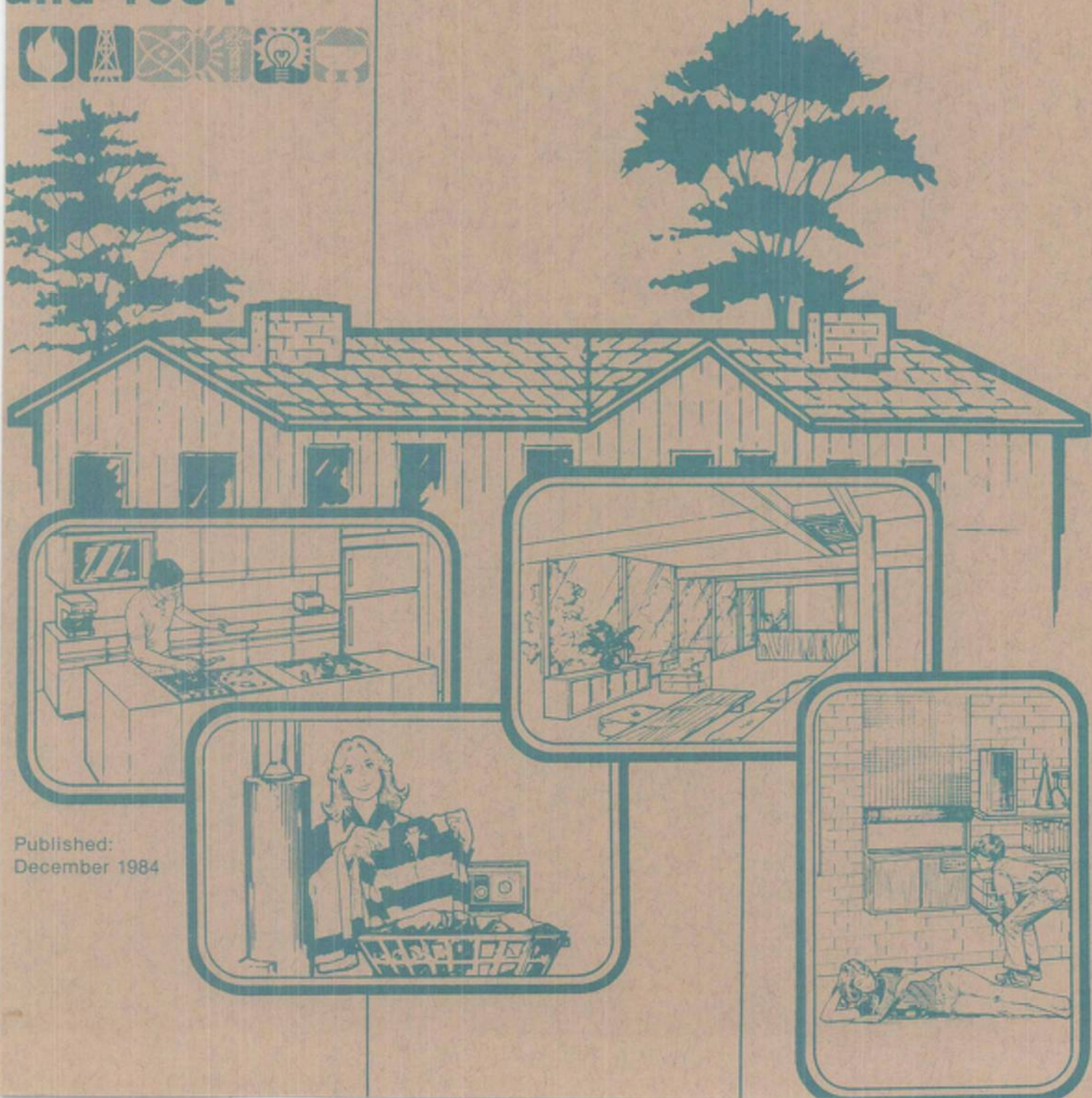


Residential Energy Consumption and Expenditures by End Use for 1978, 1980, and 1981

Energy Information Administration
Washington, D.C.



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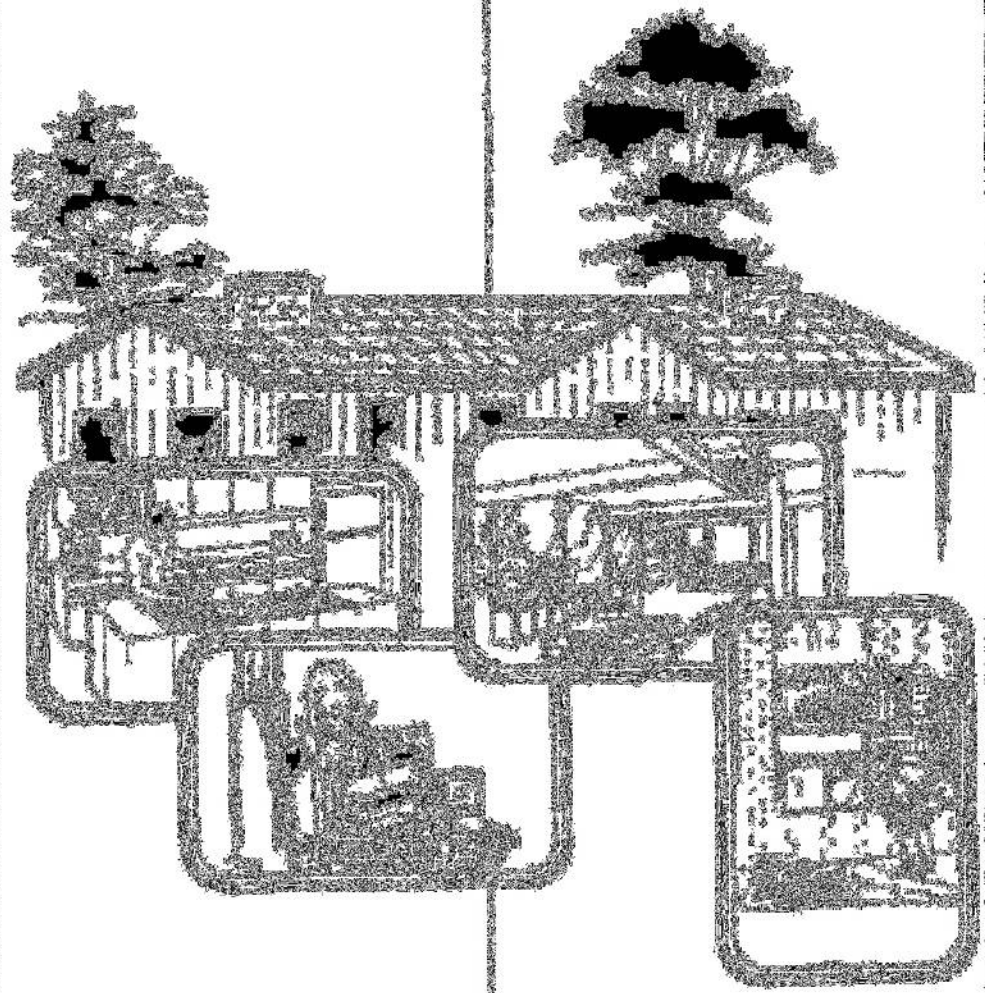
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Contents

Summary of Findings

Appendices

Figures

Introduction This report presents the results of a study of the energy consumption characteristics of residential buildings in the United States. The study was conducted by the U.S. Department of Energy, Office of Energy Research and Development, and the U.S. Environmental Protection Agency. The study was conducted in 1974 and 1975. The results of the study are presented in this report.

- 1. Summary of the Study
- 2. Introduction
- 3. Description of the Study
- 4. U.S. Energy Situation

Summary

- 1. Average Residential Energy Consumption by State During 1974, 1975, 1976, 1977, and 1978 (Million Btu)
- 2. Average Residential Electricity Consumption per State During 1974 and 1975 (Kilowatt Hours)
- 3. Average Residential Natural Gas Consumption per State During 1974 and 1975 (Million Cubic Feet)
- 4. Average Residential Fuel Oil or Petroleum Consumption per State During 1974 and 1975 (Million Gallons)
- 5. Average Residential Energy Expenditures per State, 1974, 1975, and 1976 (Million Dollars)
- 6. Average Residential Electricity Expenditures per State During 1974 and 1975 (Million Dollars)
- 7. Average Residential Electricity Expenditures per State During 1974 and 1975 (Million Dollars)
- 8. Average Residential Electricity Expenditures per State During 1974 and 1975 (Million Dollars)
- 9. Average Residential Electricity Expenditures per State During 1974 and 1975 (Million Dollars)
- 10. Average Residential Electricity Expenditures per State During 1974 and 1975 (Million Dollars)
- 11. Average Residential Electricity Expenditures per State During 1974 and 1975 (Million Dollars)
- 12. Average Residential Electricity Expenditures per State During 1974 and 1975 (Million Dollars)
- 13. Average Residential Electricity Expenditures per State During 1974 and 1975 (Million Dollars)
- 14. Average Residential Electricity Expenditures per State During 1974 and 1975 (Million Dollars)



Contents (Continued)

	Page
13. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1978 (Million Btu)	18
14. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1980 (Million Btu)	19
17. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1981 (Million Btu)	19
18. Average Household Natural Gas Expenditures When Main Heating Fuel is Natural Gas by End Use for 1978, 1980, and 1981 (Dollars)	19

