days, and income. The majority of the report focuses on the amount and the cost of natural gas and electricity used for space heating. However, data on other end uses and fuels are also presented.

The first section of this report discusses some of the significant findings. The second section discusses energy trends by end use for all fuels used in the home for 1978, 1980, and 1981. The third and fourth sections concentrate on electricity consumption and expenditures and natural gas consumption and expenditures, respectively.[4]

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[1] Residential Energy Consumption Survey: Regression Analysis of Energy Consumption by End Use, DOE/EIA-0431 (Washington, D.C., October 1983).

[2] Residential Energy Consumption Surveys: April 1978 through March 1979; April 1980 through March 1981; April 1981 through March 1982. It is important to note that the surveys are cross sectional and not longitudinal; thus, there are different sets of households in each survey.

[3] See Appendix B, "Limitations of Data" for further discussion of sampling and nonsampling errors.

[4] Standard errors for the statistics in the significant findings section can be found in sections two through four of this report and in the Residential Energy Consumption Surveys 1978 through 1981. For a discussion on the computation of the standard error of the percent change, See Appendix B.

Summary of Findings (Continued)

Significant Findings

The average U.S. energy consumption per household for all fuels used in the home declined 24 million Btu from 138 million Btu in 1978 to 114 million Btu in 1981. The primary cause of the decline in overall energy consumption was the amount of energy used for space heating. Although consumption for all fuels declined during this period, the drop was particularly evident from 1978 through 1980.

From 1978 through 1981, households experienced, on the average, a 28 percent decline in the amount of energy used to heat their homes. Even after adjusting for a difference in weather, space heating consumption still declined, on the average, 17 percent for natural gas heated homes and 31 percent for electrically heated homes. The largest decline in space heating consumption was among households that heated with electricity. These households experienced, on the average, a 39 percent decline from 31.6 million Btu in 1978 to 19.2 million Btu in 1981. The second largest decline, 27 percent, occurred among homes that heated with fuel oil. Among natural gas heated homes, there was, on an average, a 27 percent decline in space heating consumption from 1978 through 1980. Approximately a 10 percent increase then occurred from 1980 through 1981, giving an overall decline of about 19 percent from 1978 through 1981. The cost of space heating, however, increased from 1978 through 1981. Among households whose main heating fuel was natural gas, the cost of space heating increased, on the average, by 35 percent, while the cost among households heating with electricity only increased, on the average, by 7 percent. The largest increase in space heating costs occurred among homes where the main heating fuel was fuel oil. The following table shows that fuel oil costs increased by $305 from 1978 through 1981.

Table S1. Average Household Consumption and Expenditures for Space Heating by Main Heating Fuel

	Consumption (in million Btu)			Expenditures (in Dollars)		
	1978	1980	1981	1978	1980	1981
Electricity	32(2.2)	18(1.6)	19(1.3)	269(18)	241(24)	289(20)
Natural Gas	101(3.4)	74(1.3)	82(1.7)	272 (7)	285 (5)	367 (7)
Fuel Oil/ Kerosene	121(4.8)	96(2.5)	88(2.8)	475(19)	773(20)	780(26)

Note: The value in parenthesis represents one standard error of the statistic.
Source: Tables 1, 3, 5, 11, 13, 15, 17, 23, 25, 27, 29, 35.

From 1978 through 1981, electrically heated households in the West[1] experienced the largest decline in space heating consumption with, on the average, a 58 percent decrease in electricity. However, it is important to note that there was not a steady decline. From 1978 through 1980, there was a 66 percent decrease in electricity consumption, then from 1980 through 1981, consumption increased by 21 percent. Homes heated by natural gas in the West reduced their space heating consumption by 30 percent from 1978 through 1981. In 1981, homes in the Northeast heated by electricity used 35 percent more Btu for space heating than

[1] Appendix D shows the States by region.

Summary of Findings (Continued)

electrically heated homes in the West and spent, on the average, $411 more for electricity than households in the West. Households in the Northeast, heated by natural gas used, on the average, 50 percent more natural gas for heating than households in the West. The cost for this heating was approximately $360 more in the Northeast than in the West.

Natural gas heated homes constructed after 1974 used 36 percent fewer Btu for space heating in 1981 than were used in 1978, compared with a 17 percent decrease in Btu consumption in homes constructed before 1975.[2]

Average household energy expenditures also varied by size of home, age of home, and income. For example, Table S2 shows that the average household's cost for space heating did not vary greatly by income except at the highest income level. However, the cost for water heating, cooling, and miscellaneous use[3] consistently increased as income increased.

In 1981, among households whose main heating fuel was natural gas, on the average, 73 percent was used for space heating, 19 percent was used for water heating, and 8 percent was used for miscellaneous purposes. Among households whose main heating fuel was electricity, 36 percent of electricity was used for space heating, 32 percent was used for miscellaneous purposes, 19 percent was used for water heating, and 12 percent was used for cooling.

Table S2. Average Household Energy Expenditures by End Use by Income for 1981 (Dollars)

Income	Space Heating	Cooling	Water Heating	Miscellaneous Use
Less Than $5,000	335(22)	39 (6)	109(6)	281(12)
5,000 - 9,999	396(25)	47 (5)	129(7)	335(10)
10,000 - 14,999	399(19)	55 (5)	140(4)	366(11)
15,000 - 19,999	395(23)	54 (5)	154(6)	383 (9)
20,000 - 24,999	396(23)	73 (3)	161(6)	413(11)
25,000 - 34,999	399(23)	85 (7)	168(6)	454(11)
35,000 or More	483(28)	141(11)	195(8)	514(19)

Note: The value in parenthesis represents one standard error of the statistic.
Source: Table 34.

[2]Homes built after 1978 were not included in the 1978 survey; consequently, the changes in the average energy consumption from 1978 through 1981 may be heavily influenced by the post-1978 survey construction. For a discussion on the implications of this difference in populations, see Appendix C "Limitations of the Data."

[3]Miscellaneous use refers to other uses such as lighting, cooking, appliance use.

Summary of Findings (Continued)

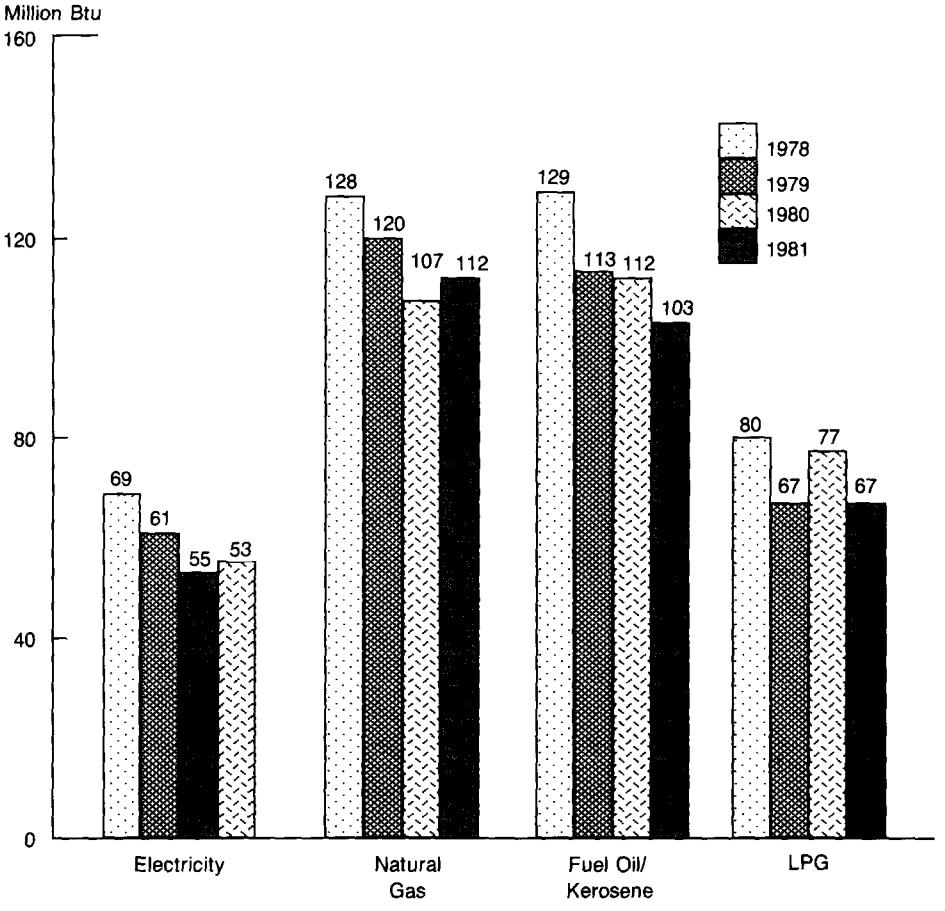
Energy End Use Trends

Average Household Consumption

The average energy consumption per household decreased from 1978 through 1981 by 17 (3) percent, while average energy expenditures during the same period increased by 41 (2) percent. Although all fuels showed a decline in consumption from 1978 through 1981, the largest decrease was in electricity consumption.

Figure 1 shows that among households whose main heating fuel was electricity there was, on the average, a 23 (5)[1] percent decline in total electricity consumption from 1978 through 1981. During the same time, the average total consumption of natural gas among households heated by natural gas declined by 12 (3) percent, while average consumption for fuel oil in those households heated by fuel oil declined by 20 (4) percent.

Figure 1. Average Household Energy Consumption by Main Heating Fuel 1978, 1979, 1980, and 1981 (Million Btu)



Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys.

Note: Energy consumption pertains to electricity consumption for households whose main heating fuel is electricity, natural gas for households whose main heating fuel is natural gas, and so forth.

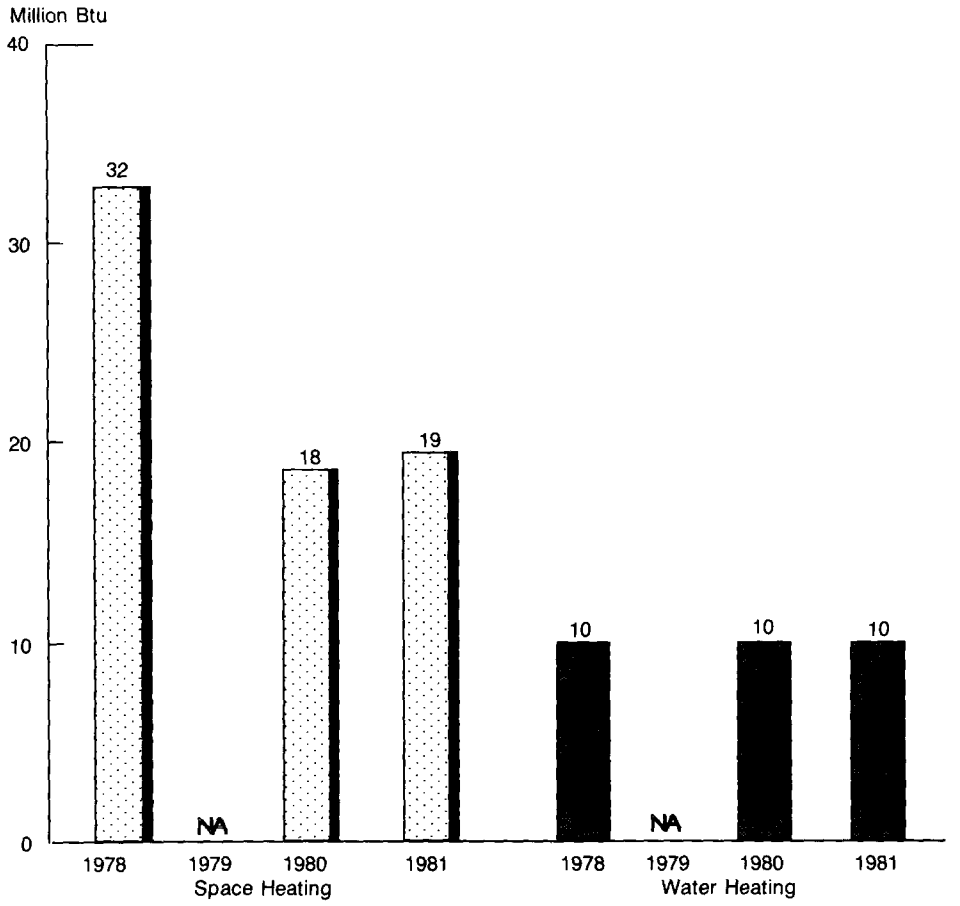
[1]The value in parenthesis represents one standard error of the statistic. The standard error is measure of the variability of an estimate.

Summary of Findings (Continued)

Space Heating Consumption

The decrease in consumption from 1978 through 1981 is primarily attributed to a decline in the amount of energy used for space heating, rather than a change in the amount of energy used for other end uses such as cooling, water heating, and miscellaneous use.[2] Additionally, it appears that the greatest portion of this decline occurred from 1978 through 1980. Figure 2 shows that from 1978 through 1981, there was approximately a 40 (6) percent decrease in electricity used for space heating among homes heated by electricity, while during this same time, there was no significant change in the amount of electricity used for water heating.

Figure 2. Average Household Electricity Consumption for Space Heating and Water Heating When Main Heating Fuel is Electricity (Million Btu)



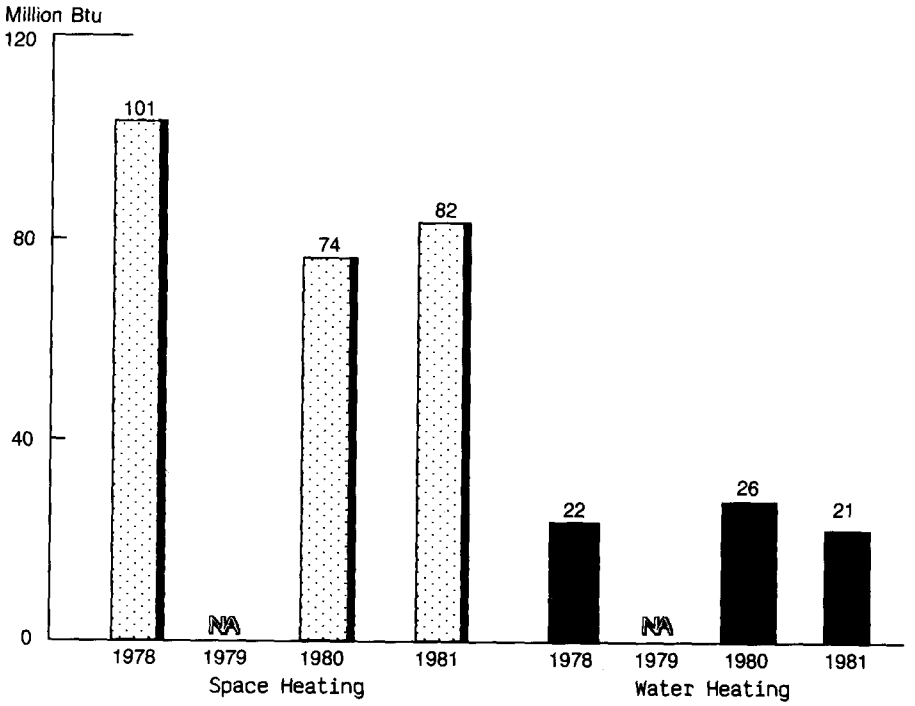
Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys.

[2] Miscellaneous use refers to other uses such as lighting, cooking, appliance use.

Summary of Findings (Continued)

Among homes heated by natural gas, approximately 101 (3.4) million Btu of natural gas was used for space heating in 1978. Figure 3 shows that like electricity, the largest decrease in gas consumption was in space heating with a 19 (3) percent decline from 1978 through 1981. However, unlike electricity, the estimated amount of natural gas used for water heating did not remain stable. From 1978 through 1980, water heating consumption increased by approximately 18 (3) percent and then decreased by approximately 17 (2) percent from 1980 through 1981.[3] The average consumption for household's heated with

Figure 3. Average Household Natural Gas Consumption for Space Heating and Water Heating When Main Heating Fuel is Natural Gas (Million Btu)



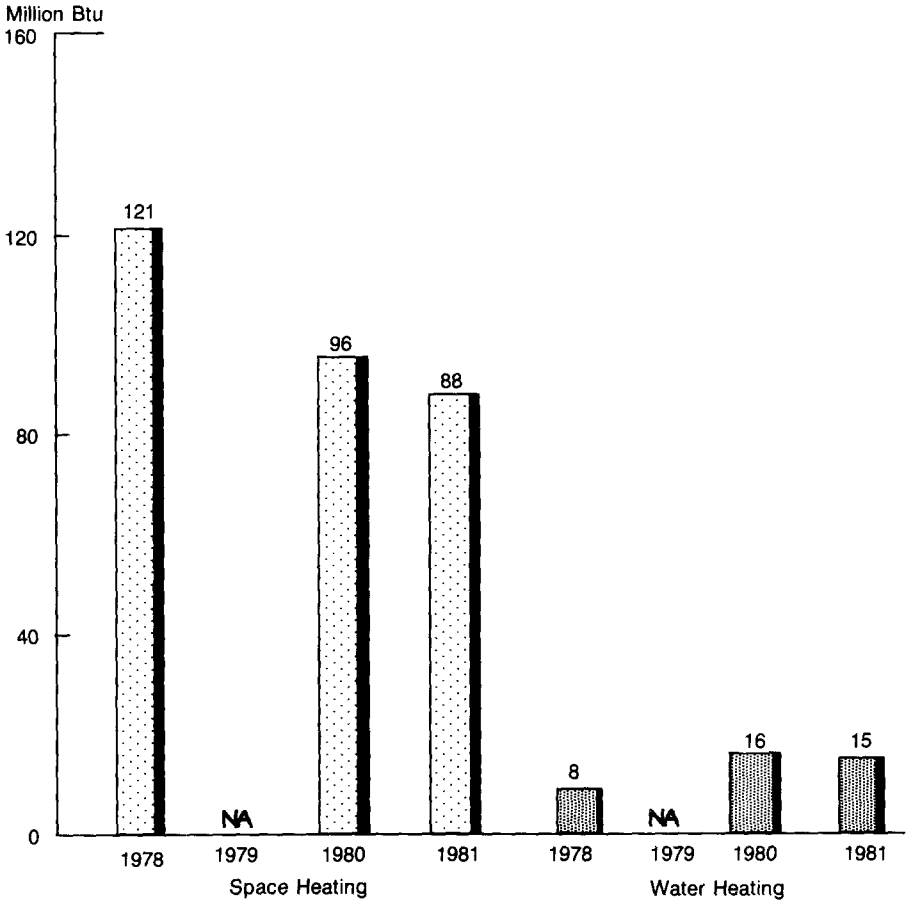
Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys.

[3] See Appendix C "Limitations of the Data" for a discussion on the variability of the amount of natural gas consumed for water heating.

Summary of Findings (Continued)

fuel oil or kerosene during the same period (1978 through 1981) also showed a decrease in the amount used for space heating but an increase in the amount used for water heating (Figure 4).

Figure 4. Average Household Fuel Oil or Kerosene Consumption for Space Heating and Water Heating When Main Heating Fuel is Fuel Oil or Kerosene (Million Btu)



Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys.

The difference in the number of heating degree-days for 1978, 1980, and 1981 may have influenced energy consumption levels particularly for space heating. The following table shows average household consumption for space heating per heating degree-days.[4] The data suggest that even after controlling for the weather, electricity consumption still declined by 31 (5) percent, natural gas consumption declined by 17 (3) percent, and fuel oil or kerosene consumption declined by 26 (6) percent. This suggests that factors other than weather may have also influenced the decreases in consumption from 1978 through 1981.

[4]Heating degree-days are base 65 degrees Fahrenheit. See Appendix B, "Methodology" for a discussion on how consumption was adjusted for heating degree-days.

Summary of Findings (Continued)

Table T1. Average Household Energy Consumption for Space Heating per Heating Degree-Day by Main Heating Fuel (Thousand Btu)

Year	Electricity	Natural Gas	Fuel Oil/ Kerosene
1978	7.5 (.4)	20.4 (.5)	22.7 (.7)
1980	4.6 (.2)	15.6 (.2)	17.6 (.4)
1981	5.2 (.2)	17.0 (.3)	16.7 (1.0)

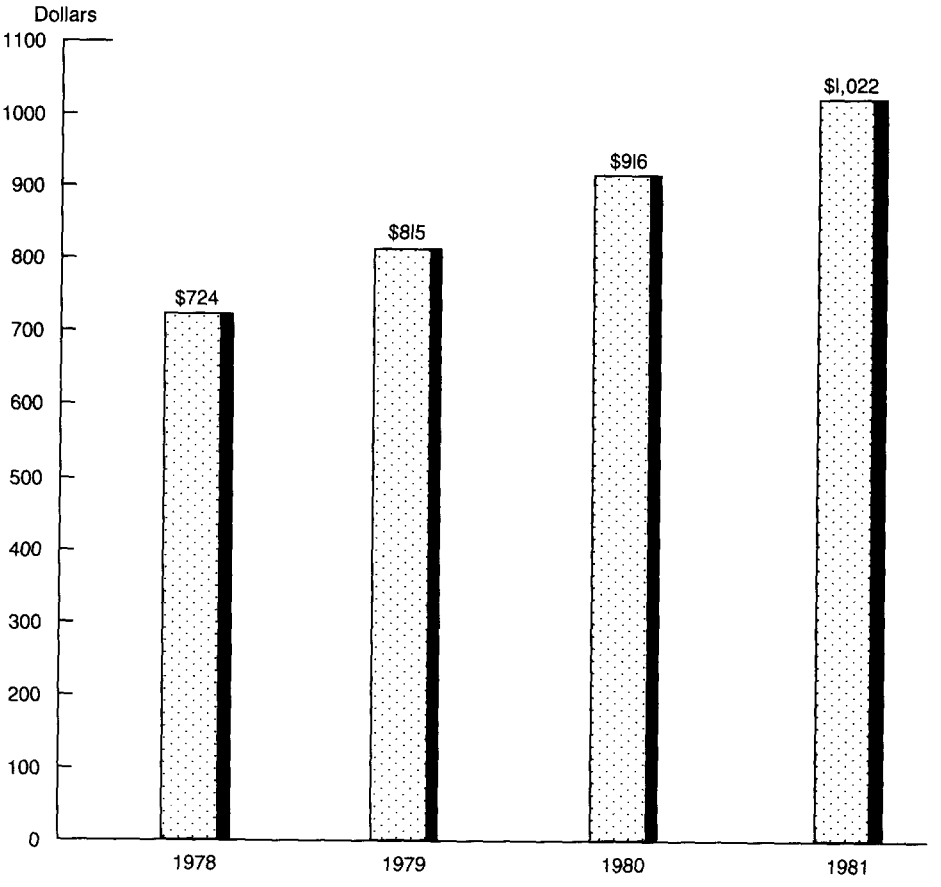
Note: The value in parenthesis represents one standard error of the statistic.

Source: Energy Information Administration, 1978, 1980, 1981, Residential Energy Consumption Surveys.

Average Household Expenditures

From 1978 through 1981, average household energy consumption decreased while the cost of energy steadily increased. Figure 5 shows that in 1978, the average household spent approximately $724 (13) for all fuels. This amount increased to $916 (14) in 1980 and $1,022 (17) in 1981. The average cost for space heating increased 28 (3) percent from $315 (8) to $403 (12) between 1978 and 1981.

Figure 5. Average Household Energy Expenditures for 1978, 1979, 1980, and 1981 (Dollars)



Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys.

Note: 1979 figures are included in the overall energy expenditures. The data, however, were incomplete for accurate end-use estimates.

Summary of Findings (Continued)

Among homes that were heated by natural gas, the average cost for space heating increased by approximately 35 (4) percent, from $272 (7) in 1978 to $367 (7) in 1981. The greatest proportion of this increase occurred from 1980 through 1981. The average electricity cost for space heating among homes heated by electricity increased by 7 (8) percent from $269 (18) in 1978 to $289 (20) in 1981. (This increase was not statistically significant.) The largest increase in costs occurred among homes heated by fuel oil or kerosene. In these homes, the average household's space heating expenditures increased 64 (2) percent from $475 (19) in 1978 to $780 (26) in 1981. This increase occurred primarily from 1978 through 1980 (Table T2).

Table T2. Average Household Consumption and Expenditures for Space Heating by Main Heating Fuel (Percent Differences 1978-1981, 1978-1980, 1980-1981)

	Consumption (Percent Differences)			Expenditures (Percent Differences)		
	1978-1981	1978-1980	1980-1981	1978-1981	1978-1980	1980-1981
Electricity	-39(6)	-42(6)	+05(10)	+7(8)	-10(10)	+20(9)
Natural Gas	-19(3)	-27(3)	+10 (3)	+35(4)	+5 (3)	+29(2)
Fuel Oil/ Kerosene	-27(3)	-20(3)	-08 (3)	+64(2)	+63 (2)	+0.9(3)

Note: The value in parenthesis represents one standard error of the statistic.
Source: Tables 1, 3, 5, 11, 13, 15, 17, 23, 25, 27, 29, 35.

Electricity Consumption and Expenditures

Space Heating

From 1978 through 1981, there was approximately a 58 (3) percent decline in electricity consumption for space heating in the West among households where the main heating fuel was electricity. This decline occurred from 1978 through 1980 with a 66 (3) percent reduction in consumption. Then, from 1980 through 1981, electricity used for space heating increased by approximately 22 (9) percent. Table E1 shows that during the same period (1978 through 1981) there was about a 37 (9) percent decrease in the amount of electricity consumed for space heating in the North Central region and a 38 (11) percent decrease in the South. Electricity consumption for space heating did not significantly change in the Northeast from 1978 through 1981.

Table E1. Average Household Electricity Consumption and Expenditures for Space Heating When Main Heating Fuel is Electricity by Region

	Consumption (Million Btu)			Expenditures (Dollars)		
	1978	1980	1981	1978	1980	1981
Northeast	33 (5.4)	24 (2.0)	33 (2.8)	347 (57)	426 (44)	644 (81)
North Central	46 (4.1)	27 (2.4)	29 (4.3)	492 (43)	359 (42)	442 (71)
South	21 (2.1)	15 (2.6)	13 (2.0)	215 (20)	205 (34)	212 (32)
West	52 (1.9)	18 (1.5)	22 (1.8)	272 (31)	150 (8)	233 (15)

Note: The value in parenthesis represents one standard error of the statistic.
Source: Tables 2, 12, 14, 24, 26, 36.

Summary of Findings (Continued)

Table E2 shows that in the 1978, 1980, and 1981 surveys, electricity consumption for space heating consistently increased as the heated square footage of the house increased. Additionally, from 1978 through 1981 in all size categories, there was a decrease in consumption. However, Table E2 shows that there was no consistent trend by dwelling size in the percent of change for electricity. The statistically significant change in the amount of electricity used for space heating ranged from 31 (10) percent to 52 (19) percent.