Tables

E1. Average Household Consumption and Expenditures for Space Heating by Main Heating Fuel	2
E2. Average Household Energy Expenditures by End Use by Income for 1981 (Dollars)	3
T1. Average Household Energy Consumption for Space Heating per Heating Degree-Day by Main Heating Fuel (Thousand Btu)	6
T2. Average Household Consumption and Expenditures for Space Heating by Main Heating Fuel (Percent Differences 1978-1981, 1978-1980, 1980-1981)	9
E1. Average Household Electricity Consumption and Expenditures for Space Heating When Main Heating Fuel is Electricity by Region	9
E2. Average Household Electricity Consumption for Space Heating When Main Heating Fuel is Electricity by Square Footage of Home	10
1. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Housing Characteristics for 1978	21
2. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Sociodemographic Characteristics for 1978	23
3. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Housing Characteristics for 1978	23
4. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Sociodemographic Characteristics for 1978	24
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	25
6. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Sociodemographic Characteristics for 1978	26
7. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Housing Characteristics for 1978	27
8. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Sociodemographic Characteristics for 1978	27
9. Average Household Energy Expenditures by End Use by Selected Housing Characteristics for 1978	28
10. Average Household Energy Expenditures by End Use by Selected Sociodemographic Characteristics for 1978	30
11. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Housing Characteristics for 1978	30



Contents (Continued)

	Page
12. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Sociodemographic Characteristics for 1970	18
13. Average Household Electricity Consumption When Main Heating Fuel is Electricity by Fuel Use by Selected Sociodemographic Characteristics for 1970	21
14. Average Household Electricity Consumption When Main Heating Fuel is Electricity by Fuel Use by Selected Sociodemographic Characteristics for 1970	23
15. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by Fuel Use by Selected Sociodemographic Characteristics for 1970	25
16. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by Fuel Use by Selected Sociodemographic Characteristics for 1970	27
17. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by Fuel Use by Selected Heating Characteristics for 1970	29
18. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by Fuel Use by Selected Sociodemographic Characteristics for 1970	31
19. Average Household LPG Consumption When Main Heating Characteristics for 1970	33
20. Average Household LPG Consumption When Main Heating Fuel is LPG by Fuel Use by Selected Heating Characteristics for 1970	35
21. Average Household LPG Consumption When Main Heating Fuel is LPG by Fuel Use by Selected Sociodemographic Characteristics for 1970	37
22. Average Household Energy Expenditures by Fuel Use by Selected Heating Characteristics for 1970	39
23. Average Household Energy Expenditures by Fuel Use by Selected Sociodemographic Characteristics for 1970	41
24. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Heating Characteristics for 1970	43
25. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Sociodemographic Characteristics for 1970	45
26. Average Household Electricity Consumption When Main Heating Fuel is Electricity by Fuel Use by Selected Sociodemographic Characteristics for 1971	47
27. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by Fuel Use by Selected Sociodemographic Characteristics for 1971	49
28. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by Fuel Use by Selected Sociodemographic Characteristics for 1971	51
29. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by Fuel Use by Selected Heating Characteristics for 1971	53
30. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by Fuel Use by Selected Sociodemographic Characteristics for 1971	55
31. Average Household LPG Consumption When Main Heating Fuel is LPG by Fuel Use by Selected Heating Characteristics for 1971	57



Contents (Continued)

	Page
32. Average Household LPG Consumption When Main Heating Fuel is LPG by Fuel Use by Selected Sociodemographic Characteristics for 1981	52
33. Average Household Energy Expenditures by Fuel Use by Selected Housing Characteristics for 1981	53
34. Average Household Energy Expenditures by Fuel Use by Selected Sociodemographic Characteristics for 1981	54
35. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Housing Characteristics for 1981	55
36. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Sociodemographic Characteristics for 1981	55
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	57
38. Percent of Average Household Electricity Consumption Used for Space Heating When Main Heating Fuel is Electricity by Selected Sociodemographic Characteristics for 1978, 1980, 1981	58
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	59
40. Percent of Average Household Natural Gas Consumption Used for Space Heating When Main Heating Fuel is Natural Gas by Selected Sociodemographic Characteristics for 1978, 1980, 1981	60
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	61
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	62
43. Comparison of Three Residential Energy Consumption and Expenditures Surveys	63
44. Number of Households by Main Heating Fuel by Survey Year	64
45. Number of Sample Households that Use Each Fuel and Percent of Households with Usable Fuel Records by Fuel Used and Type of Housing Structure	65

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 appliances and. This report, an abridgement of a previous report,¹ is the first in a series of studies in energy household energy usage by and use.

The end-use categories of the average household consumption and expenditures are statistical estimates based on the 1974, 1976, and 1981 Residential Energy Consumption Survey (RECS) conducted by the Energy Information Administration (EIA) rather than on actual observations. The end-use categories 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 by various categories 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 1974 survey, resulting in a change in sample population in the year from 1974 through 1981.) The accuracy and potential biases of these end-use estimates vary depending on the fuel type, at the point of the survey, and on the type of end use.

The data that surveys were cross-sectional surveys, that, they did not have any households in common. Successive households were not followed over time, only aggregation of the average population and expenditures for similar populations at different times are to be made. The problem with this approach is that the population is changing over time. This is particularly true when considering only households living in buildings that have been built since 1970. The houses should be sampled since throughout this report 1974 refers to the period April 1974 through March 1975; 1976 refers to April 1976 through March 1977; 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 stocks by and use for all fuels used in the home for 1974, 1976, and 1981. The third and fourth sections concentrate on electricity consumption and expenditures and natural gas consumption and expenditures, respectively.

¹ Residential Energy Consumption Survey: Analytical Analysis of Energy Expenditures of the 1974, 1976, and 1981 Surveys, E.I.A., October 1981.

² Residential Energy Consumption Survey: April 1974 through March 1975; April 1976 through March 1977; April 1981 through March 1982. To be dependent by year that the surveys are more consistent and not longitudinally bias, since most households were of households in each survey.

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

⁴ Detailed reports for the estimates in the significant findings section can be found in various sections of this report and in the Residential Energy Consumption Survey 1974 through 1981. For a discussion on the estimation of the standard errors 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 declines in space heating consumption were among households that heated with electricity. These households experienced, on the average, a 39 percent decline from 11.6 million Btu in 1978 to 7.1 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 15 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 whose 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)	23(1.6)	19(1.3)	285(18)	241(16)	209(20)
Natural Gas	101(3.4)	74(1.9)	62(1.7)	271 (7)	285 (5)	367 (7)
Fuel Oil/ Increase	102(4.8)	96(2.5)	88(2.8)	472(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 West¹ 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 Northwest heated by electricity used 35 percent more Btu for space heating than

¹Appendix B shows the States by region.



Summary of Findings (Continued)

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Summary of Findings (Continued)

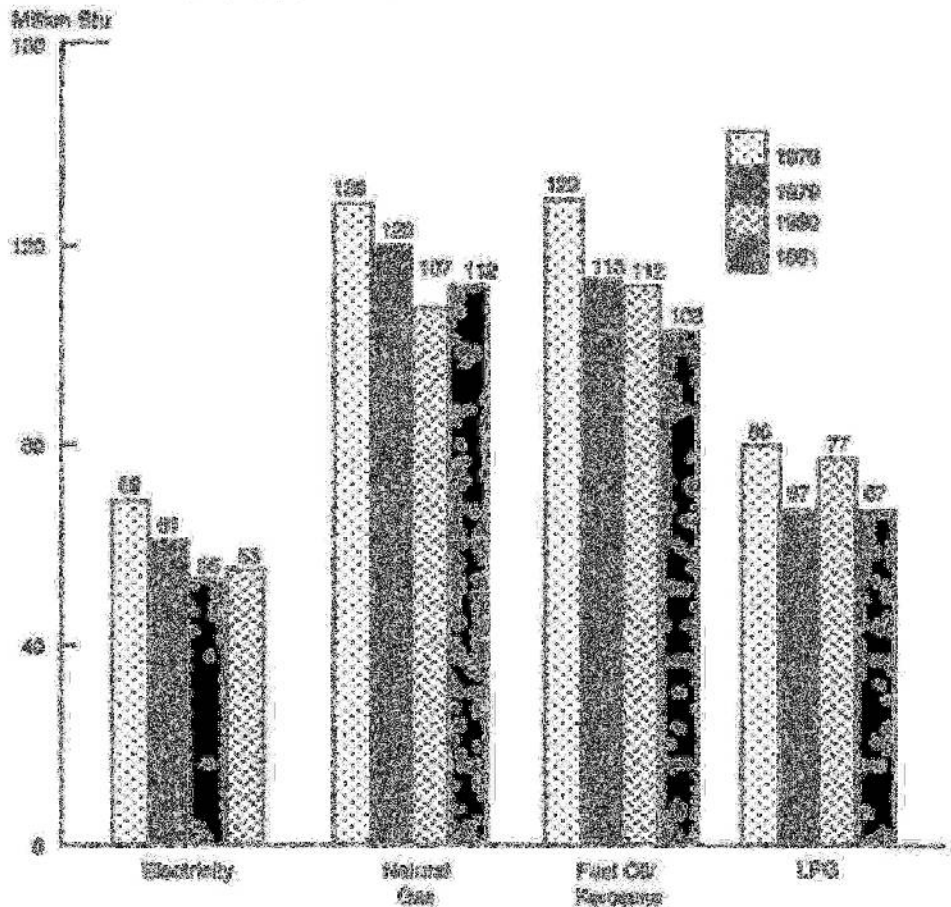
Energy End Use Trends

Average Household Consumption

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

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.



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.

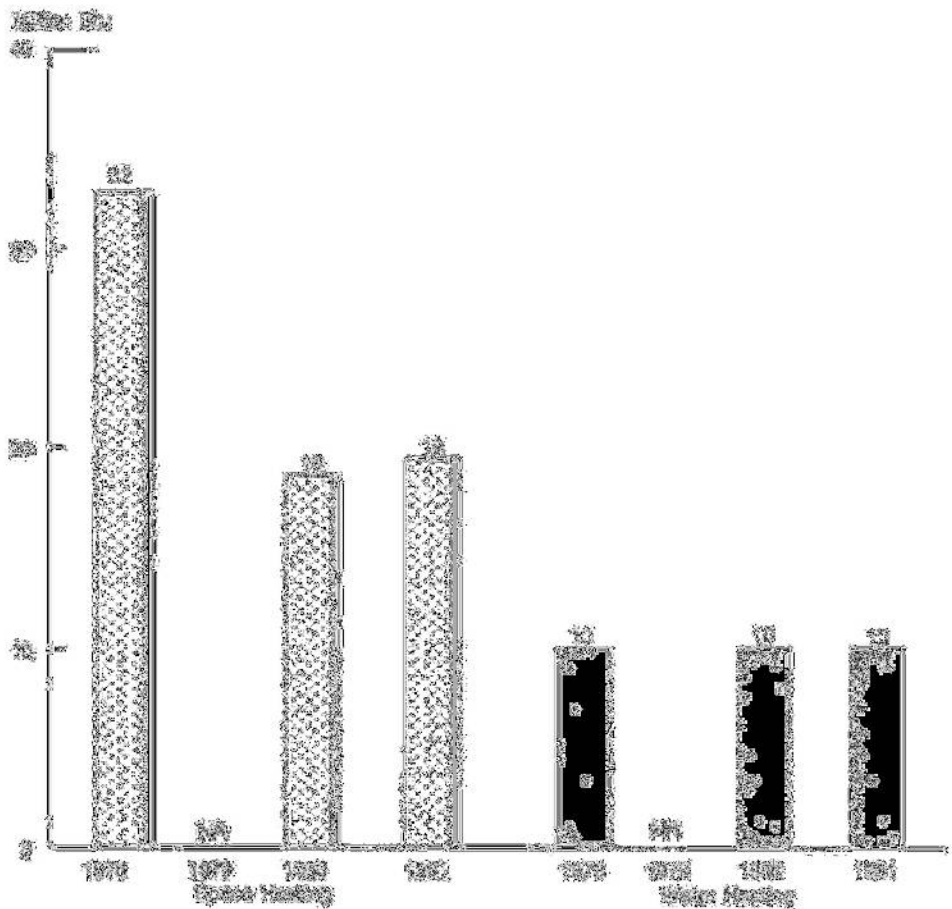
¹The values in parenthesis represent one standard error of the statistic. The standard error is a measure of the variability of an estimate.

Summary of Findings (Continued)

Space Heating Consumption

The decrease in consumption from 1972 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 1972 through 1980. Figure 2 shows that from 1972 through 1982, there was approximately a 33 (31) percent decrease in electricity used for space heating units 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 Kilowatt Hours)



Source: Energy Information Administration, 1974, 1978, 1982, and 1983 Residential Energy Consumption Surveys.

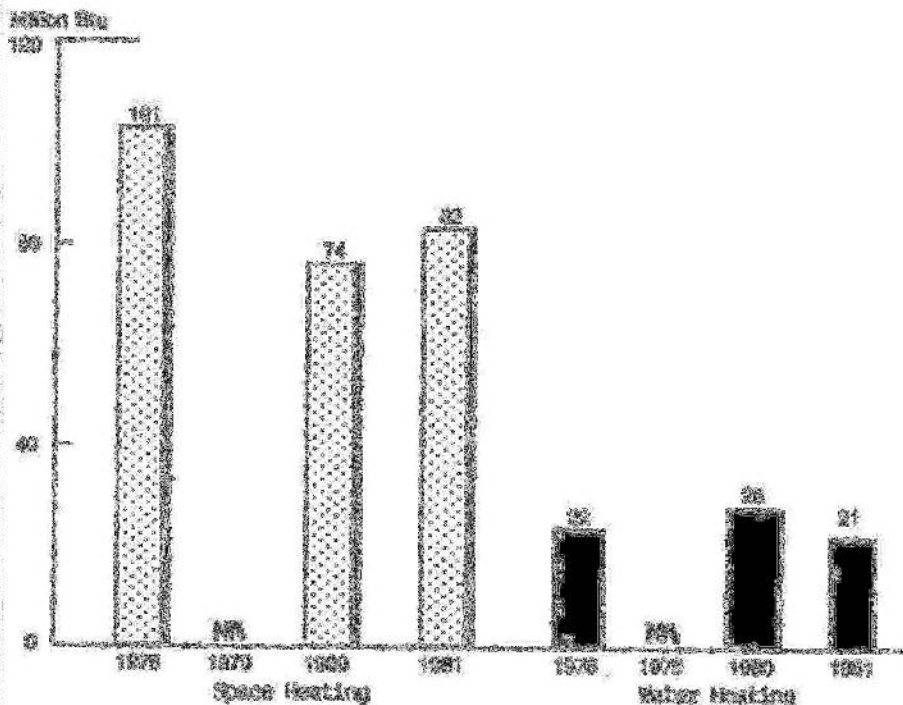
¹ Miscellaneous use refers to other uses such as lighting, cooking, clothes use.



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 (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)



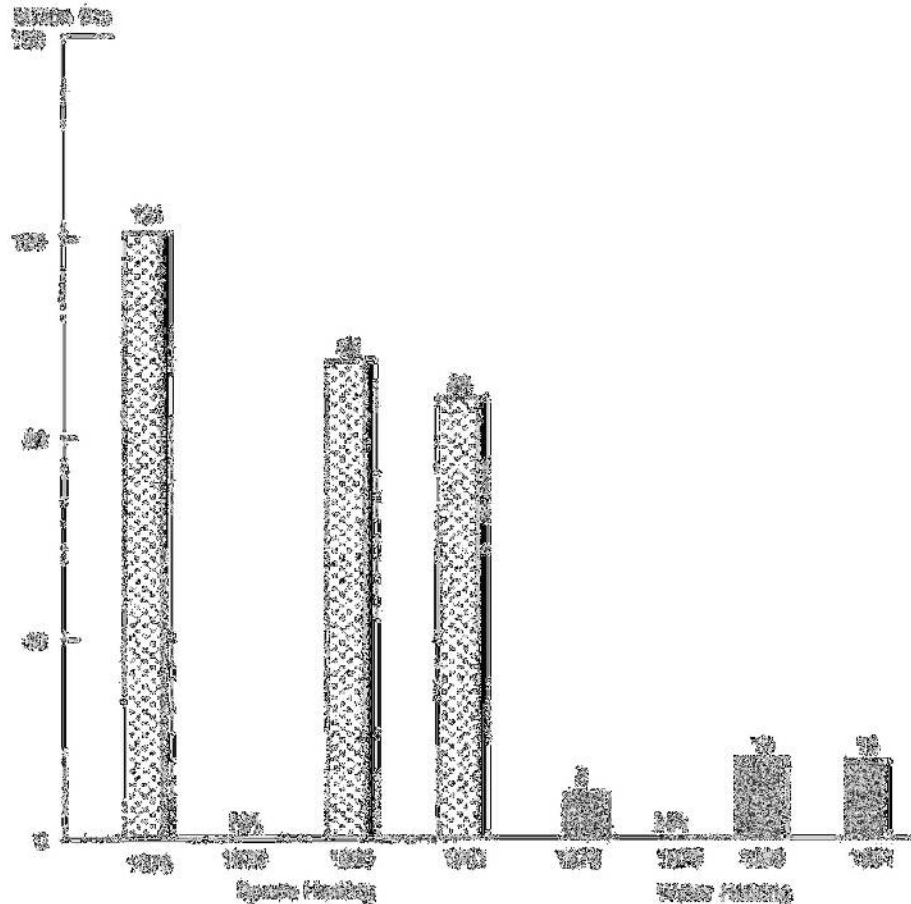
Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys.

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

Summary of Findings (Continued)

fuel oil or kerosene during the same period (1976 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, 1976, 1977, 1980, and 1981 Residential Energy Consumption Surveys.

The decrease in the number of heating degree-days for 1976, 1978, 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. The data suggest that even after controlling for the weather, electricity consumption still declined by 21 (2) percent, natural gas consumption declined by 17 (2) percent, and fuel oil or kerosene consumption declined by 21 (2) percent. This suggests that factors other than weather may have also influenced the decrease in consumption from 1976 through 1981.