Table E2. Average Household Electricity Consumption for Space Heating When Main Heating Fuel is Electricity, by Square Footage of Home (Million Btu)

Square Feet	1978	1980	1981	Percent Change Between 1978-1981
1-799	20.3 (2.9)	11.8 (1.5)	15.7 (1.4)	23 (12)
800-999	26.7 (2.7)	14.5 (1.3)	15.9 (1.4)	40 (8)
1,000-1,199	28.3 (3.2)	16.0 (2.0)	19.0 (1.4)	33 (3)
1,200-1,399	29.6 (4.2)	19.4 (2.6)	17.2 (2.2)	42 (11)
1,400-1,799	39.4 (3.2)	19.9 (2.4)	18.9 (3.5)	52 (19)
1,800-2,399	40.5 (4.7)	26.6 (1.7)	28.0 (2.6)	31 (10)
2,400 or More	60.9 (6.5)	27.6 (2.3)	32.2 (2.9)	47 (8)

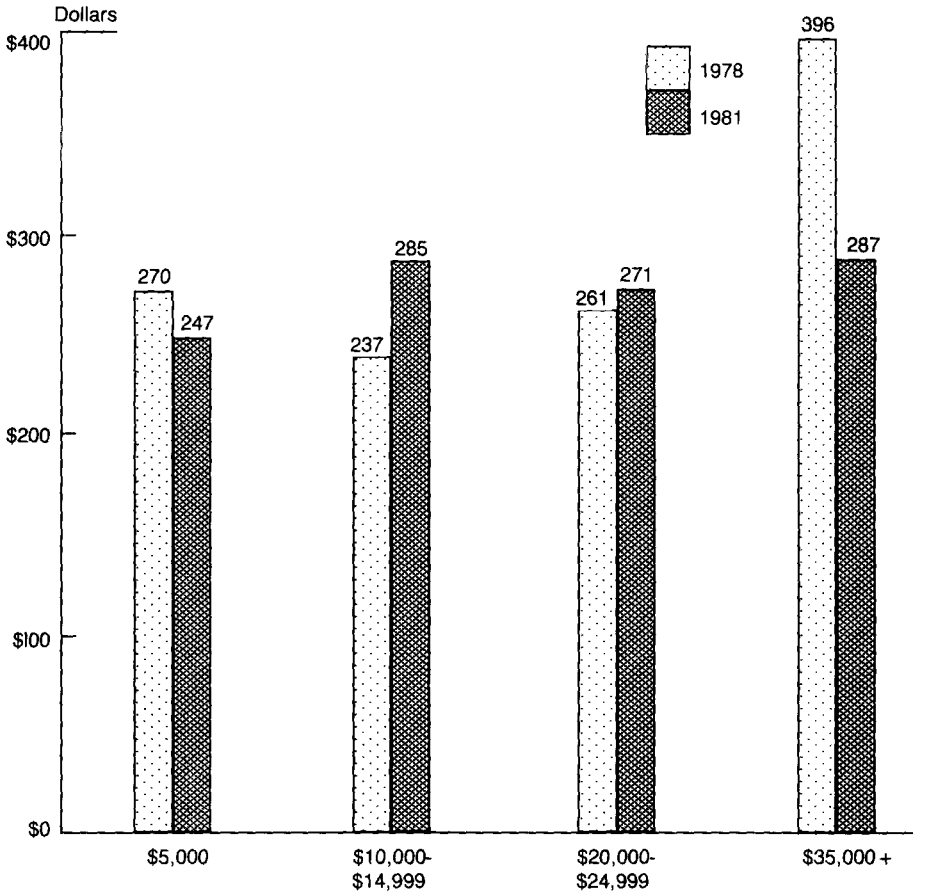
Note: The value in parenthesis is one standard error of the statistic.
Source: Tables 1, 13, 25.

Energy expenditures, particularly for space heating, varied by income, and by geographic region. In 1978, the average space heating cost for electrically heated homes in the Northeast was approximately $347 (57). By 1981, this cost had almost doubled to $644 (81). However, other regions in the United States experienced a decline in electricity costs for space heating, with the West experiencing the largest decrease in costs.

Summary of Findings (Continued)

Electricity costs for space heating decreased from 1978 through 1981 by 28 (10) percent for households in the highest income bracket ($35,000 or more). The 9 (11) percent decrease in electricity costs among households in the lowest income bracket (less than $5,000) was not statistically significant. At all other income levels, the cost of heating with electricity increased from 1978 through 1981. Figure 6 shows electricity expenditures for 1978 and 1981 by selected categories of income.

Figure 6. Average Household Electricity Expenditures for Space Heating for 1978 and 1981 by Selected Level of Income (Dollars)



Source: Energy Information Administration, 1978 and 1981 Residential Consumption Surveys.

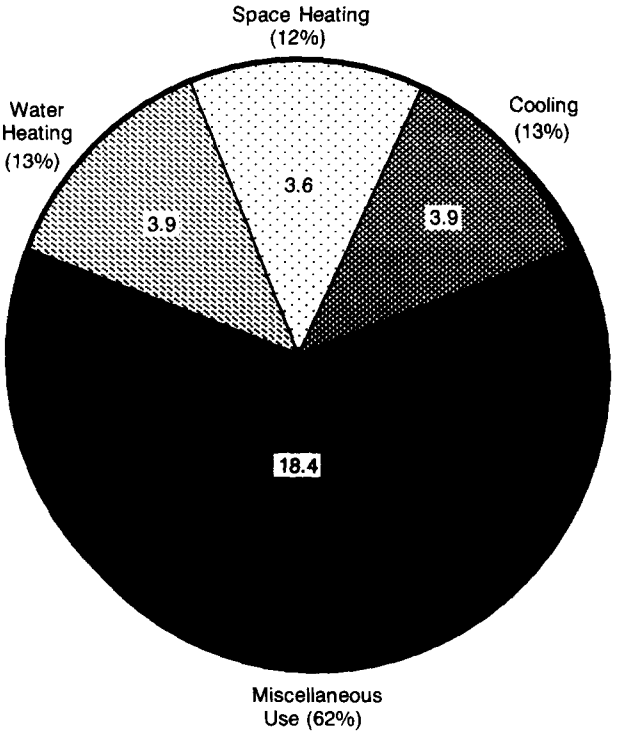
Summary of Findings (Continued)

End Use

In addition to the trends in consumption and expenditures, the patterns of energy use within a given time period are also of interest. Figures 7 through 11 describe the distribution of electricity consumption and expenditures by end use.

Figure 7 shows that in 1981, among households that used electricity but did not necessarily heat with it, approximately 62 (.8) percent of the average household electricity consumed was for miscellaneous use. Approximately 12 (.7) percent of household electricity consumption was used for space heating, while water heating accounted for approximately 13 (.5) percent and cooling accounted for 13 (.6) percent. This pattern was the same for 1978 and 1980.

Figure 7. Average Household Electricity Consumption for All Households That Use Electricity by End Use for 1981 (Million Btu)

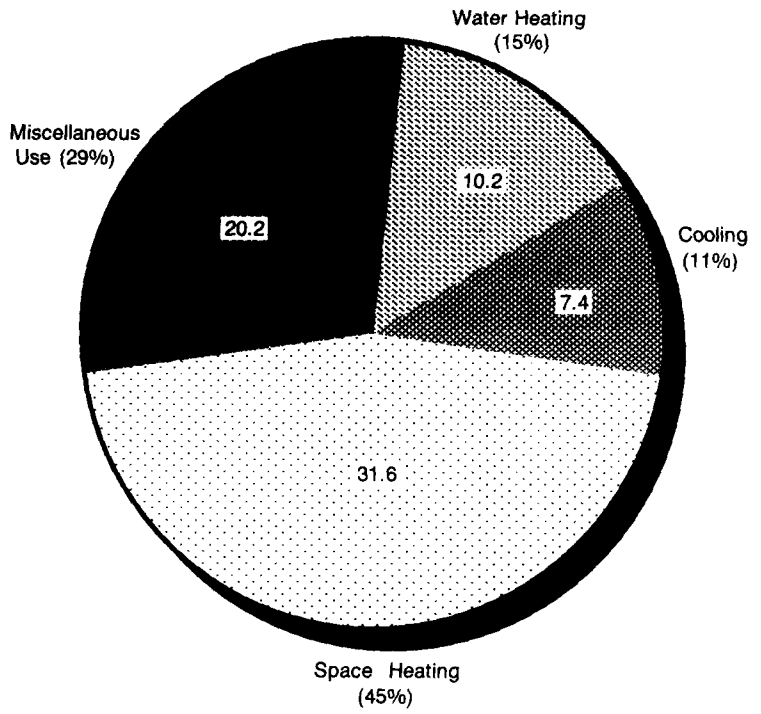


Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

Figures 8 through 10 show that this pattern of electricity consumption changes when electricity is the main heating fuel. The average household consumption for electricity was 53.4 (2) million Btu for those households that heated with electricity in 1981. Approximately 36 (1) percent was used for space heating and 32 (.5) percent was used for miscellaneous use. Approximately 12 (1) percent of electricity was used for cooling and 20 (.3) percent was used for water heating.

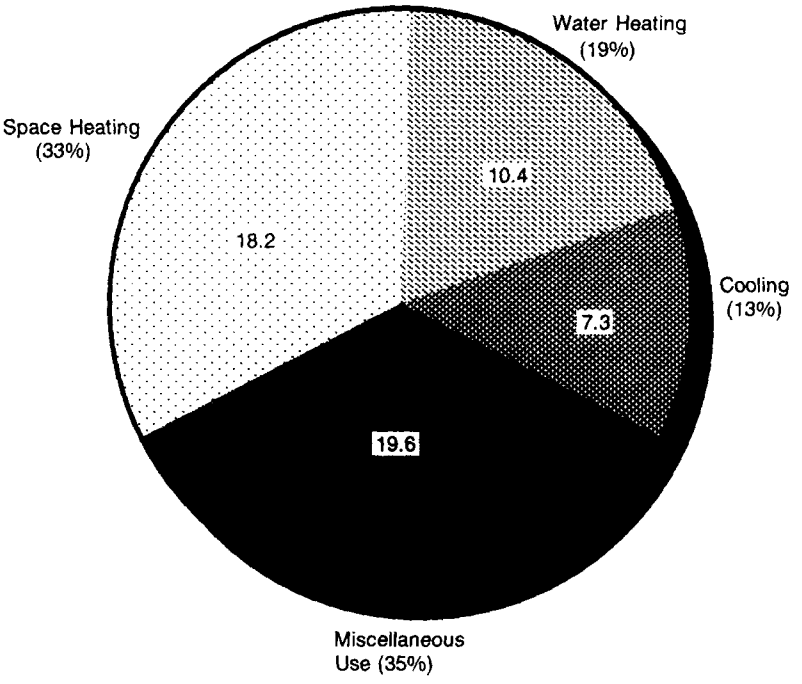
Summary of Findings (Continued)

Figure 8. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use for 1978 (Million Btu)



Source: Energy Information Administration, 1978 Residential Energy Consumption Survey.

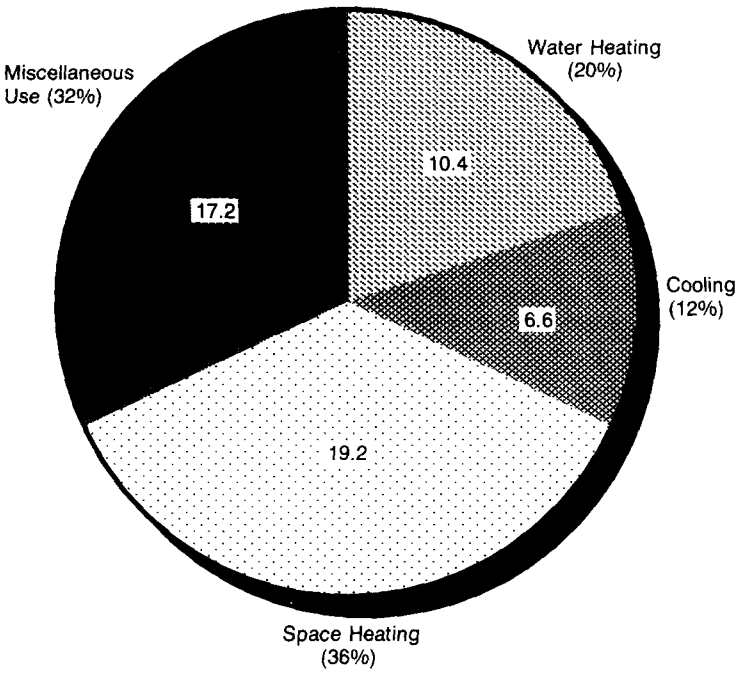
Figure 9. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use for 1980 (Million Btu)



Source: Energy Information Administration, 1980 Residential Energy Consumption Survey.

Summary of Findings (Continued)

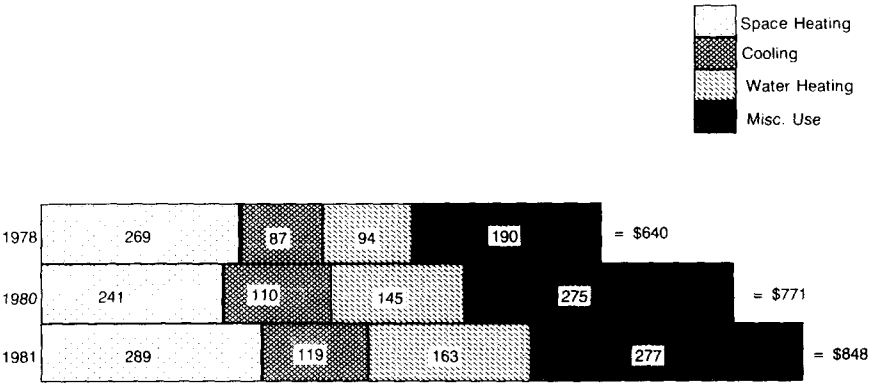
Figure 10. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use for 1981 (Million Btu)



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

Figure 11 shows the distribution for 1978, 1980, and 1981 of the average household electricity expenditures by end use for households whose main heating fuel is electricity.

Figure 11. Average Household Electricity Expenditures When Main Heating Fuel is Electricity by End Use for 1978, 1980, and 1981 (Dollars)



Natural Gas Consumption and Expenditures

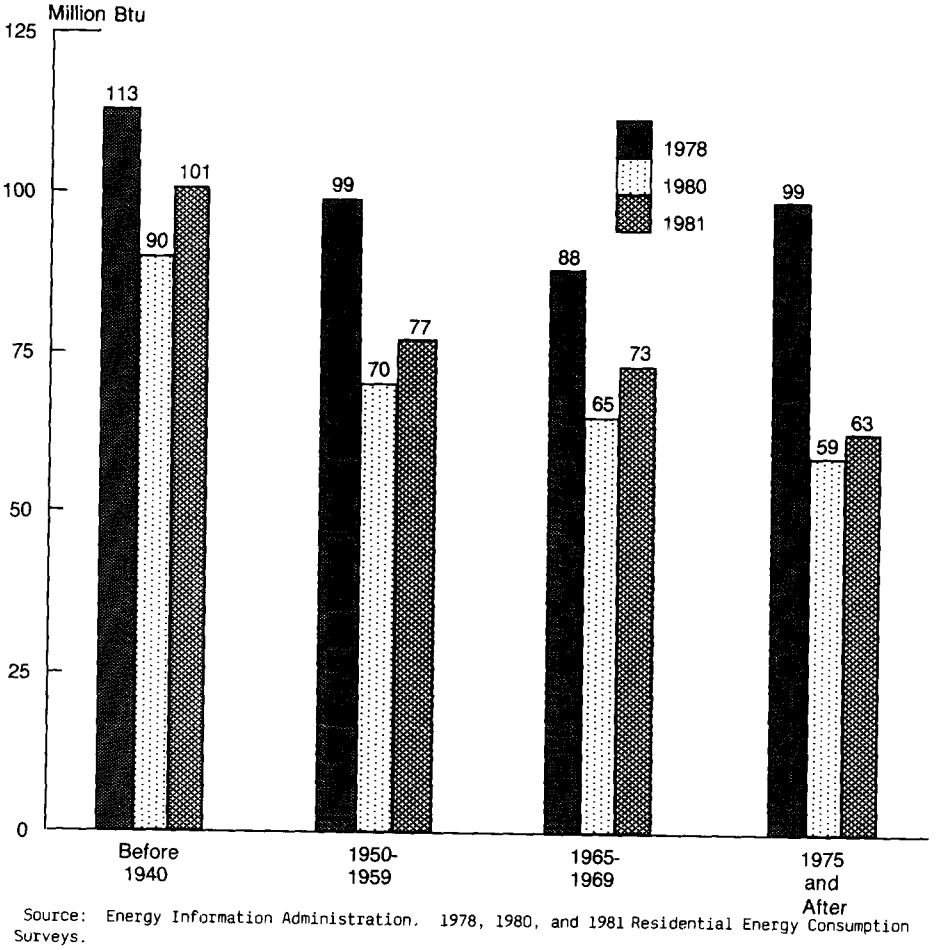
Space Heating

Among those households in the West whose main heating fuel was natural gas, there was approximately a 30 (7) percent decrease in natural gas used for space heating from 1978 through 1981 compared with a 14 (3) percent decrease in the North Central region. (The 14 (7) percent decrease in the Northeast and the 11 (8) percent decrease in natural gas consumption in the South from 1978 through 1981 were not statistically significant.) However, in the Northeast between 1978 and 1980, there was a significant decline in natural gas consumption for space heating. Households in this region experienced, on the average, a 21 (6) percent decrease in consumption.

Between 1978 and 1981 households of 1,000 to 1,199 square feet and households of 2,400 or more square feet both experienced approximately the same percentage decrease (31 percent) in consumption for space heating.

Energy consumption also varied by the age of the house. Figure 12 shows natural gas consumption for space heating by the year the house was constructed. Homes constructed after 1974 and heated by natural gas used 36 (8) percent less energy in 1978 than they did in 1981; older homes (constructed before 1975) experienced a 17 (3) percent decrease in natural gas consumption.

Figure 12. Average Natural Gas Consumption for Space Heating When Main Heating Fuel is Natural Gas by Selected Year House Was Built (Million Btu)

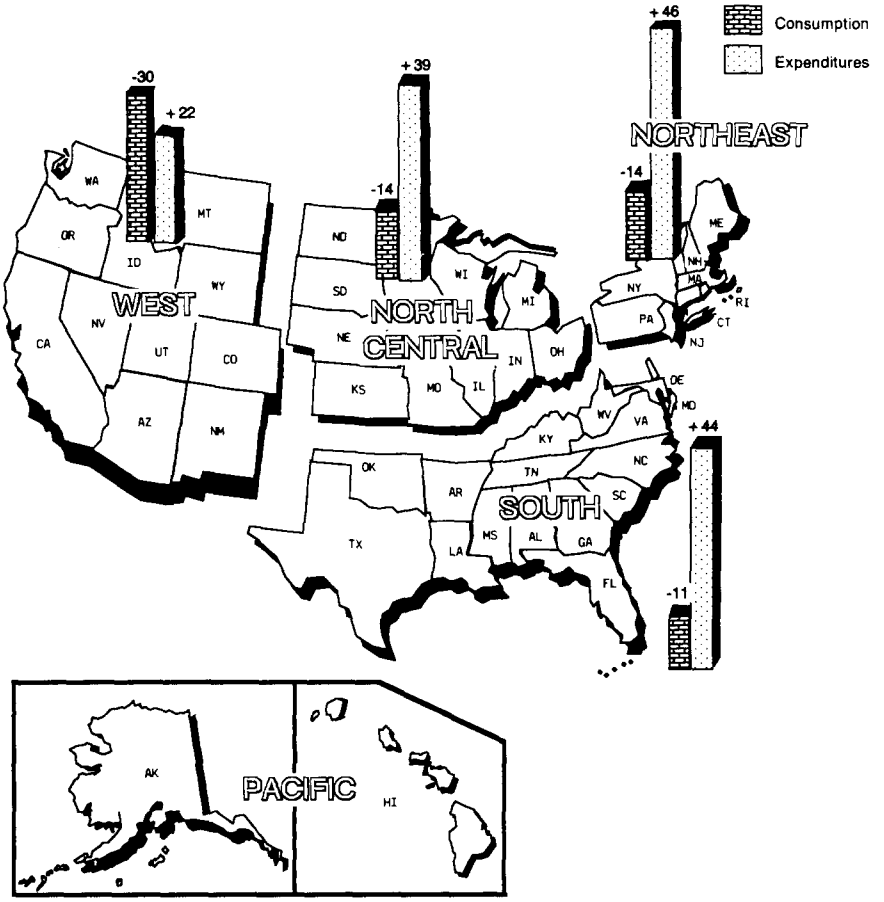


Source: Energy Information Administration, 1978, 1980, and 1981 Residential Energy Consumption Surveys.

Summary of Findings (Continued)

Natural gas expenditures for space heating increased in all regions of the United States from 1978 through 1981. Households in the Northeast experienced a 46 (3) percent increase in space heating costs; the South, a 44 (4) percent increase; the North Central region, a 39 (2) percent increase; and the West, a 22 (6) percent increase. Figure 13 shows the percentage change between 1978 and 1981 in natural gas consumption and expenditures by region.

Figure 13. Percent Change Between 1978 and 1981 of Average Household Consumption and Expenditures for Space Heating When Main Heating Fuel is Natural Gas by Region



Note: Alaska and Hawaii were not included in the 1978 survey.

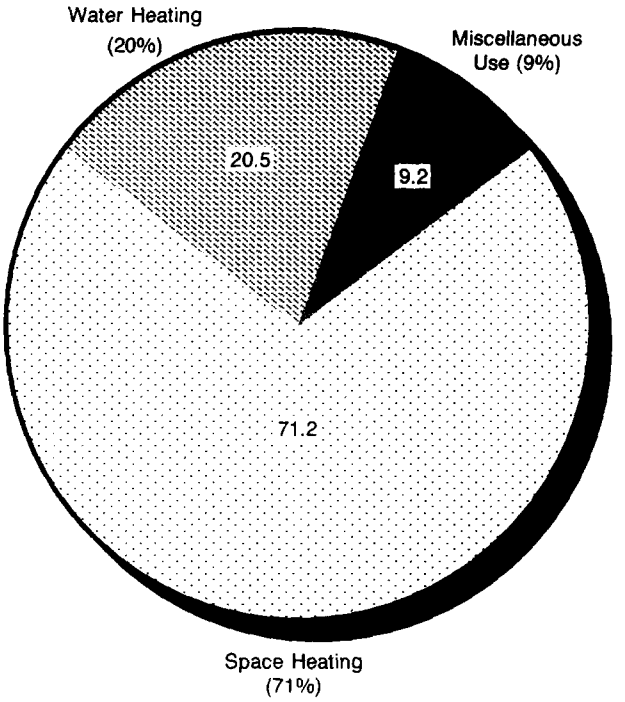
Summary of Findings (Continued)

End Use

The distribution of natural gas among space heating, water heating, and miscellaneous use was similar for households that used natural gas but did not necessarily heat with it and for households that used natural gas as the main heating fuel. The similarity in distribution patterns between the two types of households was because most households that used natural gas, used it for the main heating fuel.

Figures 15 through 17 show the distribution of natural gas consumption for 1978, 1980, and 1981 among homes whose main heating fuel was natural gas. In 1981, households that heated with natural gas used, on the average, 111.9 (2) million Btu of which approximately 73 (.5) percent was used for space heating, 19 (.2) percent for water heating and 8 (.4) percent for miscellaneous use.

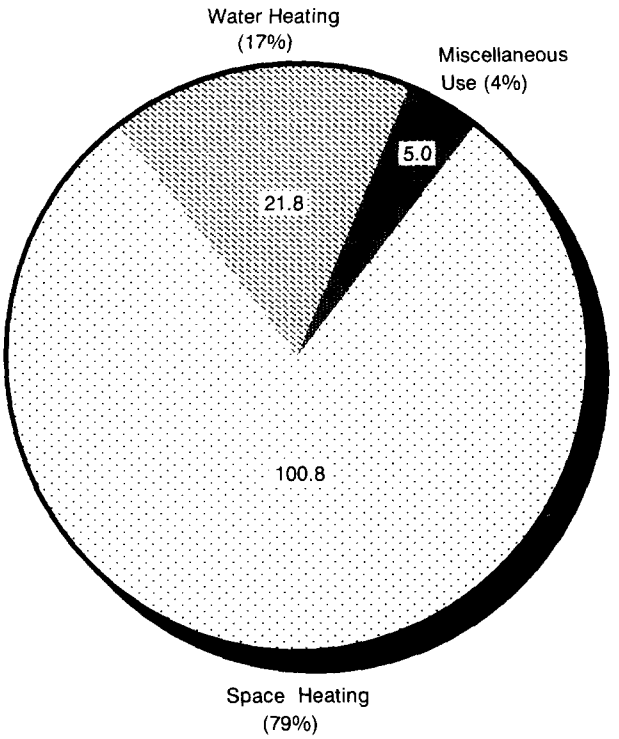
Figure 14. Average Household Natural Gas Consumption for All Households That Use Natural Gas by End Use for 1981 (Million Btu)



Source: Energy Information Administration, 1978 Residential Energy Consumption Survey.

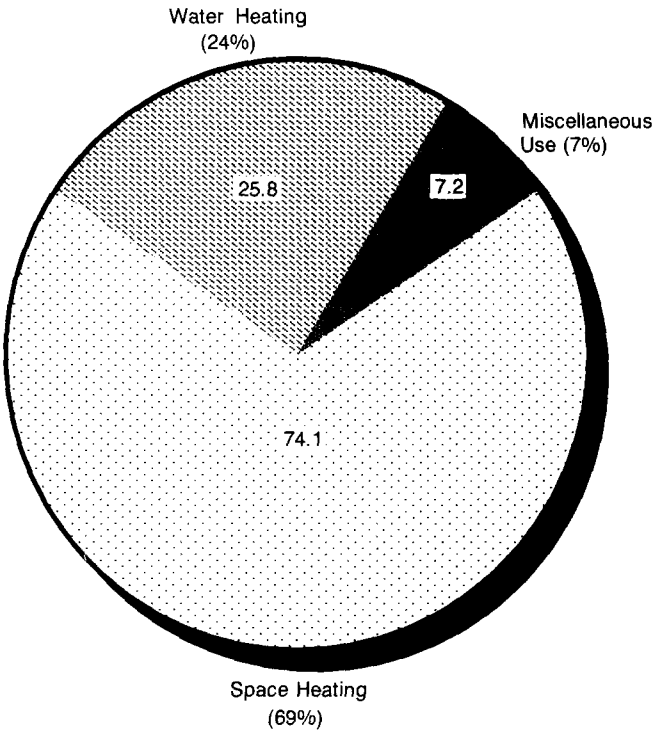
Summary of Findings (Continued)

Figure 15. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1978 (Million Btu)



Source: Energy Information Administration, 1978 Residential Energy Consumption Survey.

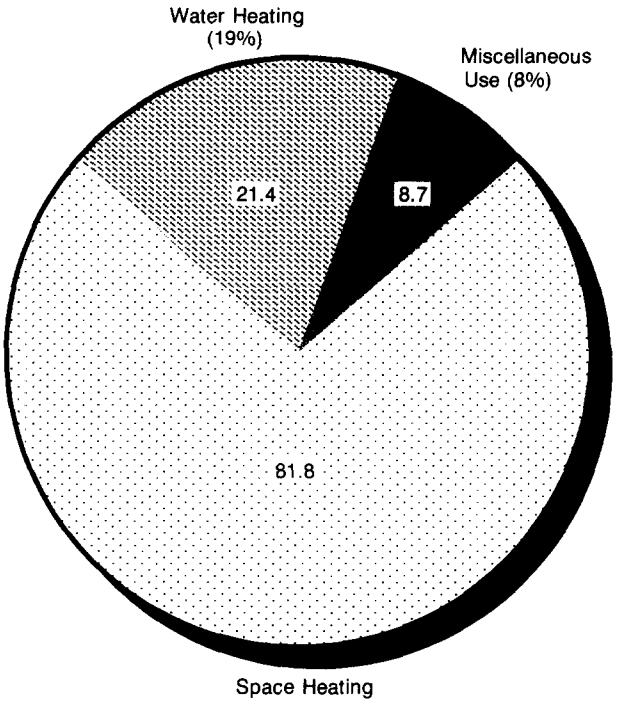
Figure 16. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1980 (Million Btu)



Source: Energy Information Administration, 1980 Residential Energy Consumption Survey.