¹ Heating degree-days are based on degree Fahrenheit. For specific information on "technology" for a discussion of the consumption and 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	7.3 (.4)	20.4 (.5)	22.7 (.7)
1980	4.6 (.2)	15.6 (.2)	17.6 (.4)
1981	5.2 (.2)	17.0 (.3)	18.7 (1.0)

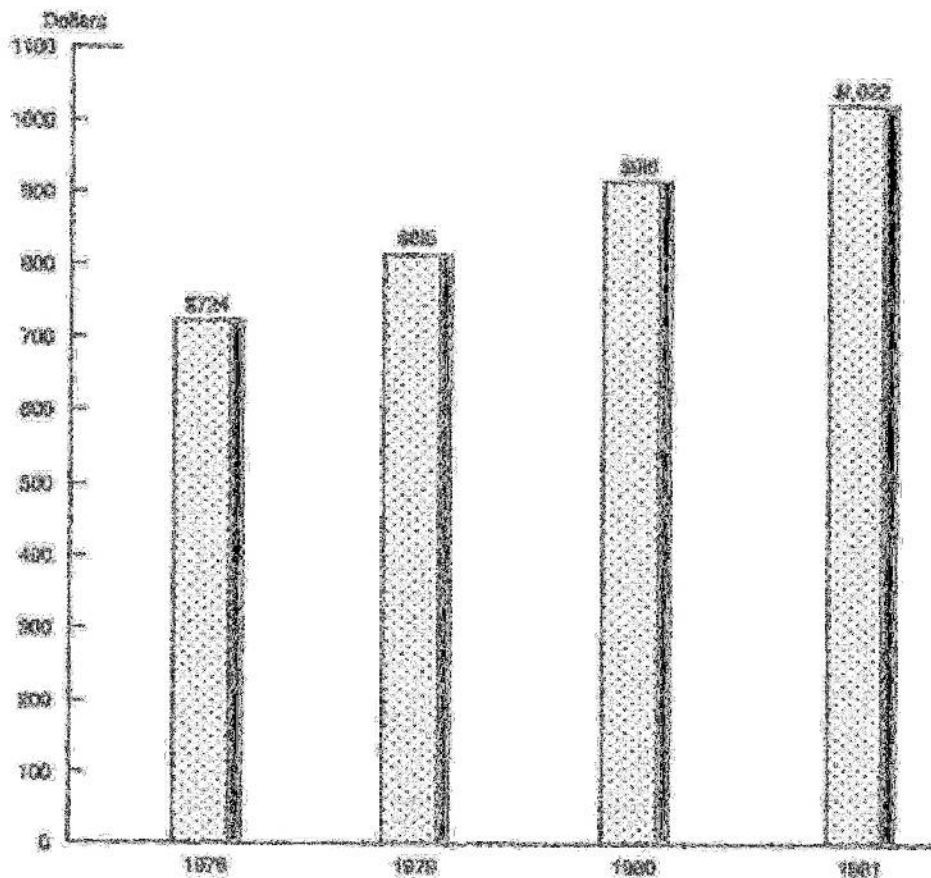
Notes: The value in parenthesis represents one standard error of the statistic.

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

Average Household Expenditures

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

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 (12) 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 \$515 (8) to \$663 (12) between 1978 and 1981.



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 annual end-use estimates.

Summary of Findings (Continued)

being heated that were heated by natural gas. The average cost for space heating increased by approximately 33 (31) percent, from \$278 (27) in 1978 to \$371 (37) 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 1 (5) percent from \$289 (28) in 1978 to \$293 (28) in 1981. (This increase was not statistically significant.) The largest increases in costs occurred among homes heated by fuel oil or kerosene. In these homes, the average household's space heating expenditures increased 45 (43) percent from \$473 (47) in 1978 to \$686 (68) in 1981. This increase occurred primarily from 1979 through 1980 (Table 12).

Table 12. Average Household Consumption and Expenditures for Space Heating by Main Heating Fuel (Percent Differences 1978-1981, 1979-1980, 1980-1981)

	Consumption			Expenditures		
	1978-1981	1979-1980	1980-1981	1978-1981	1979-1980	1980-1981
Electricity ...	+1(5)	+1(5)	+1(5)	+1(5)	+1(5)	+1(5)
Fuel oil/ kerosene ...	+45(43)	+45(43)	+45(43)	+45(43)	+45(43)	+45(43)
Gas ...	+33(31)	+33(31)	+33(31)	+33(31)	+33(31)	+33(31)

Note: The values in parentheses represent one standard error of the statistic.
Source: Tables 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.

Electricity Consumption and Expenditures

Space Heating

From 1978 through 1981, there was approximately a 33 (31) percent decline in electricity consumption for space heating in the West among households whose main heating fuel was electricity. This decline occurred from 1978 through 1981 with a 41 (41) percent reduction in consumption. Then, from 1980 through 1981, electricity used for space heating increased by approximately 22 (22) percent. Table 13 shows that during the same period (1978 through 1981) there was about a 37 (37) percent decrease in the amount of electricity consumed for space heating in the North Central region and a 35 (35) percent decrease in the South. Electricity consumption for space heating did not significantly change in the Southwest from 1978 through 1981.

Table 13. Average Household Electricity Consumption and Expenditures for Space Heating When Main Heating Fuel Is Electricity by Region

	Consumption			Expenditures		
	1978	1980	1981	1978	1980	1981
North ...	28 (2.4)	18 (1.4)	22 (1.8)	27 (27)	28 (28)	28 (28)
South ...	45 (4.4)	27 (2.4)	27 (2.4)	45 (45)	45 (45)	45 (45)
West ...	28 (2.4)	28 (2.4)	28 (2.4)	28 (28)	28 (28)	28 (28)

Note: The values in parentheses represent one standard error of the statistic.
Source: Tables 2, 3, 4, 5, 6, 7, 8.



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)	26.0 (2.6)	31 (10)
2,400 or More	60.9 (5.5)	27.6 (2.3)	32.2 (3.9)	47 (8)

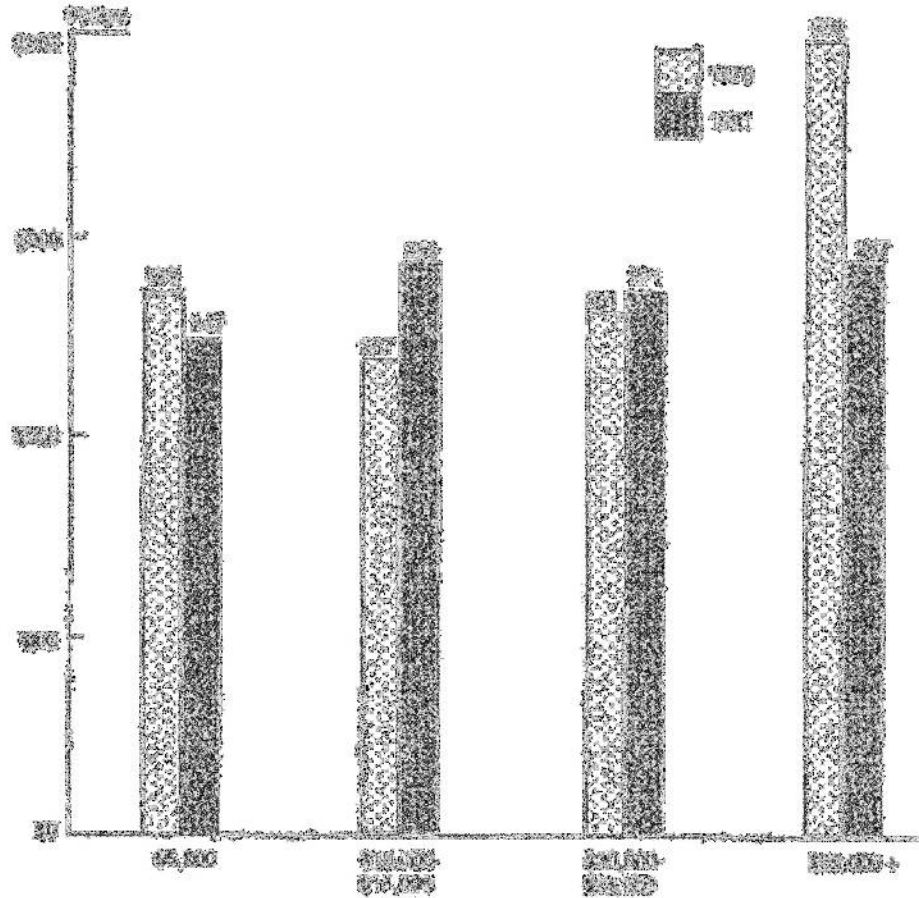
Note: The value in parenthesis is one standard error of the statistic.
Source: Tables 1, 13, 25.

Energy expenditures, particularly for space heating, varied by income, and by geographic region. In 1978, the average space heating cost for electrically heated houses 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 24 (20) percent for households in the highest income bracket (\$25,000 or more). The 9 (11) percent decrease in electricity costs was attributable to the higher income bracket (less than \$5,000) was not statistically significant. In all other income levels, the cost of heating with electricity increased from 1978 through 1981. Figure 5 shows electricity expenditures for 1978 and 1981 by selected categories of income.

Figure 5. Average Household Electricity Expenditures for Space Heating for 1978 and 1981 by Selected Level of Income (Dollars)



Source: Energy Expenditure Surveys, 1978 and 1981, by household income groups.



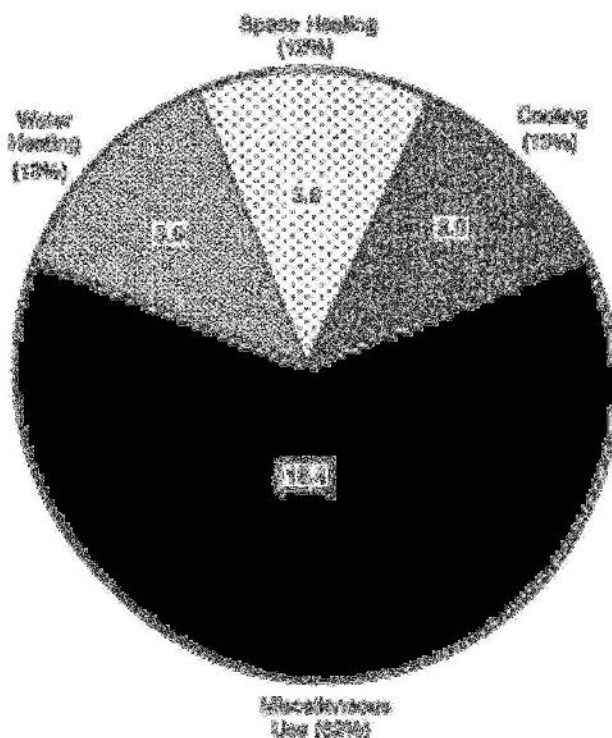
Summary of Findings (Continued)

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 13 (.7) percent of household electricity consumption was used for space heating, while water heating accounted for approximately 13 (.8) 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)

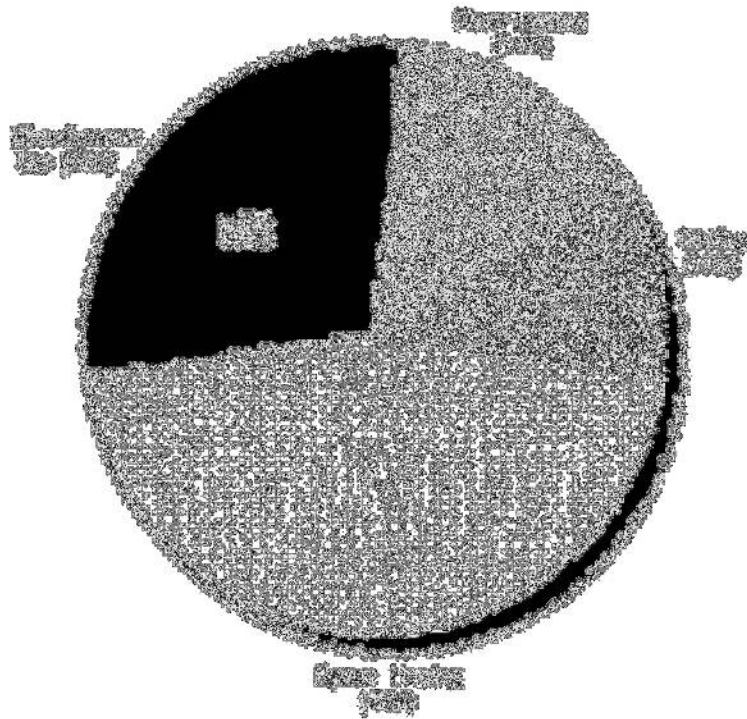


Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

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 38 (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 (.9) percent was used for water heating.

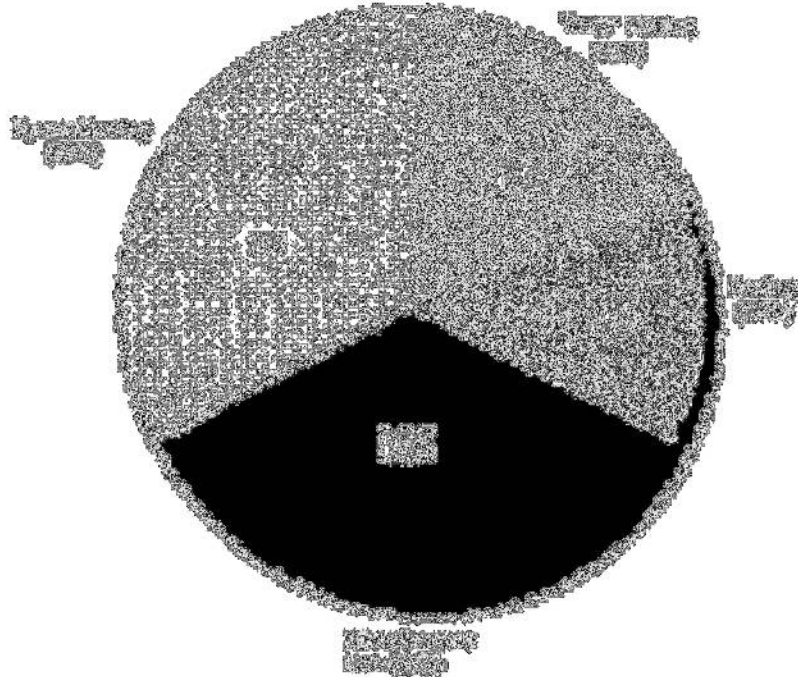
Summary of Findings (Continued)

Figure 6. Average
Annualized Percentage
Change in Real Estate
Values, 1970-1979, by
County and State



Source: U.S. Department of Housing and Urban Development, Bureau of Economic Analysis.

Figure 7. Average
Annualized Percentage
Change in Real Estate
Values, 1970-1979, by
County and State



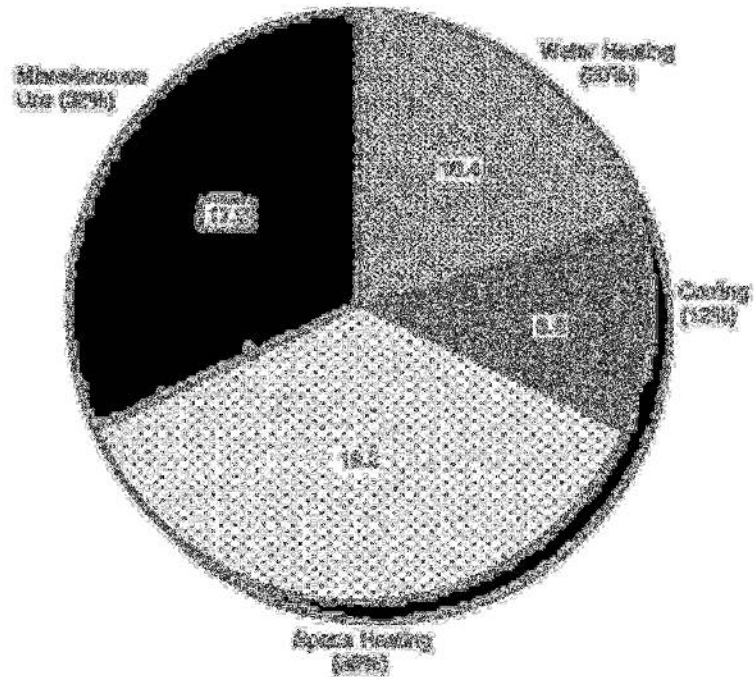
Source: U.S. Department of Housing and Urban Development, Bureau of Economic Analysis.

1. The data for the years 1970, 1971, and 1972 are based on preliminary estimates.



Summary of Findings (Continued)

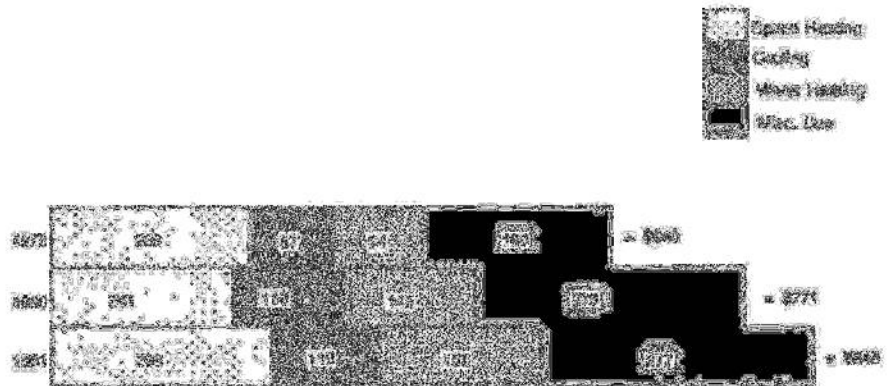
Figure 10. Average Household Electricity Consumption When Main Heating Fuel Is Electricity by End Use for 1981 (Million Btu)



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)





Summary of Findings (Continued)