Summary of Findings (Continued)

Figure 17. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1981 (Million Btu)



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

Figure 18 shows the average household expenditures for natural gas by end use when the main heating fuel is natural gas for 1978, 1980, and 1981.

Figure 18. Average Household Natural Gas Expenditures When Main Heating Fuel is Natural Gas by End Use for 1978, 1980, and 1981 (Dollars)

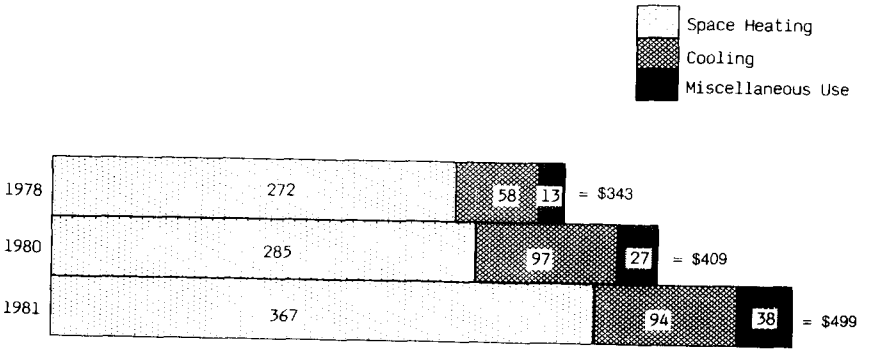


Table 1. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Housing Characteristics for 1978

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE			
		SPACE HEATING (MILLION BTU)	COOLING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	12.1 (1.2)	31.6 (2.2)	7.4 (1.0)	10.2 (0.5)	20.2 (0.9)
HOUSING STRUCTURE					
SINGLE-FAMILY DETATCHED	6.4 (0.9)	38.4 (2.6)	8.2 (1.3)	12.9 (0.5)	25.0 (3.4)
SINGLE-FAMILY ATTACHED	Q	Q	Q	Q	Q
TWO TO FOUR UNITS	1.6 (0.5)	18.5 (3.5)	6.8 (3.6)	7.6 (0.9)	14.5 (4.7)
FIVE OR MORE UNITS	2.5 (0.6)	19.2 (3.1)	7.6 (1.9)	5.6 (0.8)	21.1 (9.3)
MOBILE HOME	1.1 (0.2)	34.8 (3.1)	2.9 (0.9)	9.5 (0.9)	19.8 (8.7)
YEAR HOUSE BUILT					
BEFORE 1940	1.1 (0.3)	41.4 (4.3)	1.2 (0.5)	9.2 (1.2)	18.1 (2.2)
1940-1949	0.4 (0.1)	42.9 (5.1)	3.6 (1.3)	10.9 (2.2)	22.4 (2.9)
1950-1959	1.3 (0.3)	30.9 (5.5)	10.0 (4.0)	9.6 (0.9)	21.3 (1.9)
1960-1964	1.6 (0.2)	28.7 (2.7)	8.9 (1.1)	10.0 (1.0)	21.2 (1.5)
1965-1969	2.2 (0.3)	25.8 (3.7)	8.5 (1.1)	8.1 (1.2)	16.8 (1.8)
1970-1974	3.0 (0.5)	32.8 (3.2)	7.6 (1.6)	10.4 (0.8)	20.4 (1.2)
1975 OR LATER	2.4 (0.6)	31.3 (4.8)	7.3 (2.3)	12.7 (1.0)	22.2 (2.1)
HEATED SQUARE FOOTAGE					
1-799	1.9 (0.3)	20.3 (2.9)	5.0 (1.5)	3.8 (0.5)	10.8 (1.1)
800-999	2.4 (0.4)	26.7 (2.7)	5.7 (1.4)	8.4 (0.6)	17.0 (1.2)
1,000-1,199	2.4 (0.5)	28.3 (3.2)	4.6 (1.4)	9.4 (0.6)	18.6 (1.6)
1,200-1,399	1.5 (0.3)	29.6 (4.2)	8.5 (1.4)	10.2 (1.1)	21.0 (1.6)
1,400-1,799	2.0 (0.3)	39.4 (3.2)	8.9 (1.3)	13.7 (1.0)	25.8 (1.2)
1,800-2,399	1.2 (0.3)	40.5 (4.7)	11.7 (2.8)	16.0 (1.3)	27.6 (1.5)
2,400 OR MORE	0.7 (0.2)	60.9 (6.5)	16.6 (4.3)	18.0 (1.5)	33.0 (2.3)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 2. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Sociodemographic Characteristics for 1978

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE			
		SPACE HEATING (MILLION BTU)	COOLING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	12.1 (1.2)	31.6 (2.2)	7.4 (1.0)	10.2 (0.5)	20.2 (0.9)
GEOGRAPHIC REGION					
NORTHEAST	1.4 (0.5)	32.6 (5.4)	0.3 (0.3)	7.7 (1.3)	14.0 (2.1)
NORTH CENTRAL	1.1 (0.3)	46.5 (4.1)	4.0 (1.7)	12.0 (1.8)	23.7 (2.8)
SOUTH	6.7 (0.9)	20.7 (2.1)	12.4 (1.1)	9.7 (0.7)	19.6 (1.1)
WEST	2.8 (0.6)	51.6 (1.9)	0.5 (0.2)	12.1 (1.2)	23.2 (2.1)
HEATING DEGREE DAYS					
0-1,999	2.3 (0.7)	6.7 (2.9)	18.3 (3.6)	6.7 (1.5)	15.7 (3.5)
2,000-2,999	1.5 (0.5)	21.5 (3.3)	10.6 (1.5)	9.6 (1.3)	19.5 (2.4)
3,000-3,999	1.6 (0.6)	29.5 (2.0)	10.5 (2.7)	12.7 (1.2)	23.9 (0.8)
4,000-4,999	1.4 (0.4)	30.0 (1.2)	6.2 (1.4)	10.4 (0.5)	20.2 (1.0)
5,000-5,999	2.5 (0.9)	50.0 (7.6)	1.3 (1.1)	11.5 (2.1)	22.8 (3.9)
6,000-6,999	1.5 (0.4)	45.4 (2.9)	1.5 (0.6)	11.7 (1.4)	21.4 (2.5)
7,000-7,999	1.3 (0.7)	42.3 (15.6)	0.3 (0.8)	9.8 (2.1)	17.8 (4.0)
8,000 OR MORE	Q	Q	Q	Q	Q
INCOME					
LESS THAN $5,000	1.2 (0.2)	34.6 (2.5)	0.9 (0.3)	5.3 (0.7)	13.5 (1.2)
$5,000-$9,999	1.8 (0.3)	30.1 (2.9)	4.1 (0.7)	8.0 (0.7)	16.9 (1.2)
$10,000-$14,999	2.7 (0.5)	25.5 (2.7)	7.1 (1.1)	8.7 (0.8)	17.5 (1.3)
$15,000-$19,999	2.1 (0.3)	30.3 (3.2)	7.3 (1.2)	11.2 (0.9)	22.4 (1.4)
$20,000-$24,999	1.6 (0.3)	30.2 (3.7)	9.2 (1.7)	12.0 (0.8)	22.1 (1.5)
$25,000-$34,999	1.6 (0.3)	34.4 (4.1)	9.0 (2.0)	13.0 (0.8)	22.9 (1.5)
$35,000 OR MORE	1.1 (0.2)	47.1 (7.0)	15.9 (3.8)	14.3 (1.6)	28.2 (2.7)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	2.2 (0.3)	28.6 (3.4)	4.2 (0.9)	4.0 (0.4)	12.4 (1.2)
TWO	4.5 (0.7)	29.3 (3.6)	8.1 (1.4)	7.8 (0.5)	18.3 (1.3)
THREE	2.1 (0.2)	32.7 (2.2)	8.0 (1.2)	11.3 (0.5)	22.6 (1.0)
FOUR	1.9 (0.2)	33.6 (3.1)	8.6 (1.6)	14.3 (0.9)	24.2 (1.5)
FIVE OR MORE	1.3 (0.2)	40.3 (2.5)	7.7 (1.4)	21.0 (1.1)	29.8 (1.2)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 3. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Housing Characteristics for 1978

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	41.8 (1.9)	100.8 (3.4)	21.8 (0.7)	5.0 (0.2)
HOUSING STRUCTURE				
SINGLE-FAMILY DETATCHED	26.9 (1.2)	114.0 (3.8)	24.5 (0.8)	5.4 (0.3)
SINGLE-FAMILY ATTACHED	2.2 (0.4)	100.3 (6.5)	18.5 (2.7)	4.9 (1.2)
TWO TO FOUR UNITS	6.7 (0.9)	90.4 (8.2)	20.4 (2.0)	4.6 (0.4)
FIVE OR MORE UNITS	4.4 (0.7)	47.6 (9.3)	10.0 (3.2)	2.6 (0.7)
MOBILE HOME	1.3 (0.4)	65.4 (13.7)	18.3 (2.3)	5.5 (0.8)
OTHER	0.2 (0.1)	Q	Q	Q
YEAR HOUSE BUILT				
BEFORE 1940	14.3 (1.3)	113.0 (5.0)	20.3 (1.0)	5.0 (0.3)
1940-1949	4.9 (0.6)	96.7 (5.0)	22.0 (1.5)	5.6 (0.8)
1950-1959	8.0 (0.8)	99.0 (5.0)	21.9 (1.2)	5.6 (0.6)
1960-1964	4.5 (0.6)	96.0 (5.6)	22.1 (1.3)	4.0 (0.5)
1965-1969	4.4 (0.7)	88.2 (8.1)	24.1 (1.9)	5.0 (0.8)
1970-1974	3.7 (0.5)	85.0 (6.2)	21.4 (1.8)	4.4 (0.7)
1975 OR LATER	20.7 (0.4)	99.2 (11.9)	25.5 (1.8)	4.2 (0.7)
HEATED SQUARE FOOTAGE				
1-799	7.2 (0.8)	62.5 (6.7)	12.3 (1.4)	3.6 (0.4)
800-999	8.5 (0.7)	87.5 (4.5)	18.6 (1.1)	5.2 (0.3)
1,000-1,199	7.9 (0.6)	95.3 (4.3)	22.8 (1.2)	5.2 (0.4)
1,200-1,399	6.1 (0.5)	107.3 (4.7)	25.9 (1.4)	5.1 (0.5)
1,400-1,799	7.0 (0.7)	115.6 (5.7)	25.5 (1.1)	4.7 (0.3)
1,800-2,399	3.6 (0.4)	143.3 (5.8)	26.9 (1.4)	7.1 (1.5)
2,400 OR MORE	1.5 (0.3)	191.4 (16.9)	32.5 (2.8)	4.2 (1.1)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 4. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Socio-demographic Characteristics for 1978

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	41.8 (1.9)	100.8 (3.4)	21.8 (0.7)	5.0 (0.2)
GEOGRAPHIC REGION				
NORTHEAST	7.0 (0.6)	120.6 (7.8)	22.1 (1.5)	5.6 (0.5)
NORTH CENTRAL	15.3 (1.0)	132.0 (3.6)	24.3 (1.0)	5.1 (0.3)
SOUTH	10.1 (1.4)	65.4 (5.0)	20.9 (1.1)	5.5 (0.6)
WEST	9.6 (0.6)	73.8 (6.4)	18.4 (2.1)	3.7 (0.5)
HEATING DEGREE DAYS				
0-1,999	2.3 (0.9)	38.1 (5.6)	25.9 (3.8)	6.4 (0.8)
2,000-2,999	6.5 (0.8)	54.9 (4.1)	20.9 (1.5)	6.6 (0.9)
3,000-3,999	5.0 (1.4)	75.5 (5.0)	20.2 (1.7)	3.5 (0.9)
4,000-4,999	1.8 (1.0)	76.1 (14.7)	15.7 (6.6)	3.3 (1.5)
5,000-5,999	8.4 (1.3)	119.5 (6.2)	22.8 (1.6)	5.2 (0.6)
6,000-6,999	7.8 (1.9)	128.0 (4.3)	23.0 (1.6)	4.4 (0.3)
7,000-7,999	8.5 (1.9)	122.6 (9.9)	21.5 (2.0)	5.1 (0.6)
8,000 OR MORE	1.5 (0.1)	142.5 (8.0)	20.1 (2.1)	3.9 (0.4)
INCOME				
LESS THAN $5,000	6.4 (0.7)	79.7 (4.4)	14.8 (1.3)	4.4 (0.3)
$5,000-$9,999	8.0 (0.6)	92.9 (5.4)	19.1 (1.3)	5.1 (0.5)
$10,000-$14,999	7.8 (0.6)	91.3 (4.4)	19.1 (1.2)	4.8 (0.4)
$15,000-$19,999	5.8 (0.5)	102.1 (5.2)	24.3 (1.3)	4.1 (0.5)
$20,000-$24,999	5.5 (0.5)	111.3 (5.1)	25.6 (1.3)	5.2 (0.5)
$25,000-$34,999	5.4 (0.5)	117.4 (5.9)	28.6 (1.1)	4.6 (0.4)
$35,000 OR MORE	3.0 (0.4)	140.9 (10.6)	26.3 (1.2)	7.1 (1.4)
NUMBER OF HOUSEHOLD MEMBERS				
ONE	8.3 (0.7)	77.9 (4.6)	7.2 (0.4)	3.9 (0.3)
TWO	13.6 (0.8)	99.4 (3.6)	15.1 (0.4)	4.7 (0.3)
THREE	7.5 (0.5)	108.3 (4.7)	23.9 (0.8)	5.4 (0.4)
FOUR	6.5 (0.4)	110.4 (4.6)	31.4 (0.9)	5.9 (0.6)
FIVE OR MORE	5.9 (0.5)	116.9 (6.3)	44.5 (1.8)	5.4 (0.5)

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NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
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SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 5. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Housing Characteristics for 1978

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	16.9 (1.3)	120.7 (4.8)	8.3 (0.9)	Q
HOUSING STRUCTURE				
SINGLE-FAMILY DETATCHED	11.1 (1.1)	123.3 (5.0)	6.6 (0.8)	Q
SINGLE-FAMILY ATTACHED	0.4 (0.1)	119.8 (16.9)	9.7 (5.8)	Q
TWO TO FOUR UNITS	2.1 (0.4)	154.6 (13.1)	13.6 (4.8)	Q
FIVE OR MORE UNITS	Q	Q	Q	Q
MOBILE HOME	1.3 (0.3)	62.2 (5.8)	0.2 (0.3)	Q
YEAR HOUSE BUILT				
BEFORE 1940	7.7 (0.9)	142.1 (6.8)	9.4 (1.6)	Q
1940-1949	1.9 (0.3)	110.4 (7.7)	6.8 (2.1)	Q
1950-1959	3.6 (0.5)	109.4 (6.9)	8.5 (1.9)	Q
1960-1964	1.2 (0.3)	101.1 (16.9)	10.0 (7.2)	Q
1965-1969	0.9 (0.2)	82.3 (9.4)	5.3 (3.3)	Q
1970-1974	1.1 (0.2)	87.9 (10.1)	3.3 (1.3)	Q
1975 OR LATER	0.4 (0.2)	106.4 (17.4)	8.6 (8.3)	Q
HEATED SQUARE FOOTAGE				
1-799	3.0 (0.5)	105.1 (11.3)	10.2 (4.6)	Q
800-999	3.6 (0.5)	107.1 (8.7)	7.9 (3.0)	Q
1,000-1,199	3.2 (0.4)	108.0 (5.3)	5.4 (1.5)	Q
1,200-1,399	2.2 (0.3)	121.4 (7.8)	7.1 (1.7)	Q
1,400-1,799	3.0 (0.5)	130.9 (11.1)	8.3 (2.1)	Q
1,800-2,399	1.5 (0.2)	156.9 (14.5)	11.6 (2.1)	Q
2,400 OR MORE	0.6 (0.1)	201.6 (28.3)	11.6 (4.1)	Q

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SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 6. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Socio-demographic Characteristics for 1978

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	16.9 (1.3)	120.7 (4.8)	8.3 (0.9)	Q
GEOGRAPHIC REGION				
NORTHEAST	8.8 (0.8)	135.8 (6.0)	14.0 (1.3)	Q
NORTH CENTRAL	3.1 (0.8)	145.4 (12.6)	2.3 (1.0)	Q
SOUTH	4.2 (0.6)	73.4 (6.4)	2.3 (0.5)	Q
WEST	0.8 (0.2)	105.4 (7.4)	0.1 (0.8)	Q
HEATING DEGREE DAYS				
0-1,999	1.0 (0.1)	30.4 (3.4)	0.5 (0.1)	Q
2,000-2,999	Q	Q	Q	Q
3,000-3,999	1.2 (0.4)	81.9 (8.9)	3.1 (1.0)	Q
4,000-4,999	0.6 (0.5)	76.6 (3.4)	2.4 (1.6)	Q
5,000-5,999	7.5 (1.2)	128.9 (6.4)	13.2 (2.2)	Q
6,000-6,999	3.7 (1.0)	131.4 (7.6)	6.1 (2.0)	Q
7,000-7,999	1.7 (0.6)	154.8 (22.9)	7.5 (3.7)	Q
8,000 OR MORE	0.6 (0.5)	185.6 (66.3)	0.7 (1.5)	Q
INCOME				
LESS THAN $5,000	2.2 (0.3)	115.8 (9.5)	6.6 (2.5)	Q
$5,000-$9,999	3.4 (0.4)	109.8 (9.0)	7.6 (3.5)	Q
$10,000-$14,999	3.0 (0.3)	108.5 (7.5)	7.5 (2.1)	Q
$15,000-$19,999	2.8 (0.3)	117.7 (11.0)	11.2 (2.8)	Q
$20,000-$24,999	2.2 (0.2)	121.9 (10.9)	8.2 (1.5)	Q
$25,000-$34,999	2.1 (0.3)	138.2 (8.8)	8.4 (1.6)	Q
$35,000 OR MORE	1.2 (0.2)	163.3 (20.0)	8.2 (2.2)	Q
NUMBER OF HOUSEHOLD MEMBERS				
ONE	2.9 (0.4)	115.2 (7.4)	3.3 (1.2)	Q
TWO	5.5 (0.5)	121.8 (5.2)	5.9 (1.0)	Q
THREE	2.9 (0.3)	116.6 (8.3)	6.8 (2.1)	Q
FOUR	3.2 (0.4)	118.9 (13.7)	10.9 (2.2)	Q
FIVE OR MORE	2.4 (0.3)	132.5 (8.5)	18.3 (2.5)	Q

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SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 7. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Housing Characteristics for 1978

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	3.1 (0.5)	67.3 (8.6)	9.9 (1.5)	3.0 (0.4)
HOUSING STRUCTURE				
SINGLE-FAMILY DETATCHED	1.9 (0.3)	74.1 (10.0)	11.7 (1.3)	2.7 (0.4)
SINGLE-FAMILY ATTACHED	Q	Q	Q	Q
TWO TO FOUR UNITS	Q	Q	Q	Q
FIVE OR MORE UNITS	Q	Q	Q	Q
MOBILE HOME	0.9 (0.2)	55.8 (12.0)	8.2 (4.7)	3.8 (0.5)
YEAR HOUSE BUILT				
BEFORE 1940	0.8 (0.2)	85.6 (15.0)	8.4 (2.1)	2.4 (0.7)
1940-1949	Q	Q	Q	Q
1950-1959	0.4 (0.1)	73.7 (40.3)	9.7 (5.9)	2.7 (1.3)
1960-1964	0.4 (0.1)	58.3 (11.9)	8.7 (3.1)	1.9 (0.7)
1965-1969	0.5 (0.2)	50.3 (12.7)	13.5 (3.1)	3.8 (1.1)
1970-1974	0.7 (0.2)	53.3 (8.1)	10.1 (5.0)	3.5 (0.6)
1975 OR LATER	0.2 (0.1)	87.6 (8.3)	15.9 (3.3)	2.7 (2.1)
HEATED SQUARE FOOTAGE				
1-799	0.6 (0.2)	36.6 (17.7)	2.7 (2.4)	2.9 (1.2)
800-999	0.8 (0.2)	50.2 (11.8)	6.2 (2.1)	2.9 (0.6)
1,000-1,199	0.6 (0.1)	84.1 (9.8)	14.3 (3.7)	3.1 (0.9)
1,200-1,399	0.6 (0.2)	80.6 (10.2)	14.2 (3.1)	3.7 (0.7)
1,400-1,799	0.4 (0.1)	89.9 (21.0)	15.2 (4.7)	1.9 (0.9)
1,800-2,399	Q	Q	Q	Q
2,400 OR MORE	Q	Q	Q	Q

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Table 8. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Sociodemographic Characteristics for 1978

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	3.1 (0.5)	67.3 (8.6)	9.9 (1.5)	3.0 (0.4)
GEOGRAPHIC REGION				
NORTHEAST	Q	Q	Q	Q
NORTH CENTRAL	0.8 (0.2)	110.1 (23.8)	14.3 (1.8)	3.2 (1.2)
SOUTH	2.0 (0.4)	46.6 (5.9)	8.1 (2.1)	3.1 (0.5)
WEST	0.3 (0.2)	85.6 (28.6)	10.4 (7.4)	1.1 (1.2)
HEATING DEGREE DAYS				
0-1,999	0.2 (0.1)	19.5 (3.7)	6.4 (4.2)	2.8 (1.4)
2,000-2,999	1.0 (0.4)	44.6 (10.4)	9.5 (3.3)	3.4 (0.7)
3,000-3,999	0.8 (0.3)	55.3 (3.5)	7.8 (2.1)	2.9 (0.9)
4,000-4,999	Q	Q	Q	Q
5,000-5,999	0.5 (0.2)	86.2 (15.7)	11.0 (3.5)	3.0 (1.2)
6,000-6,999	0.4 (0.2)	113.8 (19.3)	14.7 (8.8)	3.0 (1.8)
7,000-7,999	Q	Q	Q	Q
8,000 OR MORE	Q	Q	Q	Q
INCOME				
LESS THAN $5,000	0.5 (0.1)	52.1 (7.6)	4.8 (1.8)	3.3 (0.6)
$5,000-$9,999	1.0 (0.2)	58.2 (10.9)	6.1 (1.8)	2.7 (0.7)
$10,000-$14,999	0.7 (0.1)	55.1 (6.6)	12.1 (2.1)	2.5 (0.7)
$15,000-$19,999	0.5 (0.1)	85.2 (16.0)	13.8 (5.5)	3.6 (1.2)
$20,000-$24,999	0.4 (0.1)	74.4 (28.2)	13.1 (4.5)	3.5 (1.9)
$25,000-$34,999	Q	Q	Q	Q
$35,000 OR MORE	Q	Q	Q	Q
NUMBER OF HOUSEHOLD MEMBERS				
ONE	0.5 (0.1)	79.1 (18.7)	3.9 (1.4)	2.4 (1.0)
TWO	1.0 (0.2)	55.8 (8.8)	6.2 (1.6)	2.9 (1.0)
THREE	0.5 (0.1)	74.2 (14.4)	11.9 (4.3)	3.6 (1.0)
FOUR	0.6 (0.1)	61.5 (11.7)	13.9 (3.1)	3.4 (0.6)
FIVE OR MORE	0.5 (0.1)	80.0 (15.9)	17.5 (4.2)	2.5 (1.0)

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Table 9. Average Household Energy Expenditures by End Use by Selected Housing Characteristics for 1978

HOUSING CHARACTERISTICS	TOTAL EXPENDITURES (DOLLARS)	END USE			
		SPACE HEATING (DOLLARS)	COOLING (DOLLARS)	WATER HEATING (DOLLARS)	MISCELLANEOUS USE (DOLLARS)
NATIONAL	724 (13)	315 (8)	52 (3)	91 (2)	267 (6)
HOUSING STRUCTURE					
SINGLE-FAMILY DETATCHED	800 (14)	339 (9)	57 (4)	100 (3)	305 (6)
SINGLE-FAMILY ATTACHED	742 (49)	345 (26)	54 (18)	89 (10)	254 (17)
TWO TO FOUR UNITS	655 (40)	322 (21)	36 (9)	83 (7)	214 (11)
FIVE OR MORE UNITS	476 (46)	221 (21)	43 (11)	54 (7)	158 (11)
MOBILE HOME	587 (22)	226 (16)	54 (9)	88 (5)	219 (11)
OTHER	459 (210)	234 (112)	13 (8)	37 (20)	176 (61)
YEAR HOUSE BUILT					
BEFORE 1940	750 (21)	379 (16)	24 (4)	86 (5)	261 (8)
1940-1949	697 (25)	307 (17)	36 (6)	84 (4)	270 (10)
1950-1959	756 (23)	304 (12)	64 (8)	94 (5)	295 (10)
1960-1964	712 (27)	285 (18)	67 (7)	91 (5)	269 (10)
1965-1969	669 (35)	249 (17)	77 (8)	85 (5)	258 (18)
1970-1974	704 (30)	269 (15)	78 (9)	100 (5)	256 (10)
1975 OR LATER	694 (50)	276 (21)	71 (16)	107 (8)	240 (18)
HEATED SQUARE FOOTAGE					
ZERO HEATED SQUARE FOOTAGE	463 (29)	224 (15)	26 (6)	52 (4)	161 (8)
1-799	613 (14)	273 (10)	36 (5)	82 (3)	221 (5)
800-999	686 (15)	291 (10)	43 (3)	94 (3)	259 (7)
1,000-1,199	768 (19)	324 (12)	52 (4)	98 (4)	293 (8)
1,200-1,399	877 (19)	362 (15)	70 (7)	109 (4)	336 (9)
1,400-1,799	1026 (25)	446 (20)	86 (10)	120 (7)	375 (11)
1,800-2,399	1234 (68)	559 (50)	145 (19)	125 (9)	404 (23)

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Table 10. Average Household Energy Expenditures by End Use by Selected Sociodemographic Characteristics for 1978

SOCIODEMOGRAPHIC CHARACTERISTICS	TOTAL EXPENDITURES (DOLLARS)	END USE			
		SPACE HEATING (DOLLARS)	COOLING (DOLLARS)	WATER HEATING (DOLLARS)	MISCELLANEOUS USE (DOLLARS)
NATIONAL	724 (13)	315 (8)	52 (3)	91 (2)	267 (6)
GEOGRAPHIC REGION					
NORTHEAST	887 (48)	468 (20)	18 (3)	104 (6)	298 (19)
NORTH CENTRAL	821 (20)	387 (17)	44 (6)	89 (5)	300 (9)
SOUTH	674 (19)	209 (10)	106 (7)	102 (3)	256 (9)
WEST	469 (24)	207 (14)	9 (2)	56 (2)	197 (11)
HEATING DEGREE DAYS					
0-1,999	651 (52)	113 (21)	179 (10)	107 (12)	252 (24)
2,000-2,999	553 (51)	165 (16)	73 (12)	76 (6)	238 (18)
3,000-3,999	649 (37)	222 (17)	64 (13)	95 (8)	269 (9)
4,000-4,999	573 (44)	232 (16)	53 (17)	84 (6)	205 (24)
5,000-5,999	831 (51)	403 (24)	42 (6)	98 (7)	289 (17)
6,000-6,999	798 (34)	393 (22)	20 (5)	97 (7)	289 (16)
7,000-7,999	722 (57)	382 (30)	17 (6)	74 (6)	249 (21)
8,000 OR MORE	915 (51)	501 (64)	20 (7)	91 (24)	303 (34)
INCOME					
LESS THAN $5,000	522 (23)	264 (13)	16 (2)	58 (4)	184 (9)
$5,000-$9,999	627 (15)	288 (11)	34 (4)	76 (3)	228 (7)
$10,000-$14,999	659 (17)	282 (10)	46 (4)	88 (3)	243 (6)
$15,000-$19,999	769 (23)	318 (14)	56 (5)	105 (5)	290 (8)
$20,000-$24,999	816 (20)	336 (15)	70 (7)	102 (5)	307 (8)
$25,000-$34,999	874 (23)	361 (18)	71 (6)	113 (5)	329 (11)
$35,000 OR MORE	1047 (50)	455 (36)	112 (15)	111 (7)	369 (14)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	489 (21)	268 (11)	30 (3)	33 (1)	158 (6)
TWO	669 (14)	305 (9)	53 (4)	69 (2)	241 (6)
THREE	776 (15)	333 (11)	59 (6)	100 (3)	284 (6)
FOUR	853 (19)	338 (13)	64 (5)	126 (4)	325 (8)
FIVE OR MORE	959 (26)	352 (16)	54 (5)	168 (6)	385 (10)