Natural Gas Consumption and Expenditures

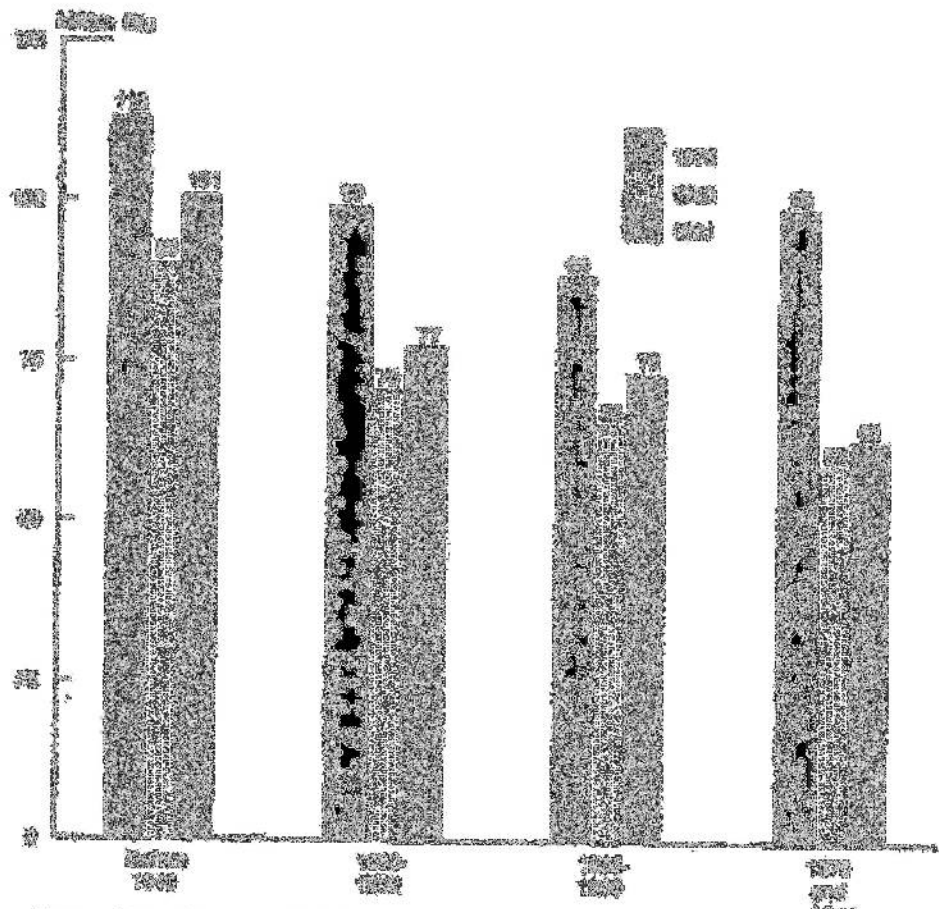
Space Heating

Using these households in the South where main heating fuel was natural gas, there was approximately a 34 (7) percent decrease in natural gas used for space heating from 1976 through 1981 compared with a 14 (6) percent decrease in the North Central region. (The 16 (7) percent decrease in the Southeast and the 11 (6) percent decrease in natural gas consumption in the South from 1976 through 1981 were not statistically significant.) However, in the Northeast between 1976 and 1981, there was a significant decline in natural gas expenditures for space heating. Households in this region experienced, on the average, a 21 (9) percent decrease in consumption.

Between 1976 and 1981 households of 1,000 to 1,500 square feet and households of 2,000 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 expenditures for space heating by the year the home was constructed. Homes constructed after 1974 and heated by natural gas used 36 (9) percent less energy in 1980 than they did in 1976; older homes (constructed before 1975) experienced a 17 (6) 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)



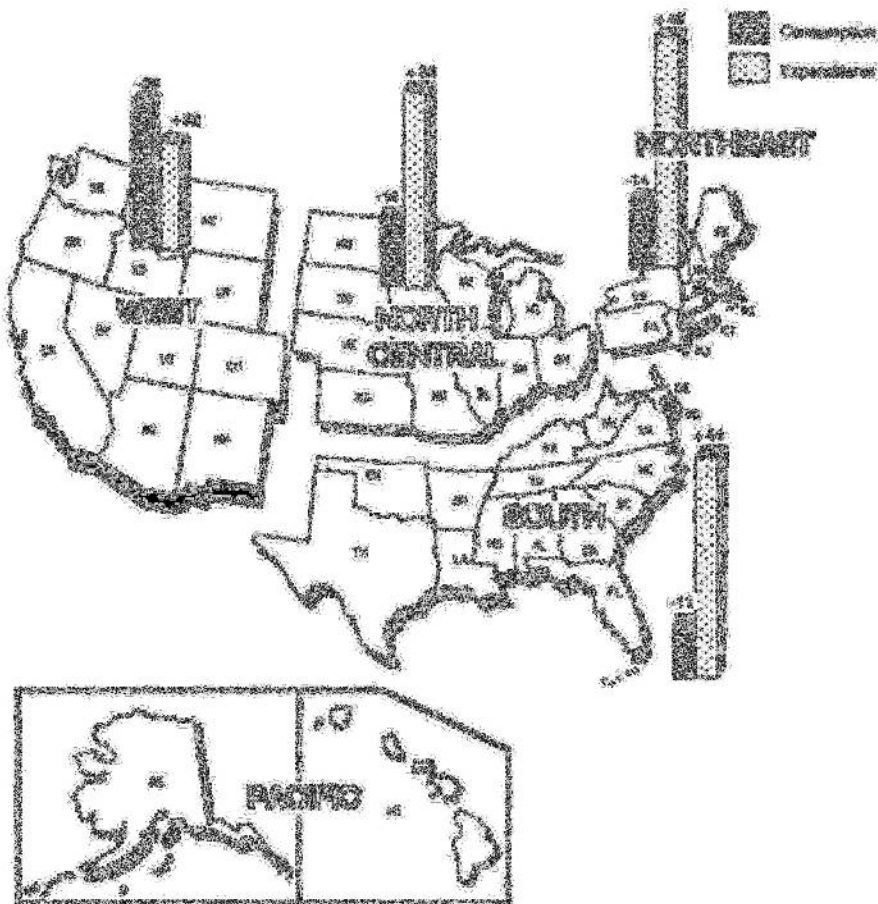
Source: Energy Information Administration, 1980, 1981, and 1982 Residential Energy Consumption Survey.



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 Expenditure for Space Heating When Main Heating Fuel is Natural Gas by Region



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

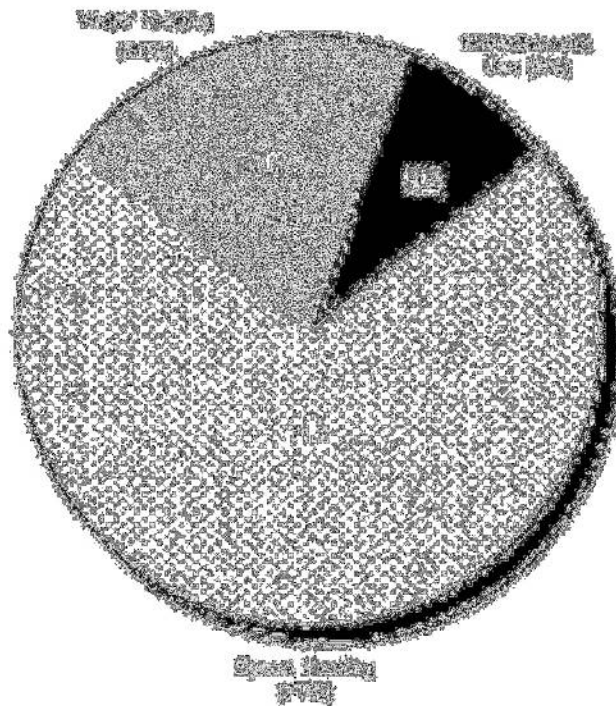
Summary of Findings (Continued)

End Use

The distribution of natural gas usage among heating, water heating, and clothes-drying was also analyzed for households that used natural gas but did not necessarily heat with it and for households that used natural gas as the only heating fuel. The similarity in distribution patterns between the two types of households was further noted. Households that used natural gas, used it for the same heating fuel.

Figures 14 through 16 show the distribution of natural gas consumption for 1974, 1981, and 1987 among three uses: water heating, clothes-drying, and heating. In 1974, households that burned natural gas used it for an average 23.9 percent of their total consumption: 1.3 percent for clothes-drying, 19.6 percent for water heating, and 2.0 percent for space heating.

Figure 14. Average Household Natural Gas Consumption for All Households That Use Natural Gas by End Use for 1974, 1981, and 1987

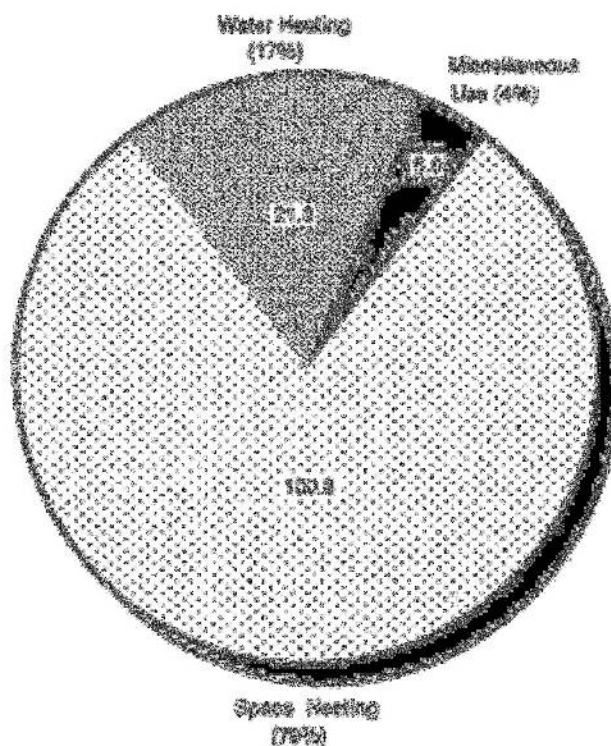


Source: Energy Information Administration, U.S. Department of Energy, Residential Energy Consumption Survey.



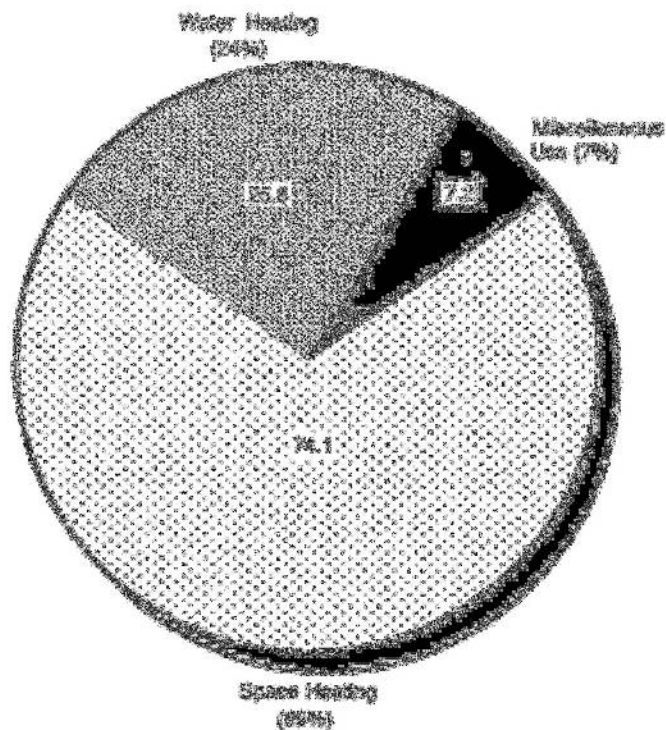
Summary of Findings (Continued)

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.

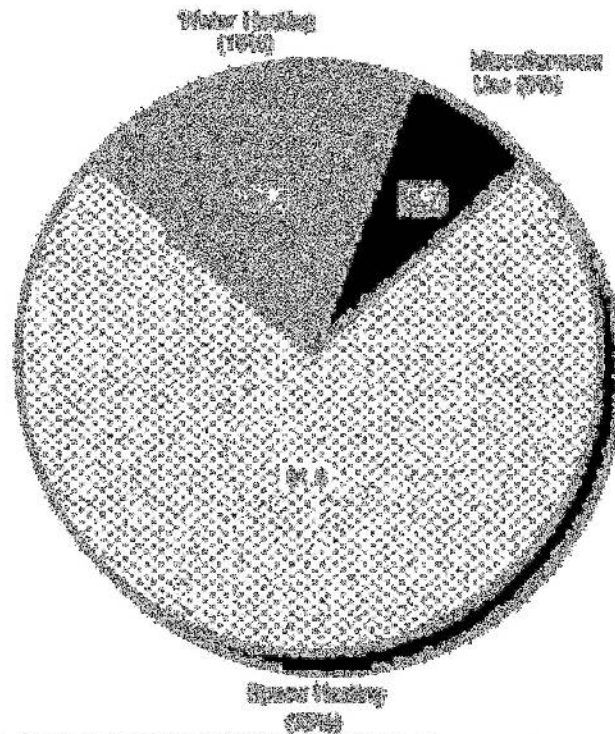
Figure 16. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1980 (Million Btu)



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

Summary of Findings (Continued)

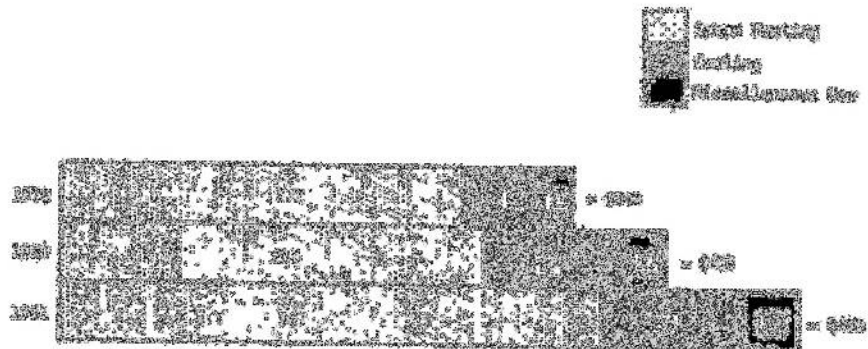
Figure 17. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1978 (Billion Btu)



Source: Energy Information Administration, 1992 Residential Energy Consumption Survey.

Figure 18. Average household expenditures for natural gas by end use when the main heating fuel is natural gas for 1978, 1988, and 1991.

Figure 12. Average Household Natural Gas Expenditures When Main Heating Fuel is Natural Gas by End Use for 1978, 1988, and 1991 (Dollars)



Summary of Findings (Continued)

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

HEATING CHARACTERISTICS	NUMBER OF HOUSEHOLDS	END USE			
		SPACE HEATING	COOKING	WATER HEATING	APPLIANCES AND LIGHTS
	KWH PER YEAR	KWH PER YEAR	KWH PER YEAR	KWH PER YEAR	KWH PER YEAR
TOTAL	10,000	10,000	10,000	10,000	10,000
HEATING SYSTEM					
Electric	1,000	10,000	10,000	10,000	10,000
Gas	1,000	10,000	10,000	10,000	10,000
Oil	1,000	10,000	10,000	10,000	10,000
Coal	1,000	10,000	10,000	10,000	10,000
Other	1,000	10,000	10,000	10,000	10,000
HEATING TYPE					
Central	1,000	10,000	10,000	10,000	10,000
Baseboard	1,000	10,000	10,000	10,000	10,000
Other	1,000	10,000	10,000	10,000	10,000
HEATING SOURCE					
Electric	1,000	10,000	10,000	10,000	10,000
Gas	1,000	10,000	10,000	10,000	10,000
Oil	1,000	10,000	10,000	10,000	10,000
Coal	1,000	10,000	10,000	10,000	10,000
Other	1,000	10,000	10,000	10,000	10,000

NOTE: THIS SUMMARY REPORT IS A SUMMARY OF THE DATA FROM THE 1978 ENERGY CONSUMPTION SURVEY. THE SURVEY IS THE LATEST AVAILABLE SOURCE OF DATA ON ENERGY CONSUMPTION IN THE UNITED STATES. THE SURVEY IS CONDUCTED BY THE ENERGY INFORMATION ADMINISTRATION. THE SURVEY IS CONDUCTED BY THE ENERGY INFORMATION ADMINISTRATION. THE SURVEY IS CONDUCTED BY THE ENERGY INFORMATION ADMINISTRATION.



Summary of Findings (Continued)

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 1978)	END USE			
		SPACE HEATING (MILLIONS kWh)	COOLING (MILLIONS kWh)	WATER HEATING (MILLIONS kWh)	RECREATION (MILLIONS kWh)
NATIONAL	121.1 (8.8)	32.6 (2.8)	7.6 (1.0)	16.8 (0.8)	26.2 (0.9)
Geographic Region					
NORTHEAST	2.4 (0.8)	22.4 (5.4)	6.3 (0.3)	7.7 (2.3)	24.0 (2.3)
MIDWEST	1.1 (0.3)	16.2 (4.2)	4.0 (1.7)	12.0 (1.8)	13.7 (0.8)
SOUTH	4.7 (0.9)	22.7 (2.1)	22.4 (1.2)	9.7 (0.7)	19.4 (1.3)
WEST	8.0 (0.6)	21.4 (1.9)	0.5 (0.0)	22.1 (1.2)	12.2 (1.3)
HEATING OVEN TYPE					
0-2,999	2.0 (0.7)	4.7 (0.9)	10.3 (1.0)	4.7 (1.3)	12.7 (0.8)
3,000-4,999	2.3 (0.5)	21.5 (1.3)	10.6 (1.5)	9.4 (1.3)	19.2 (0.9)
5,000-9,999	2.6 (0.4)	27.0 (1.0)	10.2 (1.7)	12.7 (1.2)	22.2 (0.9)
10,000-14,999	2.4 (0.4)	32.8 (1.2)	4.2 (1.4)	10.4 (0.8)	20.6 (1.2)
15,000-24,999	2.0 (0.3)	22.2 (1.4)	1.2 (1.3)	11.6 (1.1)	22.0 (0.9)
25,000-49,999	1.8 (0.4)	25.4 (1.9)	1.8 (0.0)	11.7 (1.4)	21.4 (0.8)
50,000-74,999	1.5 (0.3)	20.3 (10.5)	0.3 (0.0)	7.0 (1.1)	17.0 (0.8)
75,000 OR MORE	0	0	0	0	0
INCOME					
LESS THAN \$5,000	1.2 (0.3)	25.6 (1.9)	6.9 (0.3)	6.3 (0.7)	15.8 (1.1)
\$5,000-\$9,999	1.4 (0.3)	19.1 (1.9)	4.5 (0.7)	8.0 (0.7)	14.0 (1.2)
\$10,000-\$14,999	2.0 (0.3)	25.2 (1.7)	7.1 (1.3)	8.7 (0.8)	17.0 (1.0)
\$15,000-\$19,999	2.3 (0.3)	26.3 (1.8)	5.3 (1.0)	11.3 (0.9)	20.4 (1.0)
\$20,000-\$24,999	2.4 (0.3)	29.2 (1.7)	6.0 (1.7)	12.0 (0.8)	22.1 (1.1)
\$25,000-\$29,999	0.4 (0.1)	24.2 (0.1)	4.0 (0.1)	12.0 (0.1)	21.7 (1.1)
\$30,000 OR MORE	1.1 (0.2)	27.1 (1.0)	12.2 (0.8)	10.0 (1.0)	20.2 (0.7)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	2.0 (0.3)	22.6 (1.4)	4.3 (0.9)	6.0 (0.6)	12.0 (1.1)
TWO	4.5 (0.7)	27.2 (1.6)	5.1 (1.4)	7.8 (0.8)	16.3 (1.2)
THREE	2.1 (0.2)	22.7 (1.5)	4.0 (1.0)	11.3 (0.8)	22.5 (1.1)
FOUR	1.0 (0.2)	22.2 (1.1)	6.4 (1.4)	10.5 (0.7)	24.0 (1.1)
FIVE OR MORE	2.3 (0.2)	20.3 (1.9)	7.7 (1.4)	22.0 (1.3)	29.0 (1.1)

*0" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTAL.

VALUES IN PARENTHESES INDICATE ONE STANDARD DEVIATION. SEE APPENDIX C FOR A DETAILED DESCRIPTION.