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Table 11. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Housing Characteristics for 1978

HOUSING CHARACTERISTICS	MAIN HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
NATIONAL	269 (18)	272 (7)	475 (19)
HOUSING STRUCTURE			
SINGLE-FAMILY DETATCHED	312 (21)	298 (8)	483 (20)
SINGLE-FAMILY ATTACHED	431 (55)	305 (18)	468 (67)
TWO TO FOUR UNITS	190 (35)	261 (18)	612 (51)
FIVE OR MORE UNITS	187 (29)	139 (14)	Q
MOBILE HOME	253 (24)	173 (33)	246 (22)
OTHER	Q	244 (84)	Q
YEAR HOUSE BUILT			
BEFORE 1940	306 (26)	306 (12)	558 (27)
1940-1949	290 (27)	264 (13)	437 (35)
1950-1959	242 (23)	261 (12)	430 (28)
1960-1964	269 (24)	263 (19)	399 (72)
1965-1969	237 (33)	236 (21)	325 (38)
1970-1974	291 (28)	224 (18)	343 (38)
1975 OR LATER	264 (31)	274 (26)	416 (71)
HEATED SQUARE FOOTAGE			
1-799	175 (21)	174 (14)	413 (45)
800-999	219 (22)	238 (10)	422 (34)
1,000-1,199	252 (24)	259 (9)	421 (20)
1,200-1,399	246 (29)	284 (11)	478 (33)
1,400-1,799	329 (24)	306 (12)	516 (44)
1,800-2,399	377 (39)	384 (20)	616 (55)
2,400 OR MORE	468 (39)	508 (45)	790 (110)

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Table 12. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Socio-demographic Characteristics for 1978

SOCIODEMOGRAPHIC CHARACTERISTICS	MAIN HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
NATIONAL	269 (18)	272 (7)	475 (19)
GEOGRAPHIC REGION			
NORTHEAST	347 (57)	389 (19)	541 (24)
NORTH CENTRAL	492 (43)	338 (8)	556 (47)
SOUTH	215 (20)	185 (8)	289 (25)
WEST	272 (31)	171 (12)	397 (31)
HEATING DEGREE DAYS			
0-1,999	87 (33)	126 (25)	133 (11)
2,000-2,999	232 (36)	131 (9)	246 (45)
3,000-3,999	302 (18)	190 (16)	313 (33)
4,000-4,999	282 (12)	195 (57)	294 (20)
5,000-5,999	306 (48)	339 (17)	512 (25)
6,000-6,999	437 (59)	332 (18)	515 (32)
7,000-7,999	321 (76)	342 (29)	602 (85)
8,000 OR MORE	Q	384 (30)	696 (277)
INCOME			
LESS THAN $5,000	270 (29)	220 (16)	452 (39)
$5,000-$9,999	249 (26)	246 (11)	431 (34)
$10,000-$14,999	237 (22)	249 (9)	426 (29)
$15,000-$19,999	255 (28)	274 (13)	465 (44)
$20,000-$24,999	261 (27)	300 (13)	480 (43)
$25,000-$34,999	284 (37)	311 (16)	545 (33)
$35,000 OR MORE	396 (46)	385 (30)	638 (78)
NUMBER OF HOUSEHOLD MEMBERS			
ONE	229 (22)	215 (10)	450 (28)
TWO	247 (25)	266 (8)	478 (21)
THREE	300 (23)	298 (10)	458 (33)
FOUR	296 (25)	295 (11)	470 (52)
FIVE OR MORE	324 (27)	306 (14)	522 (33)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 13. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Housing Characteristics for 1980

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE			
		SPACE HEATING (MILLION BTU)	COOLING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	14.3 (1.0)	18. 2 (1.6)	7.3 (0.5)	10.4 (0.4)	19.6 (0.6)
HOUSING STRUCTURE					
SINGLE-FAMILY DETATCHED	7.7 (0.6)	23.5 (1.5)	9.7 (0.6)	13.5 (0.4)	24.6 (0.7)
SINGLE-FAMILY ATTACHED	0.5 (0.2)	19.8 (3.4)	4.8 (1.6)	8.3 (2.0)	15.7 (2.1)
TWO TO FOUR UNITS	1.3 (0.4)	13.5 (4.4)	5.3 (2.0)	7.2 (0.7)	12.3 (1.0)
FIVE OR MORE UNITS	3.7 (0.5)	8.5 (1.1)	3.9 (0.5)	6.7 (0.6)	12.2 (0.6)
MOBILE HOME	1.1 (0.2)	19.2 (3.2)	5.2 (1.1)	5.9 (0.6)	20.2 (1.9)
YEAR HOUSE BUILT					
BEFORE 1940	0.8 (0.1)	25.8 (4.0)	6.1 (1.3)	7.0 (0.9)	15.3 (1.3)
1940-1949	0.5 (0.1)	22.2 (3.3)	4.9 (2.4)	9.5 (1.3)	17.7 (2.3)
1950-1959	1.1 (0.2)	19.5 (4.0)	6.7 (1.8)	8.9 (1.3)	18.5 (1.6)
1960-1964	0.8 (0.1)	25.3 (4.1)	6.0 (1.5)	10.6 (1.6)	21.3 (2.4)
1965-1969	1.7 (0.2)	19.9 (1.6)	6.0 (1.0)	10.5 (0.7)	19.0 (1.3)
1970-1974	3.7 (0.4)	18.8 (1.4)	6.3 (0.8)	10.5 (0.7)	20.2 (0.9)
1975 OR LATER	5.7 (0.7)	14.7 (1.7)	8.9 (0.8)	11.1 (0.7)	19.9 (0.9)
HEATED SQUARE FOOTAGE					
1-799	3.6 (0.4)	11.8 (1.5)	2.7 (0.4)	5.4 (0.4)	11.5 (0.7)
800-999	2.2 (0.2)	14.5 (1.3)	4.9 (0.7)	8.2 (0.6)	15.1 (0.9)
1,000-1,199	1.7 (0.2)	16.0 (2.0)	5.8 (0.6)	10.6 (0.9)	18.3 (1.0)
1,200-1,399	1.4 (0.2)	19.4 (2.6)	8.9 (1.3)	11.1 (1.0)	21.1 (1.2)
1,400-1,799	2.0 (0.2)	19.9 (2.4)	11.1 (1.1)	13.8 (0.8)	23.8 (1.2)
1,800-2,399	2.0 (0.3)	26.6 (1.7)	10.6 (1.3)	13.8 (0.7)	27.1 (1.0)
2,400 OR MORE	1.4 (0.2)	27.6 (2.3)	12.6 (1.5)	15.6 (1.3)	30.2 (2.2)

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NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 14. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Sociodemographic Characteristics for 1980

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE			
		SPACE HEATING (MILLION BTU)	COOLING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	14.3 (1.0)	18.2 (1.6)	7.3 (0.5)	10.4 (0.4)	19.6 (0.6)
GEOGRAPHIC REGION					
NORTHEAST	1.6 (0.4)	24.3 (2.0)	1.7 (0.5)	10.8 (0.7)	17.9 (1.3)
NORTH CENTRAL	2.1 (0.4)	26.5 (2.4)	4.1 (0.7)	11.3 (1.2)	20.4 (2.3)
SOUTH	7.7 (0.8)	14.9 (2.6)	11.0 (0.7)	10.5 (0.6)	20.6 (0.7)
WEST	2.9 (0.4)	17.8 (1.5)	2.5 (0.4)	9.2 (0.7)	16.9 (1.1)
HEATING DEGREE DAYS					
0-1,999	3.8 (1.1)	4.9 (2.0)	13.4 (1.2)	8.9 (0.5)	19.5 (1.3)
2,000-2,999	1.2 (0.3)	11.9 (1.5)	12.4 (2.2)	9.1 (1.7)	18.1 (2.4)
3,000-3,999	1.7 (0.4)	18.0 (1.4)	8.0 (0.9)	10.3 (1.0)	18.8 (1.4)
4,000-4,999	2.8 (0.5)	26.2 (1.0)	4.5 (1.0)	12.2 (0.9)	21.3 (1.2)
5,000-5,999	2.0 (0.5)	27.2 (0.8)	3.9 (0.8)	10.9 (0.7)	19.9 (0.6)
6,000-6,999	2.0 (0.5)	23.5 (3.7)	1.8 (0.8)	10.6 (1.2)	18.7 (2.8)
7,000-7,999	0.4 (0.1)	24.4 (4.5)	0.3 (0.1)	10.6 (2.3)	16.2 (3.3)
8,000 OR MORE	0.3 (0.1)	32.6 (8.9)	0.8 (0.5)	11.3 (1.9)	22.5 (6.1)
INCOME					
LESS THAN $5,000	1.8 (0.3)	17.4 (2.2)	2.3 (0.3)	6.0 (0.5)	12.6 (0.9)
$5,000-$9,999	2.1 (0.3)	16.4 (2.8)	4.3 (0.6)	8.3 (0.6)	16.1 (0.9)
$10,000-$14,999	2.5 (0.2)	16.3 (1.5)	6.4 (0.8)	9.2 (0.8)	16.8 (1.2)
$15,000-$19,999	2.0 (0.3)	17.4 (2.2)	5.9 (1.0)	10.7 (0.6)	19.0 (0.9)
$20,000-$24,999	1.7 (0.2)	20.5 (2.2)	9.2 (1.2)	13.1 (0.9)	24.5 (1.1)
$25,000-$34,999	2.4 (0.3)	18.8 (2.3)	9.5 (1.1)	11.2 (1.0)	22.0 (1.3)
$35,000 OR MORE	1.8 (0.3)	21.9 (2.6)	13.7 (1.5)	14.6 (1.0)	26.9 (1.6)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	3.6 (0.4)	13.5 (1.4)	4.7 (0.8)	5.4 (0.4)	12.6 (0.9)
TWO	4.8 (0.5)	17.1 (2.5)	6.7 (0.9)	8.3 (0.4)	16.9 (0.5)
THREE	2.3 (0.2)	20.7 (1.4)	9.2 (0.8)	12.5 (0.7)	23.4 (1.3)
FOUR	1.8 (0.2)	20.8 (1.8)	10.0 (1.1)	15.3 (0.8)	25.9 (0.9)
FIVE OR MORE	1.7 (0.2)	25.3 (2.8)	8.4 (1.2)	18.9 (1.1)	29.9 (1.5)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 15. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Housing Characteristics for 1980

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	44.6 (1.5)	74.1 (1.3)	25.8 (0.5)	7.2 (0.4)
HOUSING STRUCTURE				
SINGLE-FAMILY DETATCHED	30.1 (1.3)	81.7 (1.5)	28.5 (0.5)	6.8 (0.5)
SINGLE-FAMILY ATTACHED	1.9 (0.3)	62.1 (5.5)	23.0 (2.0)	10.8 (0.8)
TWO TO FOUR UNITS	6.6 (0.5)	69.5 (3.2)	23.2 (1.0)	7.7 (0.6)
FIVE OR MORE UNITS	4.6 (0.3)	41.8 (6.0)	15.4 (1.2)	6.5 (1.3)
MOBILE HOME	1.4 (0.3)	53.6 (5.6)	18.1 (1.1)	10.0 (1.1)
YEAR HOUSE BUILT				
BEFORE 1940	13.3 (0.8)	90.6 (2.7)	25.1 (0.7)	6.8 (0.4)
1940-1949	4.6 (0.3)	71.6 (2.9)	25.5 (1.1)	6.1 (0.7)
1950-1959	9.1 (0.8)	70.4 (2.7)	26.9 (0.9)	7.9 (0.9)
1960-1964	4.6 (0.4)	69.3 (3.1)	26.7 (0.9)	7.6 (1.1)
1965-1969	4.8 (0.4)	64.8 (3.6)	26.9 (1.1)	7.8 (0.7)
1970-1974	4.6 (0.4)	62.4 (3.8)	24.8 (1.2)	7.5 (1.2)
1975 OR LATER	3.6 (0.4)	59.1 (4.1)	24.6 (1.0)	6.8 (1.5)
HEATED SQUARE FOOTAGE				
1-799	8.3 (0.5)	48.3 (1.8)	18.0 (1.0)	5.9 (0.5)
800-999	6.3 (0.5)	57.7 (2.9)	23.0 (1.0)	6.1 (0.5)
1,000-1,199	5.1 (0.3)	68.5 (3.0)	27.0 (1.1)	6.2 (0.4)
1,200-1,399	4.4 (0.3)	67.3 (3.0)	26.9 (1.4)	9.5 (1.3)
1,400-1,799	7.2 (0.4)	75.8 (2.5)	27.8 (0.7)	7.3 (0.6)
1,800-2,399	7.0 (0.4)	89.2 (3.4)	29.5 (1.1)	7.4 (0.7)
2,400 OR MORE	6.3 (0.4)	115.1 (5.0)	30.7 (1.0)	8.8 (1.3)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 16. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Socio-demographic Characteristics for 1980

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	44.6 (1.5)	74.1 (1.3)	25.8 (0.5)	7.2 (0.4)
GEOGRAPHIC REGION				
NORTHEAST	6.6 (0.9)	94.9 (2.9)	25.1 (0.7)	8.0 (0.5)
NORTH CENTRAL	5.0 (0.6)	99.1 (2.2)	27.0 (0.6)	7.2 (0.4)
SOUTH	11.8 (0.9)	57.5 (2.8)	25.2 (1.3)	7.4 (0.7)
WEST	11.1 (0.5)	45.5 (1.3)	25.2 (1.0)	6.5 (0.9)
HEATING DEGREE DAYS				
0-1,999	6.4 (1.1)	27.8 (1.3)	26.8 (1.4)	9.8 (1.2)
2,000-2,999	5.5 (1.2)	42.4 (2.2)	25.7 (1.9)	6.6 (1.1)
3,000-3,999	5.0 (0.7)	58.6 (4.1)	24.6 (1.5)	6.1 (1.0)
4,000-4,999	3.3 (0.7)	68.3 (3.1)	22.6 (2.0)	5.1 (0.8)
5,000-5,999	8.1 (0.9)	88.4 (2.4)	26.5 (1.2)	7.9 (0.7)
6,000-6,999	10.1 (1.0)	100.4 (2.1)	27.1 (0.6)	7.5 (0.4)
7,000-7,999	4.6 (0.6)	104.3 (4.0)	24.9 (1.0)	5.7 (0.6)
8,000 OR MORE	1.5 (0.6)	107.1 (7.4)	22.5 (2.1)	5.4 (1.4)
INCOME				
LESS THAN $5,000	5.5 (0.3)	66.9 (4.2)	22.0 (1.1)	5.9 (0.3)
$5,000-$9,999	7.3 (0.4)	68.7 (2.8)	23.1 (0.8)	6.9 (0.9)
$10,000-$14,999	6.9 (0.5)	68.4 (3.1)	23.3 (1.0)	6.7 (0.6)
$15,000-$19,999	6.6 (0.4)	70.1 (2.5)	25.8 (1.0)	6.8 (0.5)
$20,000-$24,999	6.0 (0.4)	79.5 (4.0)	29.4 (1.1)	7.3 (0.5)
$25,000-$34,999	6.7 (0.4)	79.1 (2.2)	28.2 (0.7)	7.9 (0.7)
$35,000 OR MORE	5.6 (0.4)	87.9 (5.4)	29.3 (1.1)	9.1 (1.5)
NUMBER OF HOUSEHOLD MEMBERS				
ONE	8.2 (0.4)	60.6 (2.5)	14.4 (0.5)	5.4 (0.3)
TWO	14.4 (0.6)	72.5 (2.0)	21.0 (0.5)	6.8 (0.7)
THREE	8.3 (0.5)	74.1 (2.2)	26.4 (0.7)	8.2 (0.5)
FOUR	7.7 (0.5)	82.2 (2.9)	33.9 (0.9)	7.6 (0.6)
FIVE OR MORE	5.9 (0.4)	86.0 (2.5)	41.9 (1.1)	8.6 (1.0)

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NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 17. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Housing Characteristics for 1980

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	13.4 (0.7)	96.0 (2.5)	16.4 (1.2)	Q
HOUSING STRUCTURE				
SINGLE-FAMILY DETATCHED	7.9 (0.5)	98.0 (2.5)	11.7 (1.0)	Q
SINGLE-FAMILY ATTACHED	0.7 (0.1)	11.0 (10.9)	12.2 (3.1)	Q
TWO TO FOUR UNITS	1.6 (0.2)	105.3 (10.5)	21.7 (2.6)	Q
FIVE OR MORE UNITS	2.4 (0.3)	90.0 (42.6)	34.2 (19.9)	Q
MOBILE HOME	0.7 (0.1)	58.4 (7.2)	1.4 (0.9)	Q
YEAR HOUSE BUILT				
BEFORE 1940	6.1 (0.5)	105.3 (3.5)	15.2 (1.6)	Q
1940-1949	1.6 (0.2)	91.6 (7.1)	17.9 (4.2)	Q
1950-1959	2.5 (0.3)	90.8 (4.1)	14.5 (2.0)	Q
1960-1964	1.1 (0.2)	90.3 (8.7)	22.5 (8.0)	Q
1965-1969	0.7 (0.1)	88.0 (9.7)	16.3 (5.3)	Q
1970-1974	0.8 (0.1)	82.1 (10.3)	21.4 (6.9)	Q
1975 OR LATER	0.6 (0.1)	75.0 (12.0)	14.0 (3.3)	Q
HEATED SQUARE FOOTAGE				
1-799	3.1 (0.4)	80.8 (6.6)	22.3 (5.3)	Q
800-999	1.6 (0.2)	81.5 (8.2)	18.0 (3.5)	Q
1,000-1,199	1.4 (0.2)	90.1 (4.9)	17.6 (2.8)	Q
1,200-1,399	1.2 (0.2)	85.9 (6.3)	12.9 (2.9)	Q
1,400-1,799	1.9 (0.2)	98.7 (4.4)	12.3 (2.0)	Q
1,800-2,399	1.7 (0.2)	107.3 (6.0)	13.1 (2.1)	Q
2,400 OR MORE	2.5 (0.2)	122.9 (4.7)	14.4 (1.8)	Q

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NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 18. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Socio-demographic Characteristics for 1980

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	13.4 (0.7)	96.0 (2.5)	16.4 (1.2)	Q
GEOGRAPHIC REGION				
NORTHEAST	8.2 (0.5)	106.5 (2.7)	23.4 (1.6)	Q
NORTH CENTRAL	1.5 (0.2)	88.8 (4.2)	3.3 (2.3)	Q
SOUTH	3.1 (0.4)	76.5 (4.4)	6.9 (3.0)	Q
WEST	0.5 (0.1)	68.0 (4.3)	1.2 (0.7)	Q
HEATING DEGREE DAYS				
0-1,999	Q	Q	Q	Q
2,000-2,999	Q	Q	Q	Q
3,000-3,999	1.0 (0.3)	73.5 (2.6)	1.8 (1.3)	Q
4,000-4,999	1.2 (0.4)	85.0 (6.7)	10.4 (5.9)	Q
5,000-5,999	5.6 (0.7)	96.9 (6.1)	22.8 (3.8)	Q
6,000-6,999	2.9 (0.5)	105.0 (4.9)	16.2 (2.2)	Q
7,000-7,999	1.4 (0.2)	109.4 (6.3)	15.9 (2.6)	Q
8,000 OR MORE	0.9 (0.5)	100.6 (7.4)	7.6 (2.0)	Q
INCOME				
LESS THAN $5,000	2.0 (0.2)	94.0 (9.4)	16.4 (6.5)	Q
$5,000-$9,999	2.5 (0.2)	95.2 (8.9)	20.4 (5.8)	Q
$10,000-$14,999	2.4 (0.2)	88.8 (6.0)	15.4 (2.6)	Q
$15,000-$19,999	1.8 (0.2)	95.0 (6.3)	14.2 (2.5)	Q
$20,000-$24,999	1.4 (0.1)	98.7 (8.5)	11.8 (2.6)	Q
$25,000-$34,999	2.0 (0.2)	96.7 (4.7)	14.9 (2.1)	Q
$35,000 OR MORE	1.4 (0.2)	110.8 (5.2)	20.3 (2.1)	Q
NUMBER OF HOUSEHOLD MEMBERS				
ONE	2.7 (0.3)	94.1 (7.1)	19.7 (4.0)	Q
TWO	4.8 (0.2)	93.7 (3.8)	16.5 (2.6)	Q
THREE	2.3 (0.2)	97.6 (6.2)	14.3 (2.0)	Q
FOUR	2.0 (0.2)	91.7 (4.7)	12.0 (1.3)	Q
FIVE OR MORE	1.6 (0.2)	109.1 (6.1)	18.9 (2.5)	Q

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NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 19. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Housing Characteristics for 1980

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	3.7 (0.4)	60.7 (3.4)	10.8 (1.2)	5.3 (0.5)
HOUSING STRUCTURE				
SINGLE-FAMILY DETATCHED	2.3 (0.3)	67.9 (4.7)	12.9 (1.0)	5.1 (0.7)
SINGLE-FAMILY ATTACHED	Q	Q	Q	Q
TWO TO FOUR UNITS	Q	Q	Q	Q
FIVE OR MORE UNITS	Q	Q	Q	Q
MOBILE HOME	1.2 (0.2)	45.7 (5.3)	7.0 (1.8)	6.4 (0.8)
YEAR HOUSE BUILT				
BEFORE 1940	0.9 (0.2)	79.9 (6.5)	12.4 (2.1)	5.1 (0.8)
1940-1949	0.2 (0.1)	48.4 (5.3)	15.5 (6.1)	5.1 (2.7)
1950-1959	0.4 (0.1)	63.8 (10.1)	11.8 (3.1)	3.5 (1.3)
1960-1964	0.3 (0.1)	55.3 (7.3)	13.1 (2.6)	4.0 (2.0)
1965-1969	0.5 (0.1)	43.5 (11.8)	8.0 (2.8)	3.5 (0.6)
1970-1974	0.8 (0.2)	56.4 (6.1)	8.8 (2.1)	7.5 (1.2)
1975 OR LATER	0.4 (0.1)	56.2 (7.0)	10.2 (3.9)	6.0 (1.3)
HEATED SQUARE FOOTAGE				
1-799	1.4 (0.2)	51.6 (5.1)	8.6 (2.4)	5.6 (0.6)
800-999	0.5 (0.1)	44.4 (5.8)	10.7 (3.0)	3.1 (0.9)
1,000-1,199	0.6 (0.1)	66.1 (8.9)	10.5 (2.3)	5.3 (0.6)
1,200-1,399	0.3 (0.1)	56.5 (7.7)	10.9 (3.6)	3.4 (0.9)
1,400-1,799	0.4 (0.1)	61.1 (7.0)	6.8 (2.3)	4.0 (2.0)
1,800-2,399	0.3 (0.1)	73.4 (12.8)	17.2 (2.7)	7.8 (3.7)
2,400 OR MORE	0.3 (0.1)	103.8 (13.3)	19.1 (4.9)	7.7 (2.4)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 20. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Socio-demographic Characteristics for 1980

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	3.7 (0.4)	60.7 (3.4)	10.8 (1.2)	5.3 (0.5)
GEOGRAPHIC REGION				
NORTHEAST	0.2 (0.1)	75.4 (28.2)	4.1 (2.2)	2.6 (1.4)
NORTH CENTRAL	1.2 (0.2)	89.3 (5.2)	14.4 (0.9)	5.1 (0.5)
SOUTH	2.0 (0.3)	43.9 (3.7)	9.5 (2.6)	5.7 (1.0)
WEST	0.4 (0.1)	57.7 (8.7)	9.7 (2.7)	4.4 (1.3)
HEATING DEGREE DAYS				
0-1,999	0.5 (0.1)	22.5 (4.1)	7.1 (8.3)	10.6 (3.5)
2,000-2,999	0.4 (0.2)	36.7 (4.9)	19.2 (1.3)	6.0 (3.8)
3,000-3,999	0.9 (0.3)	53.9 (6.2)	7.7 (2.6)	3.7 (0.6)
4,000-4,999	0.4 (0.1)	67.8 (8.7)	10.1 (2.6)	3.8 (0.9)
5,000-5,999	0.6 (0.2)	80.7 (8.3)	12.6 (2.1)	4.9 (1.1)
6,000-6,999	0.3 (0.1)	79.2 (12.7)	10.0 (2.8)	4.6 (1.1)
7,000-7,999	0.4 (0.2)	82.6 (10.7)	11.9 (1.3)	3.8 (1.1)
8,000 OR MORE	Q	Q	Q	Q
INCOME				
LESS THAN $5,000	0.5 (0.1)	54.6 (5.9)	10.9 (4.4)	4.7 (0.6)
$5,000-$9,999	0.9 (0.1)	55.0 (5.8)	5.5 (1.4)	3.8 (0.8)
$10,000-$14,999	0.9 (0.1)	60.3 (6.2)	11.9 (2.4)	4.3 (1.4)
$15,000-$19,999	0.4 (0.1)	61.8 (8.8)	8.4 (2.8)	5.7 (2.3)
$20,000-$24,999	0.3 (0.1)	71.0 (17.7)	14.1 (4.7)	4.7 (1.5)
$25,000-$34,999	0.5 (0.1)	60.8 (6.9)	14.6 (3.8)	7.6 (1.9)
$35,000 OR MORE	0.3 (0.1)	77.2 (16.2)	16.7 (3.4)	9.5 (3.1)
NUMBER OF HOUSEHOLD MEMBERS				
ONE	0.6 (0.1)	59.8 (9.0)	3.2 (1.1)	3.5 (0.8)
TWO	1.2 (0.2)	62.2 (5.2)	8.3 (1.1)	4.9 (0.9)
THREE	0.8 (0.2)	54.7 (8.0)	9.9 (3.7)	5.2 (1.2)
FOUR	0.6 (0.1)	58.0 (8.3)	15.5 (3.9)	4.5 (1.3)
FIVE OR MORE	0.4 (0.1)	72.7 (13.1)	25.0 (4.6)	10.1 (1.8)

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SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 21. Average Household Energy Expenditures by End Use by Selected Housing Characteristics for 1980

HOUSING CHARACTERISTICS	TOTAL EXPENDITURES (DOLLARS)	END USE			
		SPACE HEATING (DOLLARS)	COOLING (DOLLARS)	WATER HEATING (DOLLARS)	MISCELLANEOUS USE (DOLLARS)
NATIONAL	916 (14)	355 (9)	62 (3)	145 (3)	354 (6)
HOUSING STRUCTURE					
SINGLE-FAMILY DETATCHED	984 (15)	367 (9)	74 (3)	153 (3)	390 (7)
SINGLE-FAMILY ATTACHED	985 (77)	430 (53)	42 (6)	151 (14)	362 (20)
TWO TO FOUR UNITS	822 (34)	374 (20)	29 (7)	126 (5)	293 (9)
FIVE OR MORE UNITS	703 (43)	287 (48)	39 (5)	135 (12)	241 (13)
MOBILE HOME	789 (42)	285 (27)	66 (10)	99 (9)	339 (18)
YEAR HOUSE BUILT					
BEFORE 1940	981 (18)	469 (20)	29 (3)	146 (4)	337 (5)
1940-1949	898 (29)	370 (28)	45 (6)	146 (6)	337 (13)
1950-1959	919 (16)	347 (13)	66 (8)	134 (3)	372 (8)
1960-1964	932 (25)	344 (20)	64 (6)	140 (7)	383 (13)
1965-1969	858 (24)	291 (20)	74 (8)	137 (5)	356 (14)
1970-1974	900 (35)	295 (21)	86 (7)	150 (8)	369 (14)
1975 OR LATER	840 (33)	231 (19)	105 (8)	158 (10)	346 (13)
HEATED SQUARE FOOTAGE					
ZERO HEATED SQUARE FOOTAGE	702 (88)	Q	13 (7)	180 (27)	509 (73)
1-799	686 (24)	285 (20)	34 (3)	116 (4)	250 (6)
800-999	739 (21)	283 (11)	46 (5)	126 (4)	285 (9)
1,000-1,199	849 (27)	331 (16)	56 (4)	142 (6)	321 (10)
1,200-1,399	888 (29)	320 (18)	69 (5)	145 (7)	354 (10)
1,400-1,799	971 (22)	357 (15)	77 (7)	151 (4)	386 (10)
1,800-2,399	1078 (21)	404 (12)	81 (7)	164 (6)	429 (12)
2,400 OR MORE	1282 (26)	535 (23)	85 (6)	177 (6)	485 (12)

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SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 22. Average Household Energy Expenditures by End Use by Selected Sociodemographic Characteristics for 1980

SOCIODEMOGRAPHIC CHARACTERISTICS	TOTAL EXPENDITURES (DOLLARS)	END USE			
		SPACE HEATING (DOLLARS)	COOLING (DOLLARS)	WATER HEATING (DOLLARS)	MISCELLANEOUS USE (DOLLARS)
NATIONAL	916 (14)	355 (9)	62 (3)	145 (3)	354 (6)
GEOGRAPHIC REGION					
NORTHEAST	1268 (28)	627 (24)	22 (4)	199 (5)	420 (8)
NORTH CENTRAL	910 (15)	388 (12)	39 (5)	126 (3)	356 (9)
SOUTH	876 (28)	261 (18)	128 (8)	149 (6)	338 (10)
WEST	603 (16)	170 (6)	24 (3)	101 (3)	308 (14)
HEATING DEGREE DAYS					
0-1,999	761 (28)	109 (16)	134 (15)	140 (7)	378 (14)
2,000-2,999	717 (26)	164 (9)	124 (16)	112 (9)	317 (14)
3,000-3,999	791 (25)	262 (17)	83 (7)	128 (5)	317 (10)
4,000-4,999	824 (73)	316 (29)	67 (11)	138 (16)	302 (28)
5,000-5,999	1099 (48)	495 (27)	50 (6)	169 (7)	384 (15)
6,000-6,999	990 (26)	457 (18)	19 (4)	145 (6)	370 (13)
7,000-7,999	1011 (35)	506 (19)	4 (1)	149 (8)	351 (13)
8,000 OR MORE	979 (57)	450 (49)	4 (2)	149 (10)	376 (24)
INCOME					
LESS THAN $5,000	753 (33)	347 (29)	26 (3)	120 (6)	260 (9)
$5,000-$9,999	805 (21)	342 (18)	36 (4)	132 (4)	296 (8)
$10,000-$14,999	837 (20)	339 (17)	49 (4)	136 (6)	312 (9)
$15,000-$19,999	900 (22)	330 (16)	61 (5)	146 (5)	363 (8)
$20,000-$24,999	986 (19)	367 (18)	73 (6)	154 (4)	392 (9)
$25,000-$34,999	1005 (22)	365 (15)	81 (6)	155 (6)	404 (11)
$35,000 OR MORE	1206 (38)	414 (20)	123 (9)	176 (7)	492 (17)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	686 (25)	323 (19)	40 (3)	94 (4)	229 (6)
TWO	855 (15)	354 (11)	63 (4)	120 (3)	318 (8)
THREE	961 (21)	353 (12)	72 (5)	152 (5)	385 (8)
FOUR	1053 (28)	366 (19)	75 (5)	178 (5)	433 (10)
FIVE OR MORE	1171 (33)	395 (18)	61 (6)	226 (6)	489 (13)

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SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, *THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY*.

Table 23. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Housing Characteristics for 1980

HOUSING CHARACTERISTICS	MAIN HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
NATIONAL	241 (24)	285 (5)	773 (20)
HOUSING STRUCTURE			
SINGLE-FAMILY DETATCHED	309 (24)	303 (6)	788 (19)
SINGLE-FAMILY ATTACHED	322 (75)	278 (28)	882 (85)
TWO TO FOUR UNITS	163 (53)	300 (16)	850 (90)
FIVE OR MORE UNITS	123 (14)	174 (32)	723 (348)
MOBILE HOME	234 (41)	192 (20)	482 (62)
YEAR HOUSE BUILT			
BEFORE 1940	320 (48)	352 (12)	847 (29)
1940-1949	268 (53)	278 (12)	739 (57)
1950-1959	241 (54)	259 (10)	732 (32)
1960-1964	302 (53)	268 (12)	726 (72)
1965-1969	246 (23)	253 (16)	707 (76)
1970-1974	267 (27)	245 (14)	660 (82)
1975 OR LATER	202 (25)	223 (14)	604 (94)
HEATED SQUARE FOOTAGE			
1-799	156 (21)	194 (9)	652 (53)
800-999	187 (17)	223 (12)	656 (65)
1,000-1,199	211 (35)	264 (13)	728 (37)
1,200-1,399	242 (38)	256 (11)	692 (51)
1,400-1,799	267 (32)	294 (12)	796 (35)
1,800-2,399	370 (29)	335 (12)	862 (47)
2,400 OR MORE	357 (33)	437 (20)	984 (38)

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Table 24. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Socio-demographic Characteristics for 1980

SOCIODEMOGRAPHIC CHARACTERISTICS	MAIN HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
NATIONAL	241 (24)	285 (5)	773 (20)
GEOGRAPHIC REGION			
NORTHEAST	426 (44)	456 (20)	857 (22)
NORTH CENTRAL	359 (42)	353 (11)	706 (29)
SOUTH	205 (34)	220 (10)	622 (32)
WEST	150 (8)	160 (5)	536 (37)
HEATING DEGREE DAYS			
0-1,999	86 (36)	103 (6)	Q
2,000-2,999	154 (13)	155 (8)	Q
3,000-3,999	248 (21)	209 (13)	598 (17)
4,000-4,999	270 (33)	269 (23)	685 (58)
5,000-5,999	364 (30)	368 (16)	780 (51)
6,000-6,999	352 (60)	369 (9)	842 (37)
7,000-7,999	358 (63)	422 (24)	877 (48)
8,000 OR MORE	495 (152)	390 (33)	810 (64)
INCOME			
LESS THAN $5,000	228 (25)	261 (16)	760 (79)
$5,000-$9,999	206 (37)	261 (11)	764 (68)
$10,000-$14,999	222 (23)	271 (12)	712 (44)
$15,000-$19,999	225 (32)	266 (10)	763 (50)
$20,000-$24,999	264 (31)	304 (14)	799 (69)
$25,000-$34,999	242 (28)	302 (11)	779 (40)
$35,000 OR MORE	320 (46)	334 (20)	891 (44)
NUMBER OF HOUSEHOLD MEMBERS			
ONE	185 (21)	235 (10)	760 (57)
TWO	223 (34)	277 (6)	752 (30)
THREE	269 (24)	281 (11)	783 (50)
FOUR	279 (32)	322 (13)	741 (39)
FIVE OR MORE	338 (42)	327 (12)	880 (47)

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SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 25. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Housing Characteristics for 1981

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE			
		SPACE HEATING (MILLION BTU)	COOLING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	14.2 (1.1)	19.2 (1.3)	6.6 (0.6)	10.4 (0.4)	17.2 (0.6)
HOUSING STRUCTURE					
SINGLE-FAMILY DETATCHED	6.6 (0.5)	22.2 (1.1)	8.9 (0.6)	12.7 (0.5)	22.2 (0.7)
SINGLE-FAMILY ATTACHED	0.7 (0.3)	14.1 (7.3)	9.4 (0.8)	8.5 (1.3)	14.8 (2.0)
TWO TO FOUR UNITS	1.8 (0.3)	15.8 (1.8)	5.0 (4.6)	8.0 (1.1)	13.5 (1.0)
FIVE OR MORE UNITS	4.3 (0.6)	16.8 (2.6)	3.9 (1.0)	8.0 (0.6)	11.3 (0.6)
MOBILE HOME	0.8 (0.2)	19.0 (2.1)	4.4 (0.7)	10.3 (0.8)	17.0 (1.1)
YEAR HOUSE BUILT					
BEFORE 1940	1.2 (0.2)	23.4 (1.8)	3.1 (0.8)	7.8 (0.8)	13.6 (1.1)
1940-1949	0.5 (0.1)	23.2 (4.9)	6.2 (2.2)	8.3 (1.3)	18.1 (1.2)
1950-1959	1.1 (0.1)	19.0 (2.9)	6.0 (1.2)	9.0 (0.7)	17.1 (1.2)
1960-1964	0.9 (0.2)	14.7 (2.3)	6.8 (1.7)	10.1 (1.0)	16.9 (1.4)
1965-1969	1.8 (0.3)	17.7 (2.6)	7.9 (1.2)	9.3 (0.8)	16.6 (1.1)
1970-1974	3.3 (0.3)	20.2 (1.4)	6.0 (0.9)	11.2 (0.7)	17.5 (1.1)
1975 OR LATER	5.4 (0.7)	18.6 (1.9)	7.6 (1.0)	11.3 (0.6)	17.9 (0.7)
HEATED SQUARE FOOTAGE					
1-799	3.9 (0.4)	15.7 (1.4)	3.0 (0.6)	6.8 (0.4)	11.1 (0.5)
800-999	2.6 (0.3)	15.9 (1.4)	4.5 (0.7)	8.9 (0.5)	14.4 (0.6)
1,000-1,199	2.0 (0.3)	19.0 (1.4)	4.7 (0.9)	11.3 (0.6)	17.5 (0.7)
1,200-1,399	1.5 (0.2)	17.2 (2.2)	10.0 (2.3)	12.2 (0.9)	19.0 (1.0)
1,400-1,799	1.8 (0.3)	18.9 (3.5)	10.2 (1.2)	10.8 (1.2)	20.8 (2.1)
1,800-2,399	1.4 (0.2)	28.0 (2.6)	9.6 (1.5)	13.9 (1.1)	24.0 (1.8)
2,400 OR MORE	1.1 (0.2)	32.2 (2.9)	14.5 (1.8)	17.0 (0.8)	28.0 (0.9)

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

Table 26. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Sociodemographic Characteristics for 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE			
		SPACE HEATING (MILLION BTU)	COOLING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	14.2 (1.1)	19.2 (1.3)	6.6 (0.6)	10.4 (0.4)	17.2 (0.6)
GEOGRAPHIC REGION					
NORTHEAST	1.5 (0.3)	33.2 (2.8)	1.3 (0.4)	12.1 (0.9)	16.8 (2.1)
NORTH CENTRAL	1.6 (0.3)	29.3 (4.3)	2.4 (0.5)	9.5 (0.8)	14.0 (1.2)
SOUTH	7.7 (0.9)	13.3 (2.0)	10.5 (0.8)	10.2 (0.8)	18.2 (1.0)
WEST	3.4 (0.3)	21.5 (1.8)	2.3 (0.7)	10.4 (0.6)	16.5 (0.9)
HEATING DEGREE DAYS					
0-1,999	3.5 (1.0)	4.1 (1.9)	15.2 (1.1)	8.2 (1.3)	16.7 (1.9)
2,000-2,999	1.7 (0.3)	11.7 (1.3)	7.8 (1.8)	9.2 (1.1)	16.1 (1.6)
3,000-3,999	2.1 (0.4)	18.3 (1.9)	6.4 (1.3)	10.0 (1.4)	18.0 (1.5)
4,000-4,999	2.0 (0.5)	20.9 (1.5)	3.8 (1.2)	11.1 (0.9)	18.2 (1.5)
5,000-5,999	2.4 (0.3)	30.4 (2.1)	1.7 (0.5)	12.9 (0.7)	18.4 (1.0)
6,000-6,999	1.9 (0.5)	32.3 (2.3)	1.8 (0.4)	12.8 (0.7)	17.2 (1.2)
7,000-7,999	0.4 (0.2)	30.1 (5.6)	0.1 (0.1)	6.7 (0.9)	11.7 (2.6)
8,000 OR MORE	0.4 (0.1)	42.9 (10.9)	0.4 (0.3)	9.8 (3.5)	14.5 (3.9)
INCOME					
LESS THAN $5,000	2.0 (0.2)	14.8 (1.4)	4.0 (0.9)	7.2 (0.7)	11.7 (0.8)
$5,000-$9,999	2.2 (0.3)	17.5 (1.7)	4.5 (0.6)	7.6 (0.6)	13.8 (0.7)
$10,000-$14,999	2.2 (0.2)	19.9 (1.4)	4.5 (0.5)	10.0 (0.5)	16.4 (0.9)
$15,000-$19,999	2.1 (0.3)	23.1 (2.1)	4.6 (0.9)	11.1 (0.7)	17.7 (1.2)
$20,000-$24,999	1.8 (0.3)	18.2 (2.3)	6.8 (1.0)	11.0 (0.8)	18.2 (1.1)
$25,000-$34,999	1.9 (0.2)	20.9 (2.5)	8.9 (1.4)	12.2 (1.1)	21.7 (1.5)
$35,000 OR MORE	2.1 (0.3)	20.0 (2.3)	13.6 (1.1)	13.9 (0.8)	21.3 (0.9)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	3.1 (0.3)	16.7 (1.8)	3.6 (0.5)	5.6 (0.5)	10.2 (0.6)
TWO	5.4 (0.6)	18.3 (2.1)	6.6 (0.7)	9.1 (0.5)	15.7 (0.6)
THREE	2.4 (0.3)	19.9 (1.6)	9.1 (1.3)	12.1 (0.5)	20.1 (0.7)
FOUR	2.1 (0.2)	20.5 (1.6)	7.8 (1.4)	14.0 (0.8)	22.2 (1.0)
FIVE OR MORE	1.2 (0.1)	25.4 (2.2)	7.2 (1.2)	18.0 (1.0)	26.3 (1.4)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 27. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Housing Characteristics for 1981

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	46.2 (1.5)	81.8 (1.7)	21.4 (0.4)	8.7 (0.4)
HOUSING STRUCTURE				
SINGLE-FAMILY DETATCHED	32.5 (1.3)	88.0 (2.0)	24.3 (0.4)	9.7 (0.5)
SINGLE-FAMILY ATTACHED	1.7 (0.2)	71.6 (6.7)	20.4 (0.7)	9.4 (0.8)
TWO TO FOUR UNITS	5.6 (0.5)	79.0 (4.6)	15.7 (1.1)	6.5 (0.9)
FIVE OR MORE UNITS	5.1 (0.6)	53.3 (10.3)	10.7 (1.7)	4.2 (1.3)
MOBILE HOME	1.3 (0.3)	65.2 (7.7)	14.5 (2.2)	9.5 (1.3)
YEAR HOUSE BUILT				
BEFORE 1940	14.2 (0.8)	100.8 (3.6)	20.6 (0.7)	8.7 (0.5)
1940-1949	4.4 (0.3)	77.8 (4.8)	17.6 (0.9)	8.3 (0.7)
1950-1959	9.0 (0.6)	76.8 (2.7)	21.7 (0.7)	10.2 (0.8)
1960-1964	4.8 (0.3)	77.7 (5.0)	24.9 (1.0)	9.6 (1.2)
1965-1969	4.8 (0.6)	73.3 (3.5)	22.2 (1.4)	8.5 (0.7)
1970-1974	4.8 (0.3)	67.8 (6.3)	21.5 (1.3)	7.4 (1.0)
1975 OR LATER	4.1 (0.4)	63.7 (3.8)	22.1 (1.7)	6.6 (2.2)
HEATED SQUARE FOOTAGE				
1-799	8.0 (0.5)	57.6 (2.7)	11.0 (0.8)	6.4 (0.3)
800-999	6.0 (0.4)	68.4 (3.0)	15.2 (1.1)	6.8 (0.5)
1,000-1,199	5.9 (0.4)	66.0 (2.5)	18.3 (0.6)	8.8 (1.1)
1,200-1,399	4.6 (0.4)	67.5 (3.5)	20.4 (0.9)	8.0 (0.7)
1,400-1,799	7.3 (0.4)	83.1 (2.9)	21.9 (0.7)	9.5 (0.8)
1,800-2,399	7.8 (0.5)	95.2 (1.9)	27.0 (0.7)	8.5 (0.7)
2,400 OR MORE	6.6 (0.5)	131.4 (5.7)	35.8 (0.9)	13.0 (2.3)

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NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 28. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Socio-demographic Characteristics for 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	46.2 (1.5)	81.8 (1.7)	21.4 (0.4)	8.7 (0.4)
GEOGRAPHIC REGION				
NORTHEAST	7.0 (1.0)	103.5 (3.2)	22.4 (0.9)	9.4 (0.6)
NORTH CENTRAL	15.4 (0.6)	113.0 (3.1)	22.6 (0.9)	8.2 (0.5)
SOUTH	13.0 (0.9)	58.0 (3.1)	19.6 (1.0)	8.5 (0.7)
WEST	10.8 (0.4)	51.6 (1.7)	21.1 (0.7)	9.2 (1.6)
HEATING DEGREE DAYS				
0-1,999	3.4 (1.0)	32.8 (2.3)	20.2 (1.4)	10.0 (1.4)
2,000-2,999	9.0 (0.9)	40.0 (1.1)	21.7 (1.0)	11.7 (1.7)
3,000-3,999	5.4 (0.7)	62.0 (2.7)	17.9 (1.4)	6.4 (0.6)
4,000-4,999	2.8 (0.7)	74.9 (7.4)	20.9 (1.4)	7.4 (1.3)
5,000-5,999	7.4 (1.2)	94.6 (3.0)	20.8 (0.8)	7.9 (0.8)
6,000-6,999	9.0 (1.3)	111.6 (2.8)	23.2 (0.9)	8.5 (0.8)
7,000-7,999	6.7 (1.0)	115.8 (6.0)	23.5 (1.9)	9.1 (0.6)
8,000 OR MORE	2.6 (0.7)	112.6 (3.3)	19.3 (1.4)	4.3 (0.6)
INCOME				
LESS THAN $5,000	5.1 (0.4)	70.5 (5.1)	14.3 (1.0)	7.5 (0.7)
$5,000-$9,999	7.2 (0.4)	81.8 (4.2)	17.4 (1.2)	7.3 (0.4)
$10,000-$14,999	6.7 (0.3)	78.9 (3.0)	19.3 (0.7)	7.5 (0.8)
$15,000-$19,999	5.5 (0.3)	81.1 (5.1)	19.8 (1.1)	7.5 (0.5)
$20,000-$24,999	5.8 (0.4)	79.3 (3.3)	22.4 (0.9)	8.5 (0.7)
$25,000-$34,999	8.2 (0.4)	83.2 (4.2)	24.5 (0.6)	8.6 (0.7)
$35,000 OR MORE	7.8 (0.6)	92.7 (5.7)	28.4 (1.0)	13.0 (1.6)
NUMBER OF HOUSEHOLD MEMBERS				
ONE	8.5 (0.5)	72.2 (3.5)	9.0 (0.5)	5.9 (0.4)
TWO	14.9 (0.5)	80.6 (2.6)	16.6 (0.4)	8.3 (0.7)
THREE	8.6 (0.5)	87.6 (3.9)	23.3 (0.6)	8.9 (0.8)
FOUR	8.1 (0.5)	83.2 (3.4)	28.6 (0.7)	10.6 (1.3)
FIVE OR MORE	6.1 (0.4)	88.3 (3.1)	38.0 (1.1)	10.8 (1.0)

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NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 29. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Housing Characteristics for 1981

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	12.2 (0.6)	87.9 (2.8)	15.1 (1.2)	Q
HOUSING STRUCTURE				
SINGLE-FAMILY DETATCHED	7.0 (0.5)	93.1 (3.1)	11.7 (1.0)	Q
SINGLE-FAMILY ATTACHED	0.5 (0.2)	88.3 (12.8)	16.0 (8.9)	Q
TWO TO FOUR UNITS	1.7 (0.1)	90.5 (11.2)	20.9 (7.0)	Q
FIVE OR MORE UNITS	2.3 (0.2)	Q	Q	Q
MOBILE HOME	0.7 (0.2)	51.1 (5.0)	0.9 (0.8)	Q
YEAR HOUSE BUILT				
BEFORE 1940	5.1 (0.4)	97.3 (4.8)	15.9 (3.7)	Q
1940-1949	1.2 (0.2)	81.3 (6.8)	11.9 (4.9)	Q
1950-1959	2.2 (0.2)	86.3 (5.6)	15.8 (2.1)	Q
1960-1964	1.1 (0.1)	78.2 (6.9)	16.0 (3.1)	Q
1965-1969	1.0 (0.2)	85.1 (8.2)	14.3 (3.7)	Q
1970-1974	1.1 (0.2)	75.7 (6.6)	15.7 (4.8)	Q
1975 OR LATER	0.5 (0.1)	67.2 (9.6)	9.7 (4.4)	Q
HEATED SQUARE FOOTAGE				
1-799	2.9 (0.4)	71.9 (7.4)	15.0 (7.2)	Q
800-999	1.7 (0.2)	75.7 (8.7)	18.0 (7.3)	Q
1,000-1,199	1.2 (0.2)	71.4 (6.1)	10.8 (5.0)	Q
1,200-1,399	0.9 (0.2)	83.8 (7.9)	12.5 (3.1)	Q
1,400-1,799	1.7 (0.2)	97.3 (4.9)	15.8 (3.4)	Q
1,800-2,399	1.7 (0.2)	96.8 (7.2)	11.6 (2.8)	Q
2,400 OR MORE	2.1 (0.3)	116.4 (7.2)	18.6 (3.1)	Q

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

Table 30. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Sociodemographic Characteristics for 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	12.2 (0.6)	87.9 (2.8)	15.1 (1.2)	Q
GEOGRAPHIC REGION				
NORTHEAST	7.9 (0.4)	94.4 (3.9)	22.2 (1.4)	Q
NORTH CENTRAL	1.7 (0.2)	94.1 (4.2)	0.7 (0.7)	Q
SOUTH	2.2 (0.4)	63.7 (10.3)	2.9 (1.5)	Q
WEST	0.4 (0.1)	67.7 (9.2)	Q	Q
HEATING DEGREE DAYS				
0-1,999	0.4 (0.3)	35.8 (5.0)	0.1 (0.1)	Q
2,000-2,999	Q	Q	Q	Q
3,000-3,999	0.6 (0.3)	57.6 (14.4)	Q	Q
4,000-4,999	0.8 (0.4)	75.8 (9.2)	5.9 (2.8)	Q
5,000-5,999	4.9 (0.6)	90.0 (6.8)	21.5 (4.9)	Q
6,000-6,999	2.8 (0.5)	54.4 (8.3)	17.3 (3.1)	Q
7,000-7,999	1.1 (0.3)	97.7 (5.5)	14.1 (3.2)	Q
8,000 OR MORE	1.4 (0.5)	92.8 (5.9)	4.8 (3.1)	Q
INCOME				
LESS THAN $5,000	1.2 (0.1)	79.9 (7.0)	11.1 (7.0)	Q
$5,000-$9,999	2.3 (0.3)	83.3 (4.5)	13.0 (5.7)	Q
$10,000-$14,999	2.1 (0.2)	84.0 (9.5)	14.0 (3.4)	Q
$15,000-$19,999	1.5 (0.1)	81.9 (5.8)	15.5 (3.9)	Q
$20,000-$24,999	1.6 (0.3)	89.5 (6.0)	15.9 (5.3)	Q
$25,000-$34,999	1.8 (0.2)	84.0 (6.0)	15.4 (2.2)	Q
$35,000 OR MORE	1.8 (0.2)	111.3 (7.8)	20.5 (2.9)	Q
NUMBER OF HOUSEHOLD MEMBERS				
ONE	2.6 (0.3)	87.9 (10.8)	7.5 (2.3)	Q
TWO	4.1 (0.2)	89.7 (3.4)	11.4 (1.8)	Q
THREE	2.1 (0.2)	77.6 (5.3)	13.8 (3.4)	Q
FOUR	1.9 (0.2)	86.4 (5.0)	22.0 (3.0)	Q
FIVE OR MORE	1.4 (0.2)	100.1 (9.5)	32.0 (6.2)	Q

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NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 31. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Housing Characteristics for 1981

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	3.7 (0.4)	55.2 (4.5)	8.2 (0.8)	3.1 (0.3)
HOUSING STRUCTURE				
SINGLE-FAMILY DETATCHED	2.6 (0.4)	64.0 (4.9)	9.2 (0.9)	2.4 (0.3)
SINGLE-FAMILY ATTACHED	Q	Q	Q	Q
TWO TO FOUR UNITS	Q	Q	Q	Q
FIVE OR MORE UNITS	Q	Q	Q	Q
MOBILE HOME	1.1 (0.2)	33.8 (5.6)	6.0 (1.1)	4.9 (0.4)
YEAR HOUSE BUILT				
BEFORE 1940	1.2 (0.2)	78.4 (7.2)	9.1 (1.2)	3.0 (0.4)
1940-1949	0.2 (0.1)	47.4 (6.2)	10.5 (4.5)	3.0 (0.6)
1950-1959	0.3 (0.1)	36.6 (16.0)	6.2 (1.7)	1.1 (0.6)
1960-1964	0.4 (0.1)	53.7 (21.3)	8.4 (4.5)	2.1 (0.8)
1965-1969	0.3 (0.1)	49.2 (9.9)	6.1 (3.4)	3.9 (0.7)
1970-1974	0.7 (0.1)	43.3 (7.8)	8.7 (1.4)	4.5 (0.6)
1975 OR LATER	0.6 (0.2)	38.6 (5.2)	7.0 (1.9)	3.1 (0.6)
HEATED SQUARE FOOTAGE				
1-799	0.9 (0.2)	31.6 (10.6)	5.9 (1.5)	3.6 (0.8)
800-999	0.5 (0.1)	43.5 (6.0)	6.3 (1.5)	4.4 (0.3)
1,000-1,199	0.6 (0.1)	51.4 (8.0)	8.4 (2.0)	2.7 (0.7)
1,200-1,399	0.5 (0.1)	68.8 (16.9)	5.7 (1.9)	2.3 (1.2)
1,400-1,799	0.6 (0.1)	60.9 (8.8)	10.3 (2.3)	3.0 (0.5)
1,800-2,399	0.4 (0.1)	79.7 (11.2)	14.5 (2.5)	2.7 (1.4)
2,400 OR MORE	0.3 (0.1)	94.3 (14.2)	10.7 (3.4)	2.5 (1.2)

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

Table 32. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Socio-demographic Characteristics for 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLION)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	3.7 (0.4)	55.2 (4.5)	8.2 (0.8)	3.1 (0.3)
GEOGRAPHIC REGION				
NORTHEAST	0.1 (0.1)	93.2 (39.0)	12.2 (5.7)	6.4 (3.0)
NORTH CENTRAL	1.0 (0.2)	86.7 (8.3)	11.2 (1.1)	2.8 (0.4)
SOUTH	2.1 (0.4)	37.8 (4.4)	5.3 (1.0)	3.1 (0.4)
WEST	0.4 (0.1)	57.9 (18.4)	14.7 (3.0)	3.5 (0.6)
HEATING DEGREE DAYS				
0-1,999	0.7 (0.1)	20.0 (6.2)	3.2 (1.3)	4.8 (0.4)
2,000-2,999	0.6 (0.3)	36.6 (4.3)	10.9 (3.3)	2.8 (0.7)
3,000-3,999	0.8 (0.2)	49.3 (4.3)	5.7 (2.0)	1.8 (0.7)
4,000-4,999	0.4 (0.2)	59.8 (6.4)	8.2 (3.2)	3.5 (1.0)
5,000-5,999	0.4 (0.1)	85.8 (6.2)	12.0 (2.2)	3.1 (0.8)
6,000-6,999	0.3 (0.1)	117.6 (26.5)	9.8 (4.2)	1.0 (1.3)
7,000-7,999	0.2 (0.1)	98.8 (13.3)	16.8 (4.5)	5.1 (2.1)
8,000 OR MORE	0.3 (0.1)	72.1 (12.4)	10.0 (2.8)	3.8 (0.8)
INCOME				
LESS THAN $5,000	0.6 (0.1)	42.5 (6.2)	6.0 (2.8)	2.6 (0.8)
$5,000-$9,999	0.7 (0.1)	55.9 (6.9)	8.2 (1.5)	3.9 (0.5)
$10,000-$14,999	0.4 (0.1)	57.6 (8.5)	7.2 (2.1)	2.0 (0.5)
$15,000-$19,999	0.5 (0.1)	58.9 (11.2)	10.3 (2.5)	3.0 (0.8)
$20,000-$24,999	0.6 (0.2)	51.4 (20.9)	4.5 (2.9)	3.7 (1.5)
$25,000-$34,999	0.4 (0.1)	51.1 (8.8)	7.4 (3.4)	3.0 (1.2)
$35,000 OR MORE	0.4 (0.1)	75.3 (10.2)	15.8 (2.3)	3.5 (0.7)
NUMBER OF HOUSEHOLD MEMBERS				
ONE	0.6 (0.1)	37.7 (9.9)	5.6 (2.3)	3.3 (0.8)
TWO	1.4 (0.2)	51.9 (4.9)	6.6 (1.1)	3.3 (0.4)
THREE	0.6 (0.2)	70.4 (9.1)	9.1 (1.5)	3.0 (0.3)
FOUR	0.6 (0.2)	57.3 (15.1)	9.5 (2.7)	3.2 (1.0)
FIVE OR MORE	0.4 (0.1)	66.3 (20.6)	14.2 (3.6)	2.5 (0.6)

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

Table 33. Average Household Energy Expenditures by End Use by Selected Housing Characteristics for 1981

HOUSING CHARACTERISTICS	TOTAL EXPENDITURES (DOLLARS)	END USE			
		SPACE HEATING (DOLLARS)	COOLING (DOLLARS)	WATER HEATING (DOLLARS)	MISCELLANEOUS USE (DOLLARS)
NATIONAL	1022 (17)	403 (12)	72 (4)	152 (3)	396 (7)
HOUSING STRUCTURE					
SINGLE-FAMILY DETATCHED	1088 (20)	415 (12)	84 (5)	160 (3)	430 (7)
SINGLE-FAMILY ATTACHED	1015 (53)	411 (44)	69 (28)	144 (13)	390 (18)
TWO TO FOUR UNITS	969 (37)	440 (34)	36 (6)	140 (12)	353 (13)
FIVE OR MORE UNITS	827 (39)	356 (59)	44 (9)	131 (16)	297 (11)
MOBILE HOME	843 (54)	296 (21)	74 (12)	141 (12)	332 (22)
YEAR HOUSE BUILT					
BEFORE 1940	1091 (27)	520 (21)	25 (3)	150 (6)	396 (9)
1940-1949	964 (34)	388 (18)	58 (8)	136 (6)	382 (19)
1950-1959	998 (20)	383 (16)	71 (7)	135 (5)	409 (10)
1960-1964	1061 (39)	370 (19)	96 (11)	150 (7)	446 (17)
1965-1969	1023 (31)	369 (29)	104 (10)	148 (7)	402 (11)
1970-1974	995 (38)	350 (26)	98 (7)	167 (9)	380 (13)
1975 OR LATER	940 (25)	287 (18)	115 (12)	174 (6)	364 (9)
HEATED SQUARE FOOTAGE					
ZERO HEATED SQUARE FOOTAGE	717 (67)	Q	Q	182 (13)	533 (65)
1-799	737 (19)	315 (23)	33 (5)	109 (5)	279 (8)
800-999	860 (28)	346 (24)	53 (4)	131 (6)	331 (10)
1,000-1,199	903 (25)	333 (18)	62 (5)	141 (7)	367 (13)
1,200-1,399	975 (26)	347 (22)	84 (12)	150 (5)	394 (12)
1,400-1,799	1103 (31)	422 (19)	92 (6)	156 (7)	433 (14)
1,800-2,399	1192 (18)	468 (15)	89 (8)	174 (5)	461 (7)
2,400 OR MORE	1511 (53)	627 (30)	112 (13)	220 (7)	552 (21)

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Table 34. Average Household Energy Expenditures by End Use by Selected Sociodemographic Characteristics for 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	TOTAL EXPENDITURES (DOLLARS)	END USE			
		SPACE HEATING (DOLLARS)	COOLING (DOLLARS)	WATER HEATING (DOLLARS)	MISCELLANEOUS USE (DOLLARS)
NATIONAL	1022 (17)	403 (12)	72 (4)	152 (3)	396 (7)
GEOGRAPHIC REGION					
NORTHEAST	1426 (35)	675 (32)	26 (6)	218 (10)	507 (15)
NORTH CENTRAL	1042 (32)	487 (21)	41 (6)	127 (4)	387 (12)
SOUTH	922 (28)	266 (19)	148 (9)	150 (5)	357 (10)
WEST	739 (22)	226 (8)	31 (5)	113 (4)	350 (15)
HEATING DEGREE DAYS					
0-1,999	952 (47)	138 (31)	265 (15)	157 (10)	391 (17)
2,000-2,999	755 (26)	180 (8)	85 (9)	112 (6)	378 (14)
3,000-3,999	850 (19)	282 (14)	84 (8)	141 (10)	343 (16)
4,000-4,999	932 (61)	345 (30)	76 (13)	149 (13)	362 (21)
5,000-5,999	1207 (56)	539 (33)	42 (6)	176 (7)	449 (22)
6,000-6,999	1158 (50)	558 (32)	25 (5)	163 (6)	412 (18)
7,000-7,999	1128 (49)	552 (27)	26 (8)	146 (10)	404 (19)
8,000 OR MORE	1030 (39)	501 (35)	7 (3)	158 (20)	363 (14)
INCOME					
LESS THAN $5,000	765 (29)	335 (22)	39 (6)	109 (6)	281 (12)
$5,000-$9,999	906 (27)	396 (25)	47 (5)	129 (7)	335 (10)
$10,000-$14,999	959 (31)	399 (19)	55 (5)	140 (4)	366 (11)
$15,000-$19,999	986 (26)	395 (23)	54 (5)	154 (6)	383 (9)
$20,000-$24,999	1043 (25)	396 (23)	73 (3)	161 (6)	413 (11)
$25,000-$34,999	1106 (30)	399 (23)	85 (7)	168 (6)	454 (11)
$35,000 OR MORE	1333 (53)	483 (28)	141 (11)	195 (8)	514 (19)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	767 (23)	390 (26)	43 (3)	79 (3)	255 (10)
TWO	956 (21)	401 (16)	74 (5)	125 (3)	355 (8)
THREE	1076 (25)	406 (19)	83 (6)	160 (4)	428 (9)
FOUR	1157 (26)	394 (16)	85 (10)	201 (6)	477 (8)
FIVE OR MORE	1307 (24)	434 (15)	73 (7)	250 (9)	551 (11)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 35. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Housing Characteristics for 1981

HOUSING CHARACTERISTICS	MAIN HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
NATIONAL	289 (20)	367 (7)	780 (26)
HOUSING STRUCTURE			
SINGLE-FAMILY DETATCHED	308 (17)	382 (8)	826 (29)
SINGLE-FAMILY ATTACHED	203 (93)	374 (41)	782 (104)
TWO TO FOUR UNITS	247 (31)	396 (23)	805 (95)
FIVE OR MORE UNITS	299 (46)	259 (52)	Q
MOBILE HOME	248 (29)	286 (37)	468 (47)
YEAR HOUSE BUILT			
BEFORE 1940	330 (28)	459 (16)	867 (43)
1940-1949	300 (64)	346 (21)	717 (57)
1950-1959	273 (44)	327 (10)	763 (50)
1960-1964	204 (33)	341 (22)	694 (63)
1965-1969	265 (41)	344 (16)	753 (76)
1970-1974	324 (20)	305 (27)	676 (64)
1975 OR LATER	283 (30)	287 (19)	597 (86)
HEATED SQUARE FOOTAGE			
1-799	270 (21)	265 (13)	643 (64)
800-999	236 (22)	313 (15)	675 (77)
1,000-1,199	274 (21)	304 (10)	634 (54)
1,200-1,399	257 (31)	298 (19)	742 (66)
1,400-1,799	265 (49)	373 (16)	858 (45)
1,800-2,399	404 (40)	424 (10)	861 (65)
2,400 OR MORE	453 (37)	570 (24)	1030 (69)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 36. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Socio-demographic Characteristics for 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	MAIN HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
NATIONAL	289 (20)	367 (7)	780 (26)
GEOGRAPHIC REGION			
NORTHEAST	644 (81)	568 (23)	841 (36)
NORTH CENTRAL	442 (71)	470 (15)	820 (39)
SOUTH	212 (32)	267 (15)	569 (85)
WEST	233 (15)	208 (8)	592 (83)
HEATING DEGREE DAYS			
0-1,999	77 (31)	169 (11)	328 (46)
2,000-2,999	198 (27)	164 (6)	Q
3,000-3,999	284 (22)	260 (16)	517 (137)
4,000-4,999	310 (29)	330 (39)	670 (75)
5,000-5,999	393 (32)	475 (18)	801 (64)
6,000-6,999	505 (75)	479 (19)	846 (73)
7,000-7,999	541 (108)	527 (23)	875 (49)
8,000 OR MORE	601 (114)	485 (14)	811 (44)
INCOME			
LESS THAN $5,000	247 (21)	320 (24)	712 (62)
$5,000-$9,999	271 (24)	364 (18)	738 (40)
$10,000-$14,999	285 (22)	357 (13)	749 (85)
$15,000-$19,999	366 (35)	366 (23)	727 (51)
$20,000-$24,999	271 (35)	356 (16)	793 (51)
$25,000-$34,999	296 (36)	373 (19)	743 (52)
$35,000 OR MORE	287 (28)	412 (22)	991 (74)
NUMBER OF HOUSEHOLD MEMBERS			
ONE	268 (25)	328 (15)	780 (92)
TWO	284 (32)	359 (11)	794 (31)
THREE	287 (21)	397 (17)	689 (49)
FOUR	285 (21)	371 (16)	771 (44)
FIVE OR MORE	376 (36)	391 (15)	892 (86)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 37. Percent of Average Household Electricity Consumption Used for Space Heating When Main Heating Fuel is Electricity by Selected Housing Characteristics for 1978, 1980, 1981

HOUSING CHARACTERISTICS	PERCENT OF ELECTRICITY USED FOR SPACE HEATING BY YEAR		
	1978	1980	1981
NATIONAL	46 (2.0)	33 (2.0)	36 (1.0)
HOUSING STRUCTURE			
SINGLE-FAMILY DETATCHED	45 (2.0)	33 (2.0)	34 (1.0)
SINGLE-FAMILY ATTACHED	56 (9.0)	41 (2.0)	30 (12.0)
TWO TO FOUR UNITS	39 (7.0)	35 (10.0)	37 (4.0)
FIVE OR MORE UNITS	43 (5.0)	27 (3.0)	42 (4.0)
MOBILE HOME	52 (1.0)	38 (3.0)	37 (2.0)
YEAR HOUSE BUILT			
BEFORE 1940	59 (2.0)	48 (5.0)	49 (2.0)
1940-1949	54 (5.0)	41 (2.0)	42 (6.0)
1950-1959	43 (5.0)	36 (4.0)	37 (4.0)
1960-1964	42 (3.0)	40 (4.0)	30 (3.0)
1965-1969	44 (3.0)	36 (2.0)	34 (4.0)
1970-1974	46 (3.0)	34 (2.0)	37 (2.0)
1975 OR LATER	43 (3.0)	27 (2.0)	34 (2.0)
HEATED SQUARE FOOTAGE			
1-799	51 (4.0)	37 (3.0)	43 (3.0)
800-999	46 (3.0)	34 (2.0)	36 (2.0)
1,000-1,199	47 (2.0)	32 (2.0)	36 (2.0)
1,200-1,399	43 (4.0)	32 (3.0)	30 (4.0)
1,400-1,799	45 (2.0)	29 (3.0)	31 (3.0)
1,800-2,399	42 (4.0)	34 (1.0)	37 (2.0)
2,400 OR MORE	47 (3.0)	32 (2.0)	35 (2.0)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978, 1980, 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 38. Percent of Average Household Electricity Consumption When Main Heating Fuel is Electricity by Selected Socio-demographic Characteristics for 1978, 1980, 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	PERCENT OF ELECTRICITY USED FOR SPACE HEATING BY YEAR		
	1978	1980	1981
NATIONAL	46 (2.0)	33 (2.0)	36 (1.0)
GEOGRAPHIC REGION			
NORTHEAST	60 (4.0)	44 (2.0)	52 (2.0)
NORTH CENTRAL	54 (3.0)	43 (2.0)	53 (3.0)
SOUTH	33 (2.0)	26 (3.0)	25 (2.0)
WEST	59 (2.0)	38 (1.0)	42 (2.0)
HEATING DEGREE DAYS			
0-1,999	14 (2.0)	11 (4.0)	09 (3.0)
2,000-2,999	35 (2.0)	23 (1.0)	26 (1.0)
3,000-3,999	39 (2.0)	33 (1.0)	35 (2.0)
4,000-4,999	45 (2.0)	41 (1.0)	39 (1.0)
5,000-5,999	58 (2.0)	44 (1.0)	48 (1.0)
6,000-6,999	57 (3.0)	43 (2.0)	50 (1.0)
7,000-7,999	60 (5.0)	47 (6.0)	62 (3.0)
8,000 OR MORE	Q	49 (5.0)	63 (3.0)
INCOME			
LESS THAN $5,000	64 (2.0)	45 (3.0)	39 (3.0)
$5,000-$9,999	51 (3.0)	36 (4.0)	40 (2.0)
$10,000-$14,999	43 (2.0)	33 (2.0)	39 (1.0)
$15,000-$19,999	43 (2.0)	33 (3.0)	41 (2.0)
$20,000-$24,999	41 (3.0)	30 (2.0)	34 (3.0)
$25,000-$34,999	43 (3.0)	31 (2.0)	33 (2.0)
$35,000 OR MORE	45 (4.0)	28 (2.0)	29 (2.0)
NUMBER OF HOUSEHOLD MEMBERS			
ONE	58 (3.0)	37 (2.0)	46 (3.0)
TWO	46 (3.0)	35 (3.0)	37 (2.0)
THREE	44 (2.0)	31 (2.0)	32 (2.0)
FOUR	42 (2.0)	29 (2.0)	33 (2.0)
FIVE OR MORE	41 (2.0)	31 (3.0)	32 (2.0)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978, 1980, 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 39. Percent of Average Household Natural Gas Consumption Used for Space Heating When Main Heating Fuel is Natural Gas by Selected Housing Characteristics for 1978, 1980, 1981

HOUSING CHARACTERISTICS	PERCENT OF NATURAL GAS USED FOR SPACE HEATING BY YEAR		
	1978	1980	1981
NATIONAL	79 (0.4)	60 (0.4)	73 (0.5)
HOUSING STRUCTURE			
SINGLE-FAMILY DETATCHED	79 (1.0)	70 (1.0)	72 (0.5)
SINGLE-FAMILY ATTACHED	81 (2.0)	65 (2.0)	71 (2.0)
TWO TO FOUR UNITS	78 (1.0)	69 (1.0)	78 (1.0)
FIVE OR MORE UNITS	79 (2.0)	66 (4.0)	78 (5.0)
MOBILE HOME	73 (3.0)	66 (2.0)	73 (3.0)
OTHER	83 (4.0)	Q	Q
YEAR HOUSE BUILT			
BEFORE 1940	82 (1.0)	74 (1.0)	77 (1.0)
1940-1949	78 (1.0)	69 (1.0)	75 (1.0)
1950-1959	78 (1.0)	67 (1.0)	71 (1.0)
1960-1964	79 (1.0)	67 (1.0)	69 (2.0)
1965-1969	75 (1.0)	65 (1.0)	70 (1.0)
1970-1974	77 (2.0)	66 (2.0)	70 (2.0)
1975 OR LATER	77 (2.0)	65 (2.0)	69 (3.0)
HEATED SQUARE FOOTAGE			
1-799	80 (1.0)	67 (1.0)	77 (1.0)
800-999	79 (1.0)	67 (1.0)	76 (1.0)
1,000-1,199	77 (1.0)	67 (1.0)	71 (1.0)
1,200-1,399	78 (1.0)	65 (1.0)	70 (2.0)
1,400-1,799	79 (1.0)	68 (1.0)	72 (1.0)
1,800-2,399	81 (1.0)	71 (1.0)	73 (1.0)
2,400 OR MORE	84 (1.0)	74 (1.0)	73 (1.0)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978, 1980, 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 40. Percent of Average Household Natural Gas Consumption Used for Space Heating When Main Heating Fuel is Natural Gas by Selected Socio-demographic Characteristics for 1978, 1980, 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	PERCENT OF NATURAL GAS USED FOR SPACE HEATING BY YEAR		
	1978	1980	1981
NATIONAL	79 (0.4)	69 (0.4)	73 (0.5)
GEOGRAPHIC REGION			
NORTHEAST	81 (1.0)	74 (1.0)	76 (0.4)
NORTH CENTRAL	82 (0.5)	74 (0.4)	79 (0.4)
SOUTH	71 (1.0)	64 (1.0)	67 (1.0)
WEST	77 (1.0)	59 (2.0)	63 (1.0)
HEATING DEGREE DAYS			
0-1,999	54 (5.0)	43 (1.0)	52 (3.0)
2,000-2,999	67 (1.0)	57 (2.0)	54 (1.0)
3,000-3,999	76 (2.0)	66 (2.0)	72 (2.0)
4,000-4,999	80 (7.0)	71 (2.0)	73 (2.0)
5,000-5,999	81 (1.0)	72 (1.0)	77 (1.0)
6,000-6,999	82 (1.0)	74 (0.4)	78 (1.0)
7,000-7,999	82 (1.0)	77 (1.0)	78 (1.0)
8,000 OR MORE	86 (1.0)	79 (1.0)	83 (1.0)
INCOME			
LESS THAN $5,000	81 (1.0)	71 (1.0)	76 (2.0)
$5,000-$9,999	79 (1.0)	70 (1.0)	77 (1.0)
$10,000-$14,999	79 (1.0)	70 (1.0)	75 (1.0)
$15,000-$19,999	78 (1.0)	68 (1.0)	75 (1.0)
$20,000-$24,999	78 (1.0)	68 (1.0)	72 (1.0)
$25,000-$34,999	78 (1.0)	69 (1.0)	72 (1.0)
$35,000 OR MORE	81 (1.0)	70 (2.0)	69 (1.0)
NUMBER OF HOUSEHOLD MEMBERS			
ONE	88 (1.0)	75 (1.0)	83 (1.0)
TWO	83 (1.0)	72 (1.0)	76 (1.0)
THREE	79 (1.0)	68 (1.0)	73 (1.0)
FOUR	75 (1.0)	66 (1.0)	68 (1.0)
FIVE OR MORE	70 (1.0)	63 (1.0)	64 (1.0)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978, 1980, 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Table 41. Percent of Average Household Fuel Oil or Kerosene Consumption Used for Space Heating When Main Heating Fuel is Fuel Oil or Kerosene by Selected Housing Characteristics for 1978, 1980, 1981

HOUSING CHARACTERISTICS	PERCENT OF FUEL OIL OR KEROSENE USED FOR SPACE HEATING BY YEAR		
	1978	1980	1981
NATIONAL	93 (0.5)	85 (1.0)	85 (1.0)
HOUSING STRUCTURE			
SINGLE-FAMILY DETATCHED	95 (0.6)	89 (1.0)	89 (1.0)
SINGLE-FAMILY ATTACHED	92 (2.0)	99 (2.0)	85 (8.0)
TWO TO FOUR UNITS	92 (1.0)	83 (1.0)	81 (3.0)
FIVE OR MORE UNITS	87 (2.0)	72 (7.0)	Q
MOBILE HOME	100 (0.4)	97 (3.0)	98 (0.4)
YEAR HOUSE BUILT			
BEFORE 1940	94 (1.0)	87 (1.0)	86 (2.0)
1940-1949	94 (1.0)	84 (2.0)	87 (4.0)
1950-1959	93 (1.0)	86 (1.0)	84 (1.0)
1960-1964	91 (3.0)	80 (4.0)	83 (2.0)
1965-1969	94 (2.0)	84 (3.0)	86 (3.0)
1970-1974	96 (1.0)	79 (3.0)	83 (3.0)
1975 OR LATER	93 (4.0)	84 (3.0)	87 (6.0)
HEATED SQUARE FOOTAGE			
1-799	91 (1.0)	78 (2.0)	83 (2.0)
800-999	93 (1.0)	82 (2.0)	81 (4.0)
1,000-1,199	95 (1.0)	84 (2.0)	87 (3.0)
1,200-1,399	94 (1.0)	87 (2.0)	87 (3.0)
1,400-1,799	94 (1.0)	89 (1.0)	86 (2.0)
1,800-2,399	93 (1.0)	89 (1.0)	89 (2.0)
2,400 OR MORE	95 (2.0)	90 (1.0)	86 (2.0)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978, 1980, 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

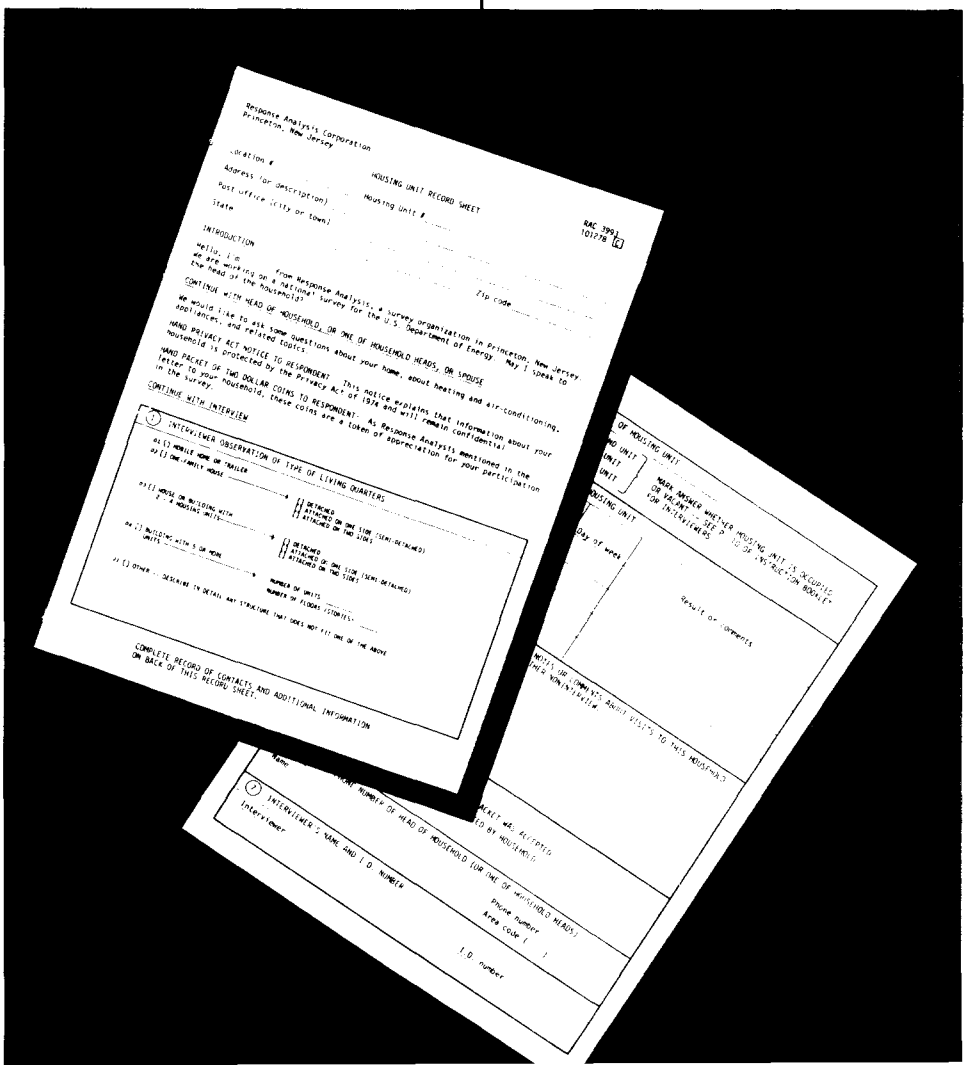
Table 42. Percent of Average Household Fuel Oil or Kerosene Consumption Used for Space Heating When Main Heating Fuel is Fuel Oil or Kerosene by Selected Sociodemographic Characteristics for 1978, 1980, 1981

SOCIODEMOGRAPHIC CHARACTERISTICS	PERCENT OF FUEL OIL OR KEROSENE USED FOR SPACE HEATING BY YEAR		
	1978	1980	1981
NATIONAL	94 (0.5)	85 (1.0)	85 (1.0)
GEOGRAPHIC REGION			
NORTHEAST	91 (0.5)	82 (1.0)	81 (1.0)
NORTH CENTRAL	99 (1.0)	96 (1.0)	99 (1.0)
SOUTH	97 (1.0)	92 (2.0)	96 (2.0)
WEST	100 (0.2)	98 (1.0)	97 (2.0)
HEATING DEGREE DAYS			
0-1,999	98 (2.0)	Q	100 (1.0)
2,000-2,999	Q	Q	Q
3,000-3,999	96 (1.0)	98 (3.0)	Q
4,000-4,999	97 (1.0)	89 (4.0)	93 (3.0)
5,000-5,999	91 (1.0)	81 (1.0)	81 (3.0)
6,000-6,999	96 (1.0)	87 (1.0)	85 (2.0)
7,000-7,999	95 (2.0)	87 (2.0)	87 (2.0)
8,000 OR MORE	100 (1.0)	93 (2.0)	95 (2.0)
INCOME			
LESS THAN $5,000	95 (1.0)	85 (3.0)	88 (5.0)
$5,000-$9,999	94 (1.0)	82 (2.0)	87 (2.0)
$10,000-$14,999	94 (1.0)	85 (1.0)	86 (1.0)
$15,000-$19,999	91 (1.0)	87 (2.0)	84 (2.0)
$20,000-$24,999	94 (1.0)	89 (2.0)	85 (3.0)
$25,000-$34,999	94 (1.0)	87 (1.0)	84 (2.0)
$35,000 OR MORE	95 (1.0)	84 (1.0)	84 (2.0)
NUMBER OF HOUSEHOLD MEMBERS			
ONE	97 (0.4)	82 (2.0)	92 (1.0)
TWO	95 (1.0)	85 (1.0)	89 (1.0)
THREE	94 (1.0)	87 (1.0)	85 (2.0)
FOUR	92 (1.0)	88 (1.0)	80 (2.0)
FIVE OR MORE	88 (1.0)	85 (1.0)	76 (3.0)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
NUMBER IN PARENTHESIS INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, THE 1978, 1980, 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Appendix A

Sources of the Data



Appendix A

The data contained in this report were from three residential energy consumption and expenditure surveys conducted by the Energy Information Administration, U.S. Department of Energy. The information was collected from a sample of households during 1978, 1980, and 1981. Households were selected using a multiple stage probability sampling design.[1]

The housing characteristic information was collected in personal interviews with adult residents of a representative national sample of households. Figures on actual total consumption and expenditures were obtained from the household's fuel suppliers. Estimates for end-use data are statistical rather than metered data.

Although the three surveys were very similar in questionnaire construction and data collection, there were, nevertheless, several differences. Table A1 highlights these differences.

Table A1. Comparison of Three Residential Energy Consumption and Expenditures Surveys

1978 (NIECS)	1980 (RECS 1)	1981 (RECS 2)
Sample design not specifically created for EIA's needs. Instead created as all purpose design.	Sample design created for collection of residential energy consumption and related housing characteristics.	Same as 1980
Target population does not include households in Alaska, Hawaii, or on U.S. military bases.	Target population includes all households in the United States, including Alaska, Hawaii, and U.S. military bases.	Same as 1980
Uses respondent's estimate of square footage for dwelling.	Uses interviewer's measurement of square footage for dwelling.	Same as 1980
Heating degree-days calculated using a base 65° F.	Heating degree-days calculated using bases 50° F through 80° F.	Same as 1980
Weather data obtained using long-term averages adjusted by Census division for April 1978 through March 1979.	Weather data obtained using recorded daily highs and lows at the National Oceanic and Atmospheric Administration's (NOAA) district weather stations.	Same as 1980
Geographic units were four Census regions: Northeast, North Central, South, West.	The four geographic regions were further divided into nine Census division.	Same as 1980

[1] Residential Energy Consumption Survey: Consumption and Expenditures, April 1978 through March 1979, DOE/EIA-0207/5 (Washington D.C., July 1980). Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 through March 1981, DOE/EIA-0321/1 (Washington D.C., September 1982). Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 through March 1982, DOE/EIA-0321/1 (Washington D.C., September 1983).

Appendix A (Continued)

Table A2. Number of Households by Main Heating Fuel by Survey Year (Million Households)

Main Heating Fuel	1978	1980	1981
All Households	76.6 (0)	81.6 (0)	83.1 (0)
Households Where Main Heating Fuel is Electricity	12.1(1.2)	14.3(1.0)	14.2(1.1)
Households Where Main Heating Fuel is Natural Gas	41.8(1.9)	44.6(1.5)	46.2(1.5)
Households Where Main Heating Fuel is Fuel Oil or Kerosene	16.9(1.3)	13.4(0.7)	12.2(0.6)
Households Where Main Heating Fuel is LPG	3.1(0.5)	3.7(0.4)	3.7(0.4)

Household consumption data for natural gas, electricity, fuel oil/kerosene, and liquefied petroleum gas (LPG) were collected from the suppliers. Kerosene was combined with fuel oil. Figures for natural gas and electricity were based on actual consumption, while fuel oil/kerosene and LPG figures were based on the amount delivered to households rather than on the amount consumed. Both consumption and expenditure information for the three surveys was annualized for April 1978 through March 1979, April 1980 through March 1981, and April 1981 through March 1982. In this report, consumption figures are reported in million Btu except when consumption is adjusted for heating degree-days (HDD). These figures are reported in thousand Btu. Expenditure figures are reported in dollars.

Four end uses were examined: space heating, water heating, cooling[2], and miscellaneous use. Miscellaneous use includes cooking, lighting, dishwashing, clothes drying, pool heating, and other uses. Consumption and expenditure estimates for the four end uses were addressed in terms of selected housing characteristics and selected sociodemographic characteristics. Housing characteristics included dwelling structure, the age of the structure, and heated square footage of the dwelling. Sociodemographic characteristics included the geographic region, number of heating degree-days, income, and number of household members. The base for the number of heating degree-days was 65 degrees Fahrenheit. Income refers to family income immediately before the survey year.

[2]Cooling applies only to electricity consumption. The small amount of natural gas used for air-conditioning was included in the miscellaneous use for natural gas.

Appendix B

Methodology

Appendix B

The analysis of residential energy consumption and expenditures by end use occurred in three steps. The first step was to use a robust regression technique to provide a regression equation that predicts energy consumption. Energy expenditures were estimated based on the results for consumption.[1]

Twelve equations were developed. For each of the three surveys, a separate equation was developed for each of the four main fuels: electricity, natural gas, fuel oil, and LPG. In each equation, the dependent variable was energy consumption from April to March of the following year. (That is, for the 1978 survey, measured consumption was from April 1978 to March 1979; for the 1980 survey, consumption was from April 1980 to March 1981, and so forth.)

For electricity, the theoretical model that was used for all surveys was

Total Consumption = Space Heating Component + Water Heating Component + Air-Conditioning + Miscellaneous Component.

The space heating component consisted of all electricity used in electric space heating equipment. Similarly, for water heating and air-conditioning, the components consisted of all electricity used in electric water heating equipment and electric air-conditioning equipment. The miscellaneous component consisted of all electricity not used specifically for any of the other end uses. This miscellaneous use included refrigeration, cooking, lighting, entertainment, clothes drying as well as many other uses. In many households, the miscellaneous component equaled the total consumption.

It is true that electricity used for many miscellaneous uses during the winter will contribute to the space heating requirements. In this report, this secondary effect of miscellaneous consumption will be ignored. The water heating component only included electricity used to heat water for hot running water or bath water. It did not include energy used for heating water on a stove or on an appliance for cooking or drinking purposes. The latter use of electricity was included in the miscellaneous component.

The theoretical model used for natural gas, fuel oil, and LPG consisted of only three components: space heating, water heating, and miscellaneous use. The air-conditioning component was added to the miscellaneous component.

The independent variables used in the regression equations were grouped together into sets of independent variables corresponding to the components. The components can be estimated by using the linear equations formed from the independent variables in the corresponding sets and their estimated regression coefficients.

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[1] For a more detailed explanation of the regression program, see Chapter 5 and 6 in Residential Energy Consumption Survey: Regression Analysis of Energy Consumption by End Use, DOE/EIA-0431 (Washington, D.C., October 1983).

Appendix B (Continued)

Many of the independent variables were multiple interaction terms. For instance, in the 1980 survey, the equation for the space heating component of the natural gas model contained an independent variable that was the product of an indicator variable for natural gas main space heating, times the heated square footage of the dwelling, times the heating degree-days. The water heating component of the electricity model for the 1981 survey contained an independent variable that was the product of an indicator variable for electric water heating, times the number of household members.

All independent variables involved indicator variables for a type of equipment or appliance except some of the variables used in the miscellaneous component for electricity. The use of electricity for small appliances, lighting, and various other small uses was represented by independent variables such as heated square footage, number of household members, and number of rooms.

The sets of independent variables that were used varied from survey to survey. For a given survey, they varied from fuel to fuel. Some appliances only used electricity, hence, the indicator variable for that appliance was only used in the electricity components. Even if the differences between the indicator variables for electric main space heating and the ones for natural gas, fuel oil, and LPG main space heating are discounted, the independent variables used in the space heating components were still different. Some of this difference is due to the type of equipment used with the different fuels and some is due to the differences in the populations of households that used the different fuels. Additionally, more households used natural gas for space heating than used electricity, fuel oil, or LPG (Table A2). Hence, it was possible to use more independent variables when fitting the space heating component for natural gas.

Only a few independent variables were used in the water heating component for any fuel. In addition, relatively few households used fuel oil or LPG as their water heating fuel. Therefore, the accuracy of the estimated water heating component for fuel oil and LPG may be limited.

One reason that the set of independent variables varied from survey to survey was that the amount and type of information changed from survey to survey. For instance, a reliable estimate of the square footage was not available for the 1978 survey; more accurate weather data was available for the 1980 and 1981 surveys; and the questions concerning appliance stock, heating equipment, and insulation characteristics were changed for each survey.

We did not attempt to interpret the coefficients of the independent variables in the regression equation. The fact that the set of independent variables changed from survey to survey would prevent any comparisons between surveys. Additionally, many of the independent variables were highly colinear. An example of this is the set of interaction terms used in the natural gas space heating component for the 1981 survey. This set included three interaction terms involving an indicator variable for natural gas main space heating, multiplied by different measures of dwelling sizes. These measures were heated square footage, number of rooms, number of doors and windows. Hence, the effect of dwelling size on the space heating component of the natural gas component was divided between several of the independent variables.

As previously outlined, the fitted regression equations were split into components. The components represent end-use categories that were easily interpreted. The problem of colinearity is greatly reduced by summing terms that were highly colinear.

Appendix B (Continued)

The second step in predicting end-use consumption consisted of using the regression results to produce end-use estimates for the individual components for each household. The end-use estimates were normalized so that the sum of the end-use estimates was equal to the actual or imputed yearly consumption. As a result, the regression results were used only to estimate the proportion of energy used by each end use. The estimated end-use expenditures were obtained by assuming the proportion of dollars spent on each end use was the same as the proportion of energy used. This assumption ignores any effect of the utility rate structure.

The third step in the analysis consisted of producing end-use estimates for selected categories based on demographic characteristics and housing characteristics. Tables and figures in this report include estimates of the average normalized household end-use consumption and expenditures both nationally and for selected subgroups. The averages are weighted by the number of households in the subpopulations that the sample represents. Consumption figures are given in Btu and expenditure figures are given in dollars. Consumption figures for Table T1 have been adjusted for weather. In this instance, the annual space heating consumption of each household was divided by the household's annual number of heating degree-days, base 65 degrees Fahrenheit. The values in Table T1 are the average value of the index of consumption per heating degree-days.

The estimates for the standard errors were obtained using a balanced half-sample replication technique.[1] The technique was used to produce an estimate of the relative standard error (also called the coefficient of variation) of the statistics computed using only the households whose energy consumption was not imputed using a regression estimate.[2] This relative standard error was multiplied by the statistics computed using all households to produce an estimated standard error that applied to all households. The justification for only using households whose consumption was not based on a regression estimate was that the households with imputed consumption values did not contribute any information about the relationship between energy consumption and the variables collected by RECS.

In calculating standard errors for percentage change, the following approximation was used. Let Z be the percentage change from Y to X. Then $Z = 100 \times ((X-Y)/Y)$. Hence, the standard error of Z equals 100 times the standard error of X/Y. The standard error for X/Y can be obtained using the approximation $RSE^2(X/Y) = RSE^2(X) + RSE^2(Y)$, where RSE is the relative standard error. The approximation is valid when X and Y are uncorrelated. This should be true when X and Y are based on data from different surveys. All of the percentage changes sited in this report involved changes between two surveys.

This report also contains statistics on the percentage of the total consumption that is represented by each component. The standard errors of these statistics were calculated directly using the half-sample procedure. The above approximation was not used.

The error terms shown in parenthesis in the tables and text are one standard error.

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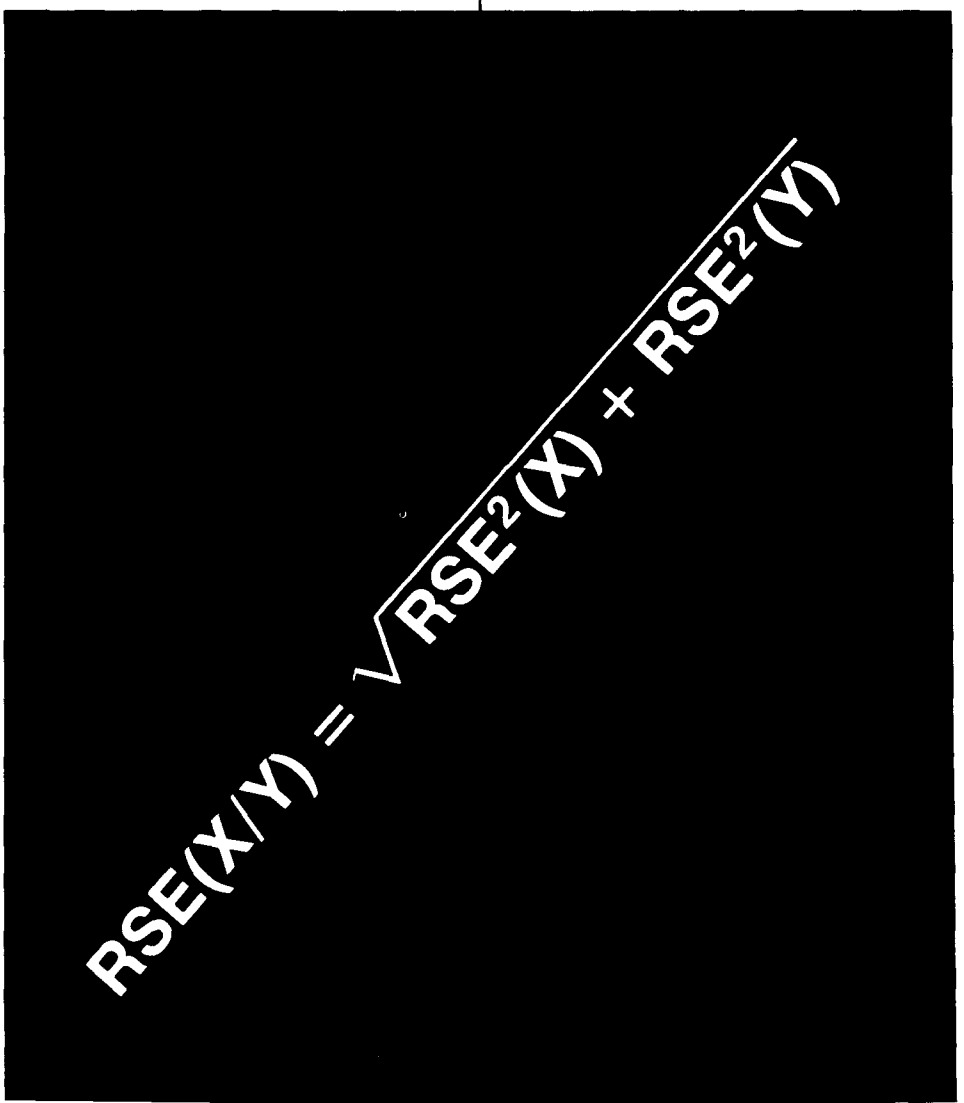
[1] Residential Energy Consumption Survey: Regression Analysis of Energy Consumption by End Use, DOE/EIA-0431 (Washington, D.C., October 1983).

[2] Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 through March 1982, DOE/EIA-0321/1(81) (Washington, D.C., September 1983). Appendix A.

Appendix C

Limitations of the Data



Appendix C

The limitations of the data can be divided into three parts: first, problems with the annual consumption and expenditure data upon which the end-use estimates were based; second, problems with the disaggregation technique; and third, problems with the estimated standard errors.

The end-use estimates were derived by disaggregating the annual consumption and expenditure data. Any deficiencies in the annual amounts were carried over into the end-use estimates. The number of households that use each fuel and the percentage of cases where the annual amount was based upon usable consumption data were of particular interest. Table C1 lists the number of households in the sample that use each fuel along with the percentage of households with consumption amounts based upon usable data for each fuel by housing type for the 1981 survey. The results for the other surveys were similar except the total sample size was 35 percent smaller for the 1978 survey. Other RECS reports discuss in detail limitations of the data pertaining to consumption and expenditure figures.[1]

[1] Residential Energy Consumption Survey: Consumption and Expenditures, April 1978 Through March 1979, DOE/EIA-0207/5 (Washington, D.C., July 1980); Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, DOE/EIA-0321/1 (Washington, D.C., September 1982); and Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, DOE/EIA-0321/1 (Washington, D.C., September 1983).

Appendix C (Continued)

Table C1. Number of Sample Households That Use Each Fuel and Percent of Households with Usable[a] Fuel Records by Fuel Used and by Type of Housing Structure[b]

Type of Fuel Use	Total Households in Sample Using the Fuel	Mobile Home	Single-Family	Units in Buildings With Two to Four Units	Units in Buildings With Five or More Units
Electricity					
Number of Households	6,263	390	4,343	697	833
Percent with Usable Fuel Records	80.8	80.8	88.8	67.3	52.1
Natural Gas					
Number of Households	3,850	119	2,650	544	537
Percent with Usable Fuel Records	71.7	69.7	88.2	49.5	13.0
Fuel Oil or Kerosene					
Number of Households	1,122	70	724	159	169
Percent with Usable Fuel Records	46.7	37.1	64.2	20.7	0
LPG					
Number of Households	627	144	465	16	2
Percent with Usable Fuel Record	61.3	56.9	62.8	56.2	50.0

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

[b]*Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 through March 1982, Part 1: National Data*, DOE/EIA-0321/1 (Washington, D.C.), Table A11.

For those households whose annual energy consumption data were missing or unusable, the consumption amounts were imputed. The imputation procedure for the 1978 and 1980 surveys assumes that the regression equations developed from data on households with usable data can also be used to predict the energy consumption for households whose consumption needs to be imputed. In particular, this assumes that the results on fuel oil consumption for units in buildings with five or more units will not be drastically different from the results for the other housing types. If this assumption is not valid, then the resulting annual consumption estimates and end-use consumption estimates will be biased.

Appendix C (Continued)

Beginning with the 1981 survey, adjustments were made in the imputation procedures for electricity and natural gas consumption. These adjustments take into account some differences between energy consumption patterns for households living in master metered buildings and those living in buildings with individual meters. Future surveys will expand and refine these adjustments.

Additional problems with the annual data that may result in biases in the end-use estimates are nonresponse and undercoverage. The annual estimates are derived under the assumption that the nonrespondents and neighboring respondents have similar energy characteristics. While there may be differences between neighboring households, any systematic difference between neighboring respondents and nonrespondents will result in biased estimates.

The RECS data did not cover vacant units and vacation or second residential units. This convention resulted in an underestimate of the total energy used in the residential sector. The results in this report give estimates for average end-use consumption only for occupied primary residences. If the vacant units and secondary units were included in the averages, then it is expected that the results would be lower.

The sample design for the 1978 survey did not cover Alaska, Hawaii, and residential housing units in military bases. The 1980 and 1981 survey did cover these residential units. Barracks in military bases were not classified as residential units. The results for the 1978 survey were biased by this undercoverage. This affects comparisons between the 1978 results and the results for 1980 and 1981.

The effect of not covering Alaska and Hawaii in the 1978 survey was examined by analyzing the results for the 1980 and 1981 surveys. The results of the analysis tentatively showed that dropping Hawaii and Alaska would increase the average electricity consumption in the West Census region by approximately .5 percent, increase the average natural gas consumption by approximately 1 percent, decrease the average fuel oil and kerosene consumption by approximately 4 percent, and decrease the average LPG consumption by approximately 6 percent. The effect on the national averages were approximately a .1 percent increase, a .2 percent increase, a .4 percent increase, and a .5 percent decrease for electricity, natural gas, fuel oil/kerosene, and LPG, respectively.

In comparing the results for 2 years, the changes in the population will affect the interpretation of the results. For instance, when comparing the results across surveys for units built during or after 1975, the population in 1978 includes units built in 1975 through the summer of 1978. The population in 1980 includes units built in 1975 through the summer of 1980. If the type of units built in 1975 through the summer of 1978 vary from the type of units built from the winter of 1978 through the summer of 1980, then the change in population housing characteristics will alter the interpretation of any comparison in energy consumption between the 1978 survey and the 1980 survey.

The disaggregation technique used the regression results to estimate only the percentage of each fuel consumed by each end use. Implicit in this technique was the assumption that if a household used more fuel or less fuel on the average for one end use, it will do so for all end uses by the same percentage. For example, if a household increased its electricity bill by raising the thermostat setting in the winter, then during the summer, the household will have also increased its usage of air conditioning. The percentage of the increase would have been the same for both end uses. It is obvious

that many household did not conform to this behavior pattern. If there were systematic deviations from this pattern, the results given in this report will be biased. In future studies, EIA plans to use billing period data to help overcome this problem.

The regression equations for the components were developed using only the households with usable consumption data. The results are applied to all households. This carries with it the assumption that the population of households with and without usable consumption data conformed to the same linear regression model. The assumption was most tenuous when applying the results to fuel oil consumption for households living in buildings with five or more units. If this assumption was not valid, then end-use estimates could be biased, even if the total consumption estimate was not biased.

The end-use estimates for expenditures were calculated by applying the same percentages to expenditures as were applied to consumption. This assumes that the average cost per unit of energy does not vary from billing period to billing period. If the utility rate structure is such that the average cost is lower for bills with large consumption amounts than it is for bills with small consumption amounts, then the cost of heating or cooling may be overestimated. If the rate structure has the opposite effect, then the cost of heating or cooling may be underestimated. In the future, incorporating the billing period data into the estimation procedure will help alleviate this problem.

Additional biases in the end-use estimates can result from the choice of independent variables used in the regression procedure. The components where the regression technique was the least subject to these potential biases, were the space heating components for all fuels and the appliance component for electricity. The regression technique most subject to the potential biases was the water heating and appliance components for fuel oil/kerosene and LPG.

The questionnaire has been improved with each survey. Consequently, the data available to use in constructing independent variables has been improved. Hence, the end-use estimates should be more accurate for the 1981 survey than for the 1980 survey which, in turn, should be more accurate than the estimates for the 1978 survey.

An example of improved data is the square footage data. The data for the 1978 survey was an estimate provided by the respondent. These estimates were not used in the regression procedure because of inaccuracy in reporting by the respondent. The square footage data for the 1980 and 1981 surveys were based on measurements taken by the interviewers.

Only limited weather data was available for the 1978 survey. The question on the fuel used for air conditioning was improved for the 1981 survey. Questions on the number and types of appliances have been improved with each survey.

The listed standard errors reflect only the sampling variation and the number of households with usable utility data. They did not take into account errors made in disaggregating the annual energy consumption for individual households. One way to account for the disaggregation errors, is to perform a separate regression analysis for each half-sample using only the observations that fall in the half-sample. The end-use estimates for each half-sample would then be based on the regression for that half-sample. This would involve a considerable amount of work.

Appendix C (Continued)

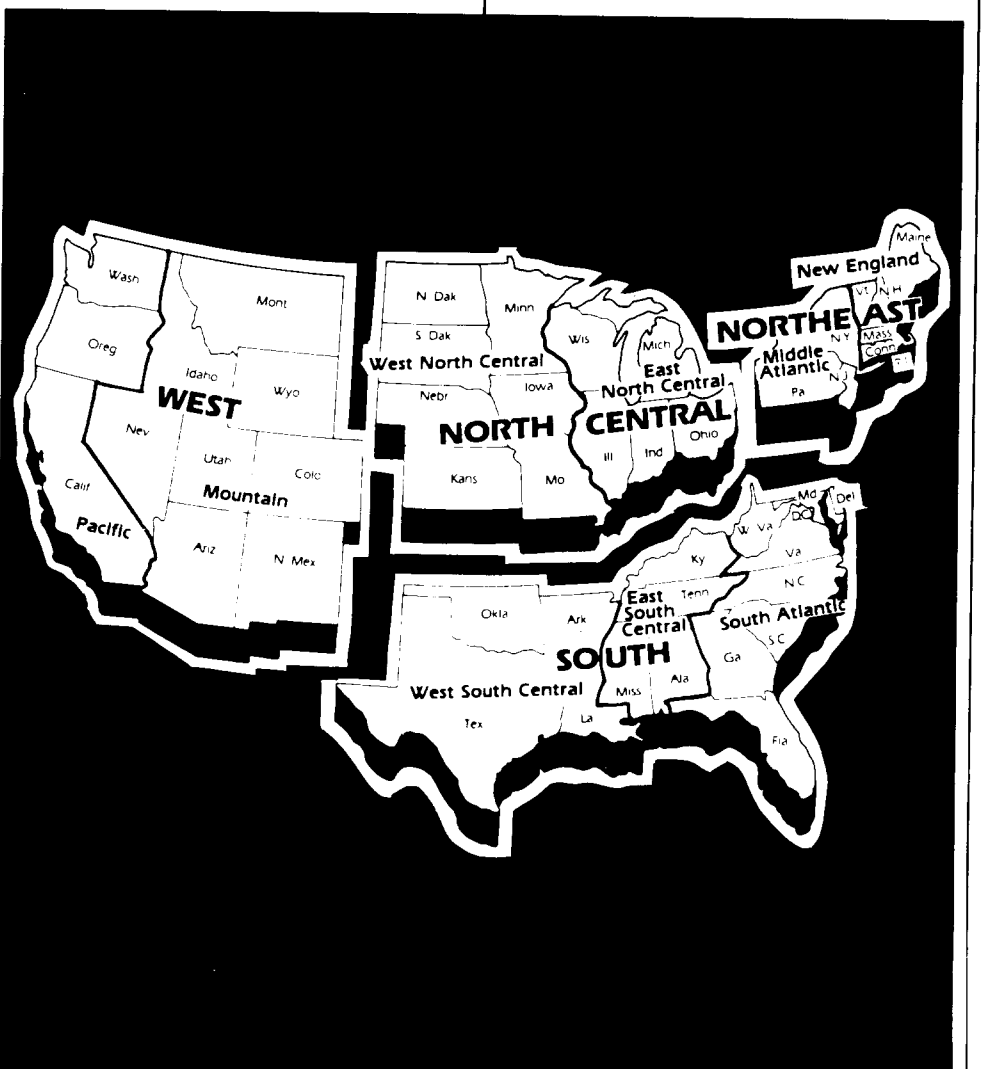
As a test of the effect of the disaggregation error, separate end-use estimates for each half-sample were computed for LPG consumption amounts for the 1980 survey. Half-sample estimates of the variance were computed for the three LPG components for the national averages and the averages for each Census division. The standard errors using the separate end-use estimates for each half-sample were higher than the standard errors where the end-use half-sample estimates were based on the full sample regression analysis. Standard errors were, on the average, 3.2 percent higher for the space heating component, 14.5 percent higher for the water heating component, and 8.7 percent higher for the appliance component.

It was conjectured, based on the results of the half-sample estimates of the variance for the LPG components, that the underestimation of the standard error was greatest in the instances where the disaggregation procedure was the least precisely determined. Hence, the underestimation would be greatest for the water heating component for LPG and fuel oil. Conversely, the underestimation would be smallest for the space heating component for all fuels and smallest for the appliance component for electricity. Additionally, the standard errors of the end-use estimates would be underestimated in cases where the estimates were averages over cells which contained a substantial proportion of households with imputed consumption data, such as the fuel estimates in large buildings.

The procedure for producing the end-use estimates has been improved with each survey. Hence, it can be conjectured that the standard error estimates for the 1978 survey will be subject to more underestimation than the standard error estimates for the 1980 and 1981 surveys.

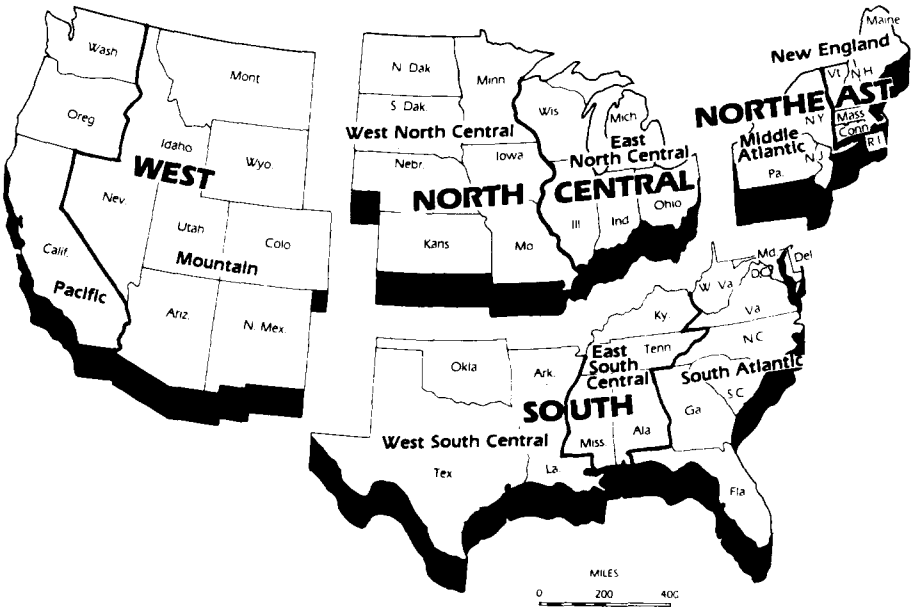
Appendix D

U.S. Census Regions and Divisions

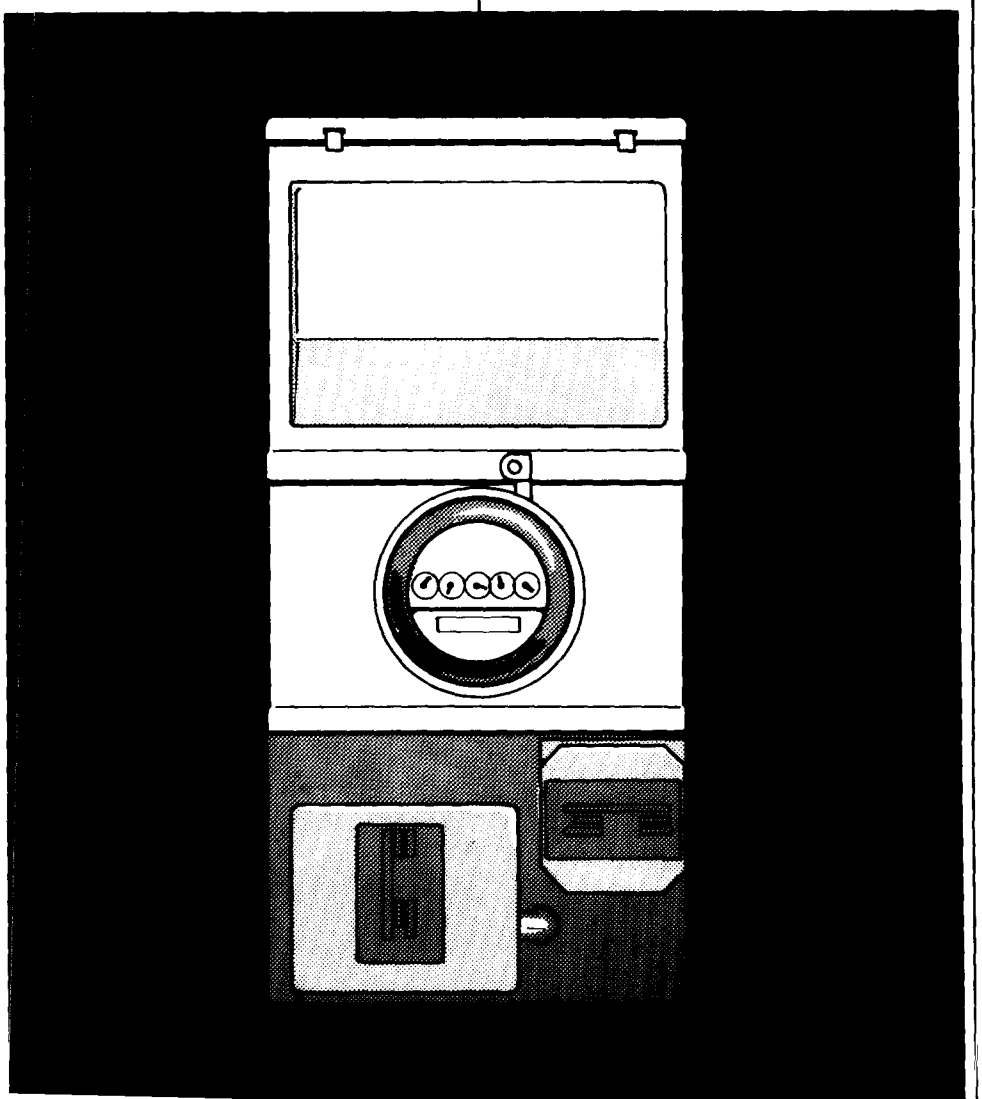


Appendix D

U.S. Census Regions and Divisions



Glossary



Glossary

Air-Conditioning: Cooling of air by a refrigeration unit. This does not include fans, blowers, or evaporative cooling systems not connected to a refrigeration unit. Air-conditioning units that are not currently in working condition or are not used, but are in place in the housing unit, are included in this survey.

"Number of rooms that can be air-conditioned" refers to the number of rooms the air-conditioning equipment is capable of cooling when the equipment is used. Question 36 "How many rooms in your house (apartment) are cooled by air-conditioning?" refers to rooms that could be cooled if the air-conditioning equipment were used. There are, therefore, no cases in the data set of a household with air-conditioning equipment that cooled zero rooms.

"All rooms air-conditioned" means that 100 percent of the rooms are air-conditioned. "Some rooms air-conditioned" means that fewer than 100 percent are air conditioned.

"Central air-conditioning system" refers to a system that air-conditions a number of rooms in a home. See also Central System for the Building. For a definition of rooms, see Number of Rooms.

All-Electric Home: Uses electricity for space heating, water heating, and cooking. Other fuels may be used for supplementary heating or other purposes.

Appliances Used: Appliances possessed and used by the household. Appliances possessed by the household but not used are not counted. Air-conditioning units are an exception. Air-conditioning is counted as present whether or not it is used. (See Air-Conditioning.) Appliances loaned to the household for their regular use are included. Appliances temporarily not in working condition but generally used by the household are included only if a repair person has been called or the appliance has been taken to a repair shop. "Swimming pool heater" applies only to swimming pools that are for the exclusive use of the housing unit. Swimming pools in apartment buildings, condominiums, or cooperatives that are for the use of many resident households are not included. "Oven" includes microwave and convection ovens, but does not include toaster ovens. "An evaporative cooler (swamp cooler)" is an air-cooling unit that turns air into moist, cool air by saturating the air with water vapor. (See also Refrigerators.)

April 1978 through March 1979, April 1980 through March 1981, April 1981 through March 1982: The annual consumption period is a 365-day period beginning as close as possible to April 1. For natural gas and electricity, the actual beginning date for a household may vary from April 1 in either direction by several weeks depending on that household's billing cycle. For fuel oil or kerosene and LPG, the beginning date is always April 1, but the amounts represent deliveries received by the household during the 365-day period, not gallons consumed The expenditures for fuel oil or kerosene and LPG represent expenditures for the amount of fuel delivered to the home, not the amount of fuels consumed. (See Consumed.)

Basement: An enclosed space in which a person can walk upright under all or part of the building. A "crawl space" is the space between the ground and the floor of a house. An "enclosed" crawl space is one not accessible from the outside of the house because the walls of the space protect it from the weather. A crawl space "open to the outside" is accessible from outside the house even though it may be covered by a trellis or lathwork, or some kind of brickwork that leaves space for circulation of air.

Glossary (Continued)

Bathroom: A "complete" bathroom has a flush toilet, a bathtub or shower, and a sink or washbasin with running water. A "half-bath" has a flush toilet or a bathtub or shower but does not have all the facilities for a complete bathroom.

Billing Period: The time between meter readings. It does not refer to the time the bill was sent or when the payment was to have been received. In some cases, the billing period is the same as the billing cycle that corresponds closely (within several days) to meter-reading dates. For fuel oil and LPG, the billing period is the number of days between fuel deliveries.

Btu (British Thermal Units): A Btu is the amount of energy required to raise the temperature of 1 pound of water 1 degree Fahrenheit at or near 39.2 degrees Fahrenheit and 1 atmosphere of pressure. One Btu is about equal to the heat given off by a blue-tip match.

Btu conversion factors for this survey are

Electricity	3,412 Btu/kilowatt-hour
Natural Gas	1,027 Btu/cubic foot
Fuel Oil No. 1	135,000 Btu/gallon
Kerosene	135,000 Btu/gallon
Fuel Oil No. 2	138,690 Btu/gallon
LPG (propane)	21,540 Btu/pound
	91,330 Btu/gallon
	2,510 Btu/cubic foot
	88,640 Btu/cubic meter
Wood	20 million Btu/cord

Other conversion factors used include:

1 therm = 100,000 Btu
1 barrel = 42 gallons

Almost all LPG reported by the fuel suppliers was propane. Hence, the LPG conversion factors are those for propane.

Built-in Electric Units: Individual resistance electric heating units are permanently installed in the floors, walls, ceilings, or baseboards and are part of the electrical installation of the building. Electric heating devices that are plugged into an electric socket or outlet are not considered built in.

Central System for the Building: A central system serving one or more buildings of two or more housing units each that is used for main heating, water heating, or air-conditioning. A system that is for the respondent's living quarters only is not a central system for the building.

Central Warm-Air Furnace: A central furnace providing warm air through ducts leading to the various rooms. Heat pumps are not included in this category. A "forced-air" furnace is one in which a fan is used to force the air through the ducts. In a "gravity" furnace, air is circulated by gravity. The warm air rises through ducts and the cold air falls through ducts that return it to the furnace to be reheated. This completes the circulation cycle.

Glossary (Continued)

Consumed: Is the amount of electricity or natural gas used by the household during the 365-day period. For fuel oil, kerosene, and LPG, the quantity represents fuel purchased, not fuel consumed. If the level of fuel in the tank was the same at the beginning and end of the annual period, then the quantity consumed would be the same as the quantity purchased. Measurements or reports of the level of fuel in the tank were not included in the data collection.

Cooling Degree-Days: Refers to the number of degrees per day the daily average temperature is above 65 degrees Fahrenheit. Normally, cooling is not required in a building when the outdoor average daily temperature is below 65 degrees. Cooling degree-days are determined by subtracting the base of 65 from the daily average temperature. For example, a day with an average temperature of 85 degrees has 20 cooling degree-days (85-65 = 20), while one with an average temperature of 65 degrees or lower has none. The average daily temperature is the mean of the maximum and minimum temperatures for a 24-hour period. The cooling degree-days for RECS households in the 48 States and the District of Columbia were assigned according to the NOAA division in which each household was located (see NOAA Division). Cooling degree-day totals for Alaskan and Hawaiian households were assigned by appropriate nearby weather stations.

Doors: (Outside doors) go from a heated area to the outside or to an unheated area, such as a porch or garage. Doors to a heated hallway in an apartment building, doors permanently sealed shut, and doors to an unheated attic or basement were not counted because these doors are not usually fitted with storm doors. The NIECS survey counted doors to an unheated attic or basement, but this rule was not followed in the RECS survey. Double doors were counted as one door. A pair of sliding glass doors was counted as one door in this survey. A pair of sliding glass doors was counted as two doors in the NIECS survey. "Standard" doors include doors with and without glass panels.

Electricity: See "Fuels."

End Use: Refers to the amount of energy used for space heating, space cooling, water heating, and miscellaneous use. Miscellaneous use includes energy used for lighting, cooking, and appliances.

Estimated Bills: Are calculated by the fuel supplier when the meter is not read. The estimate may be based on one or more of the following factors: past usage, usage by similar households, and weather data.

Expenditures: Refers to the cost for electricity or natural gas consumed during the 365-day period. Expenditures include State and local taxes, but exclude merchandise, repairs, or special service charges. For households on a budget plan, the expenditures are for the actual consumption. Fuel oil, kerosene, and LPG expenditures are for the amount of fuel purchased, which may differ from the amount of fuel consumed (see Consumed). For households that do not pay directly to their fuel supplier, the expenditures for fuels are estimated and included in the tables.

The reader should also be aware that the consumption and expenditures data include households that do not pay directly for the energy used.

Glossary (Continued)

Family Income: Is the total combined income for the calendar year prior to the survey of all members of the family from all sources before taxes and deductions. It includes wages, salaries, tips, commissions, and income from Social Security, pensions, interest, dividends, rent, public assistance, and unemployment insurance. This includes the total income for all family members who lived in the household during the calendar year prior to the survey, 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.

Fireplace: Is any masonry or prebuilt installed fireplace. Fireplaces in mobile homes are included. A fireplace must have a permanent chimney built into the wall of the house. A freestanding fireplace that can be detached from its chimney is a heating stove. A fireplace insert is classified as a fireplace.

Floor, Wall, or Pipeless Furnace: A "floor furnace" is located below the floor and delivers heated air to the room immediately above or, if under a partition, to the room on each side. A "wall furnace" is installed in a partition or in an outside wall and delivers heated air to the rooms on one or both sides of the wall. A "pipeless furnace" is installed in a basement and delivers heated air through a large register in the floor of the room or hallway immediately above.

Fuels: Refers to the primary fuel delivered to the residential site. It may be converted at the site to some other energy form. "Electricity" is included in this report as a fuel.

"Coal" includes coke.

"Electricity" refers to metered electric power supplied by a central utility company to a residence via underground or aboveground power lines. It does not refer to electricity generated onsite for the exclusive use of the residence. In this case, the fuel used for the generator will be indicated. The Btu equivalent for electricity is the energy value of electricity as received by the household (3,412 Btu per kilowatt-hours). Electrical energy losses that occur in the generation and transmission of electricity are not included in the conversion of electricity into Btu for this report. If these losses were to be included, in general, the conversion rate would be about 10,353 Btu per kilowatt-hour.

"Fuel Oil" is No. 1, No. 2, or No. 4 grade fuel oil or residual oil that is burned for space- or water-heating purposes. No. 1 distillate fuel oil is a form of heating oil used mostly as a blending stock to assure that heavier grades of fuel flow under severe cold weather conditions. No. 2 distillate collectively refers to No. 2 heating oil and No. 2 diesel fuel. Although these products are not precisely identical, they are essentially interchangeable in most applications. No. 2 fuel oil is the most common form of heating oil. No. 4 distillate is a blend of No. 2 and No. 5 or No. 6 residual fuel oil used in large stationary diesel engines and boilers equipped with fuel preheating equipment. Residual fuel oil refers to the heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are boiled off in refinery operations.

Glossary (Continued)

"Kerosene" refers to a distilled product of oil or coal with the generic name "kerosene." Kerosene is similar to No. 1 distillate fuel oil and is used for space heating or water heating or lighting equipment using wicks. It is sometimes sold under the names "range oil" or "stove oil."

"LPG or liquefied petroleum gas" refers to any fuel gas supplied to a residence in liquid form such as propane or butane. It is usually delivered by tank truck and stored near the residence in a tank or cylinder until used. Propane was the most common liquefied petroleum gas supplied to RECS households. Household use of LPG solely for outdoor gas grills is not considered sufficient use to mark the household as an LPG user.

"Natural gas" is utility gas supplied by underground pipeline to individual housing units by a central utility company. It does not refer to privately owned gas wells operated by the household.

Heating Degree-Days: The number of degrees per day the daily average temperature is below 65 degrees Fahrenheit. Normally, heating is not required in a building when the outdoor average daily temperature is above 65 degrees. Heating degree-days are determined by subtracting the average daily temperature below 65 degrees from the base 65. For example, a day with an average temperature of 50 degrees has 15 heating degree-days (65 - 50 = 15), while one with an average temperature of 65 or higher has none. The average daily temperature is the mean of the maximum and minimum temperature for a 24-hour period.

The heating degree-days for RECS households in the 48 States and the District of Columbia were assigned according to the NOAA division in which each household is located (See NOAA Division). Heating degree-days for Alaskan and Hawaiian households were assigned by appropriate nearby weather stations.

Heat Pump (Reverse Cycle System): A year-round heating/air-conditioning system in which refrigeration equipment supplies both heating and cooling through ducts leading to individual rooms. It generally consists of a compressor, both indoor and outdoor coils, and a thermostat.

When the heat pump is attached to a central furnace, the heat pump is either the main or secondary heating equipment depending on how often the heat pump operates. If it operates for a short time and then the furnace comes on, the heat pump is secondary (or additional heating equipment). If the heat pump is sufficient to provide the desired warmth, the heat pump is the main heating equipment.

Hot-Deck Imputation: A procedure by which the household file is sorted by variables related to the missing item. A household is then selected that has the same value on the matching variables, and this "donor" household supplies the value for the missing item. (See Imputation).

Household: A group of up to 12 persons occupying the same housing unit. "Occupy" means the housing unit was the person's usual or permanent place of residence at the time of the first field contact. The household includes babies, lodgers, boarders, employed persons who live in the housing unit, and persons who usually live in the household, but are away traveling or in a hospital. The household does not include persons who are normally members of the household but who were away from home as college students or members of the armed forces at the time of the contact.

Glossary (Continued)

The household does not include persons temporarily visiting with the household if they have a place of residence elsewhere, persons who take their meals with the household but usually lodge or sleep elsewhere, domestic employees or other persons employed by the household who do not sleep in the same housing unit, or persons who are former members of the household, but have since become inmates of correction or penal institutions, mental institutions, homes for the aged or needy, homes or hospitals for the chronically ill or handicapped, nursing homes, convents or monasteries, or other places in which residents may remain for long periods of time. By definition, the count of households is the same as the count of occupied housing units.

Householder: The person (or one of the persons) in whose name the home is owned or rented. If there is no lease or similar agreement or if the person who owns the home or pays the rent does not live in the housing unit, the householder is the person responsible for paying the household bills or generally in charge.

Housing Structure: One of four structure types used to categorize the building in which the housing unit was located.

A "single-family housing unit" refers to a structure that provides living space for one household or family. The structure may be detached, attached on one side (semidetached), or attached on two sides. Attached houses are considered single-family houses as long as the house itself is not divided into more than one housing unit and has an independent, outside entrance. A single-family house is contained within walls that go from the basement to the roof.

A "house or building with two to four housing units" is divided into living quarters for two, three, or four families or households. This category also includes houses originally intended for occupancy by one family or for some other use that have since been converted to a separate dwelling for two to four families. Typical arrangements in these types of living quarters are separate apartments, downstairs and upstairs, or one apartment on each of three or four floors.

A "building with five or more housing units" refers to a building containing living quarters for five or more separate households or families.

A "mobile home or trailer" refers to a structure that has all the facilities of a dwelling unit, but is built on a movable chassis. It may be placed on a permanent or temporary foundation and contain one or more rooms. If additional rooms are added to the structure, it is still considered a mobile home.

Housing Unit: A structure or part of a structure where a household (family or individual) lives or could live. It has direct access from the outside of the building or through a common hall. Housing units do not include group quarters such as prisons, hospitals, dormitories, nursing homes, fraternity houses, or convents where 10 or more unrelated persons live. Hotel rooms, motel rooms, mobile homes, or trailers are considered housing units if occupied.

Imputation: Is a statistical method used to estimate the response to specific questions for which answers are missing. In general, it is a procedure for filling in missing data values.

Glossary (Continued)

Insulation: Refers to any material that, when placed between the interior of the dwelling and the outdoor environment, reduces the rate of heat loss to the environment or heat gain from the environment. The four forms of insulation, illustrated in a drawing shown to respondents, are listed below:

"Blankets or batts"--rolls or pieces of insulation that are nailed or stapled between the rafters or wall joists (beams). It is usually made of fiberglass or rock wool.

"Loose particles or loose fill"--loose insulation comes in a bag and is poured between joists (beams). Loose insulation can also be blown into open spaces. Loose fill can be glass fiber, rock-wool fibers, cellulose fiber, or vermiculite.

"Firm foam or firm plastic"--rigid boards (such as styrofoam) that can be cut to size and either edged, nailed, or glued into place.

"Sprayed-in urethane foam" is not shown separately as a category because the description used in the survey was inaccurate. Urethane foam is not sprayed in because it expands so much that confined areas may be broken apart by the force of the expanding substance. The more general category of "sprayed foam" will be used in the future to include all types of foam insulation.

"Floor insulation" is insulation between the bottom floor and the unheated basement or crawl space. Carpeting or carpeting pads are not insulation.

Main Cooking Fuel: Is the answer to the question: "Thinking of all the different kinds of cooking done here, including cooking in the oven, on a range, and with small appliances, which fuel is used most?"

Main Heating Equipment: (See description of specific heating equipment.) Main heating equipment, if temporarily out of order, is reported as the main heating equipment. If two types of heating equipment are used, the main equipment is the one used more. If both are used equally, the main equipment is the one that appears first on the list in the question.

Main Heating Fuel: The fuel mentioned by the respondent in response to the Question: "What is the main fuel used for heating this house (apartment)?"

Master Metered: The method used by utility companies (e.g., electricity and natural gas) to measure the total volume of energy used by several individual customers collectively.

NIECS: The National Interim Energy Consumption Survey, the first developmental survey in the planned series of Residential Energy Consumption Surveys. The NIECS contacted 4,081 households in October and November 1978. Fuel suppliers provided data on consumption and expenditures for the period April 1978 through March 1979.

NOAA Division: One of the 344 weather divisions designated by the National Oceanic and Atmospheric Administration (NOAA) encompassing the 48 contiguous States. These divisions usually follow county borders to encompass counties with similar weather conditions. The NOAA division does not follow county borders when weather conditions vary considerably within a county such as is likely to happen when the county borders the ocean or contains high mountains. A State contains an average of seven NOAA divisions; a NOAA division contains an average of nine counties.

Glossary (Continued)

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

Number of Rooms: Whole rooms are rooms such as living rooms, dining rooms, bedrooms, kitchens, lodger's rooms, finished basements or attic rooms, recreation rooms, and permanently enclosed sun porches that are used year-round. Rooms used for offices by a person living in the unit are included in this survey. Bathrooms, halls, foyers or vestibules, balconies, closets, alcoves, pantries, strip or pullman kitchens, laundry or furnace rooms, unfinished attics or basements, open porches, and unfinished space used for storage are not included.

A partially divided room, such as a dinette next to a kitchen or a living room, is a separate room only if there is a partition from floor to ceiling, but not if the partition consists solely of shelves or cabinets. If a room is used by occupants of more than one unit, the room is included with the unit from which it is most easily reached.

Rooms are counted as year-round living space if they are completely enclosed with permanently installed walls, windows, and a roof and can be heated.

Occupied Housing Unit: A unit someone was living in as his or her usual or permanent place of residence at the time of the first field contact.

Owner/Renter: Own/rent refers to the structure itself, not the land on which it is located. The household is classified "renter" even if the rent is paid by someone not living in the unit. "Rent free" means the unit is not owned or being bought and no money is paid or contracted for rent. Such units are usually provided in exchange for services rendered or as an allowance or favor from a relative or friend not living in the unit. "Rent free" also includes occupants who pay only for utilities. Unless shown separately, "rent free" households are grouped together with "renters."

Quadrillion: Equals 1,000,000,000,000,000 or 10^{15}.

Region: The States are divided into 10 groups as follows:

Region	States
Northeast	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut New York, New Jersey
North Central	Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas
South	Delaware, Pennsylvania, Maryland, Virginia, West Virginia, District of Columbia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida
West	Colorado, Utah, Wuoming, Montana, Idaho, New Mexico, Hawaii, Arizona, California, Nevada, Alaska, Oregon, Washington

Glossary (Continued)

Residential: Refers to occupied housing units including mobile homes, single-family housing units (attached and detached), and apartments. The definition of housing units is the same as that used by the U.S. Bureau of the Census. (See Household and Housing Unit for further definition.)

Residential Energy Consumption Survey (RECS) 1980, 1981: The Residential Energy Consumption Surveys that contacted 6,051 households in 1980 and 6,269 households in 1981. Fuel suppliers provided data on consumption and expenditures for the period April 1980 through March 1981 and April 1981 through March 1982.

Rooms: (See Number of Rooms.)

Refrigerators: With no freezer sections are included in the non-frost-free category. "Frost-free" means that frost does not build up on the insides of the freezer section or ice cube section.

Room Heaters Burning Gas, Oil, Kerosene: Are circulating heaters, convectors, radiant gas heaters, space heaters, or other nonportable room heaters that may or may not be connected to a flue, vent, or chimney.

Screener Survey: The Residential Energy Consumption Survey that contacted 4,033 households in October and November 1979. Fuel suppliers provided data on consumption and expenditures for the period April 1979 through March 1980. This survey was named the Household Screener Survey because it was used to screen households for participation in the Household Transportation Panel.

Secondary Heating Equipment: Equipment used in addition to the main equipment. Description of the secondary heating equipment is the same as for the main heating equipment.

Square Feet: The floor area of the housing unit that is enclosed from the weather. Basements are included whether or not they contain finished space. Garages are included if they have a wall in common with the house. Attics that have finished space and attics that have some heated space are included. Crawl spaces are not included even if they are enclosed from the weather. Sheds and other buildings that are not attached to the house are not included. "Measured" square feet means that the measurement of the dimensions of the home did not rely on the respondent's reports but was an actual measurement by the interviewer using a metallic, retractable, 50-foot tape measure.

"Heated square feet" are that portion of the measured square feet that is heated during most of the season. Rooms that are shutoff during the heating season to save on fuel use are not counted as heated square footage. Attached garages that are unheated and unheated areas in basements and attics are not counted as heated square feet.

Steam or Hot Water System with Radiators or Convectors: A central heating system supplying steam or hot water to conventional radiators, baseboard radiators, heating pipes embedded in the walls or ceilings, or heating coils or equipment that are part of a combined heating/ventilating or heating/air-conditioning system. This category also includes radiant heating through hot water pipes inlaid in a concrete, slab floor.

Storm Doors and Windows: Storm doors made of double or insulating glass such as thermopane. Glass or plexiglass placed over a sliding glass door on either the exterior or interior is counted as a storm door. A plastic sheet covering the door is not counted as a storm door.

Glossary (Continued)

Storm windows are made of double or insulating glass, such as thermopane. Glass or plexiglass placed over windows on either the interior or exterior side are counted as storm windows. Plastic sheets covering windows are not counted.

Note: Responses of "don't know" for storm doors, windows, and/or attic insulation were treated the same as "do not have." For example, a respondent who indicated that his or her house had storm windows (some or all) and storm doors (some or all), but who did not know if it had attic insulation, was counted in the "have one or two of these" category.

Water-Heating Fuel: The answer to the question, "Which fuel is used most for heating water?" Households that did not have running water in their home were also asked this question. The fuel is used for heating water for bathing and washing. The hot water may have been available anywhere in the same building as the respondent's living quarters. This may have been in a hallway, in a room used by several units in the building, in the basement, or in an enclosed porch, provided the respondent's household had access to it.

Windows: All windows in the year-round living space. Windows in the basement, attic, garage, and porch are counted only if these areas are heated. Windows in doors are not counted. Each window that opens separately is counted as one window. Windows fixed in place are also counted. Panes of glass in a large window are not counted individually unless they open separately. Skylights and stained-glass windows are counted as windows.

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