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



Summary of Findings (Continued)

Table 2. Average Household Natural Gas Consumption When Main Heating Fuel Is Natural Gas by End Use by Selected Housing Characteristics for 1978

HEATING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (000-000)	CUBIC FEET		
		SPACE HEATING (EXCLUDING WATER HEATING)	SPACE HEATING INCLUDING WATER HEATING	WATER HEATING (EXCLUDING SPACE HEATING)
TOTAL	14.2 01.01	285.2 0 0.00	311.8 00.71	61.8 00.01
HOUSE CHARACTERISTICS				
APARTMENT HOUSES	11.5 01.00	282.2 0 0.00	297.8 00.00	5.4 00.00
OWNED SINGLE-FAMILY HOMES	2.7 00.01	288.2 0 0.00	314.0 00.71	6.6 00.01
THE 90 PERCENTILE	2.7 00.01	288.2 0 0.00	314.0 00.71	6.6 00.01
THE 10 PERCENTILE	2.7 00.01	288.2 0 0.00	314.0 00.71	6.6 00.01
HOUSE TYPE	2.5 00.01	285.2 0 0.00	311.8 00.71	6.6 00.01
OWNED	2.2 00.01	285.2 0 0.00	311.8 00.71	6.6 00.01
TYPE OF HEAT				
HEATING OIL	11.5 01.00	282.2 0 0.00	297.8 00.00	5.4 00.00
1970-1974	4.7 00.01	282.2 0 0.00	297.8 00.00	5.4 00.00
1975-1979	6.8 00.01	282.2 0 0.00	297.8 00.00	5.4 00.00
1970-1974	4.7 00.01	282.2 0 0.00	297.8 00.00	5.4 00.00
1975-1979	6.8 00.01	282.2 0 0.00	297.8 00.00	5.4 00.00
TYPE OF FLOOR	2.7 00.01	288.2 0 0.00	314.0 00.71	6.6 00.01
SPACE HEATING PACKAGE				
1-775	0.2 00.00	285.2 0 0.00	311.8 00.71	6.6 00.01
800-1000	2.2 00.01	285.2 0 0.00	311.8 00.71	6.6 00.01
1000-1500	3.9 00.01	285.2 0 0.00	311.8 00.71	6.6 00.01
1500-2000	4.2 00.01	285.2 0 0.00	311.8 00.71	6.6 00.01
2000-2500	7.8 00.01	285.2 0 0.00	311.8 00.71	6.6 00.01
2500-3000	2.2 00.01	285.2 0 0.00	311.8 00.71	6.6 00.01
3,000 OR MORE	1.2 00.00	285.2 0 0.00	311.8 00.71	6.6 00.01

*775 = DATA BEHAVIOR BEYOND OF A GIVEN NUMBER.
 SOURCE: BUREAU OF ENERGY STATISTICS, DATA FOR THE YEAR 1978.
 QUANTITIES IN PARENTHESES INDICATE THE NUMBER OF HOUSEHOLDS. THE NUMBER IN PARENTHESES IS NOT A PERCENTILE INDICATOR.
 NOTE: SPACE HEATING INCLUDING WATER HEATING, OTHER AS HEATED HOUSES ARE THE MAIN HEATING FUEL FOR THE HOUSEHOLD. FOR MORE INFORMATION, CONTACT STATISTICS DIVISION.



Summary of Findings (Continued)

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

SOCIO-DEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLIONS)	END USE		
		SPACE HEATING (BILLION BTU)	WATER HEATING (BILLION BTU)	RECREATIONAL GAS (BILLION BTU)
NATIONAL.....	91.8 (12.9)	286.8 (3.8)	81.8 (19.7)	8.9 (11.8)
Geographic Region				
NORTHEAST.....	7.8 (8.8)	187.4 (4.8)	48.1 (11.8)	3.5 (8.8)
NORTH CENTRAL.....	33.3 (12.1)	228.4 (3.8)	74.3 (12.8)	2.8 (6.8)
SOUTH.....	35.1 (12.1)	65.4 (5.8)	27.7 (11.8)	5.9 (19.8)
WEST.....	7.6 (8.8)	75.8 (8.8)	28.4 (12.1)	3.7 (12.8)
Median Family Size				
2-3, 1978.....	8.8 (9.8)	38.1 (3.8)	15.7 (12.8)	4.8 (12.8)
3, 1978-1979.....	4.8 (12.8)	54.8 (4.8)	18.8 (11.8)	4.8 (12.8)
3, 1980-3, 1999.....	8.8 (12.8)	38.8 (3.8)	18.8 (12.8)	3.8 (12.8)
4, 1978-4, 1979.....	1.8 (12.8)	75.1 (14.8)	28.7 (12.8)	3.8 (12.8)
4, 1980-4, 1979.....	4.4 (12.8)	117.8 (4.8)	28.8 (11.8)	2.8 (12.8)
4, 1980-4, 1979.....	7.8 (12.8)	128.8 (4.8)	28.8 (11.8)	4.4 (12.8)
5, 1978-5, 1979.....	8.8 (12.8)	128.8 (4.8)	28.8 (11.8)	5.1 (12.8)
5, 1980-5, 1979.....	1.8 (12.8)	248.8 (8.8)	28.8 (11.8)	3.8 (12.8)
Income				
less than \$2,000.....	4.4 (12.8)	77.7 (4.8)	18.8 (11.8)	4.8 (12.8)
\$2,000-\$3,999.....	8.8 (12.8)	98.8 (5.8)	18.8 (11.8)	5.8 (12.8)
\$4,000-\$5,999.....	7.8 (12.8)	91.8 (4.8)	18.8 (11.8)	4.8 (12.8)
\$6,000-\$7,999.....	8.8 (12.8)	108.8 (5.8)	18.8 (11.8)	4.8 (12.8)
\$8,000-\$9,999.....	8.8 (12.8)	118.8 (5.8)	18.8 (11.8)	4.8 (12.8)
\$10,000-\$19,999.....	8.8 (12.8)	127.8 (5.8)	18.8 (11.8)	4.8 (12.8)
\$20,000 or more.....	3.4 (12.8)	168.8 (12.8)	18.8 (11.8)	7.1 (12.8)
Number of Household Members				
one.....	4.8 (12.8)	77.8 (4.8)	18.8 (11.8)	3.8 (12.8)
two.....	17.8 (12.8)	98.8 (5.8)	18.8 (11.8)	4.8 (12.8)
three.....	7.8 (12.8)	128.8 (5.8)	18.8 (11.8)	4.8 (12.8)
four.....	8.8 (12.8)	118.8 (5.8)	18.8 (11.8)	4.8 (12.8)
five or more.....	3.8 (12.8)	114.8 (5.8)	18.8 (11.8)	4.8 (12.8)

NOT = DATA INTERRUPTED BECAUSE OF A LARGE VARIANCE.
 NOTE: BECAUSE OF ROUNDING, DATA MAY NOT ADD UP TO TOTALS.
 VALUES IN PARENTHESES INDICATE ONE STANDARD DEVIATION. ONE STANDARD IS FOR A DETACHED HOUSEHOLD.
 SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND USE; AND USE, ENERGY USE DIVISION, THE 1978 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

Table 6. 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

HEATING CHARACTERISTICS	NUMBER OF HOUSEHOLDS (THOUSANDS)	1978			PERCENTAGE OF HOUSEHOLDS WITH HEATING EQUIPMENT
		AVG. ANNUAL CONSUMPTION (GALLONS PER YEAR)	AVG. ANNUAL CONSUMPTION (THERMS PER YEAR)	AVG. ANNUAL CONSUMPTION (DOLLARS PER YEAR)	
TOTAL	10.4 (2.8)	288.7 (8.4)	7.4 (2.0)	2	
HOUSE CHARACTERISTICS					
Single-Dwelling Units	12.2 (2.7)	288.1 (8.4)	7.3 (1.9)	4	
Single-Family Attached	0.4 (0.1)	288.0 (8.4)	7.3 (1.9)	4	
Two or More Units	11.8 (2.6)	288.1 (8.4)	7.3 (1.9)	4	
Mobile Homes	0.2 (0.0)	288.8 (8.4)	7.4 (2.0)	5	
Multi-Family Units	0.2 (0.0)	289.6 (8.4)	7.5 (2.0)	5	
Other Housing Units	0.0 (0.0)	289.0 (8.4)	7.4 (2.0)	5	
Climate-Related Features					
Year Built					
1970-1979	7.2 (2.0)	288.1 (8.4)	7.3 (1.9)	4	
1960-1969	1.7 (0.5)	288.0 (8.4)	7.3 (1.9)	4	
1950-1959	0.4 (0.1)	288.1 (8.4)	7.3 (1.9)	4	
1940-1949	0.1 (0.0)	288.1 (8.4)	7.3 (1.9)	4	
1930-1939	0.7 (0.2)	288.1 (8.4)	7.3 (1.9)	4	
1920-1929	1.8 (0.5)	288.1 (8.4)	7.3 (1.9)	4	
1910-1919	0.4 (0.1)	288.1 (8.4)	7.3 (1.9)	4	
1900-1909	0.4 (0.1)	288.1 (8.4)	7.3 (1.9)	4	
Before 1900	0.4 (0.1)	288.1 (8.4)	7.3 (1.9)	4	
Climate Zone					
Northwest	0.2 (0.0)	288.1 (8.4)	7.3 (1.9)	4	
North	0.2 (0.0)	288.1 (8.4)	7.3 (1.9)	4	
Northeast	0.2 (0.0)	288.1 (8.4)	7.3 (1.9)	4	
East	0.2 (0.0)	288.1 (8.4)	7.3 (1.9)	4	
South	0.2 (0.0)	288.1 (8.4)	7.3 (1.9)	4	
West	0.2 (0.0)	288.1 (8.4)	7.3 (1.9)	4	

NOT A COMPLETE LISTING OF ALL HOUSES.

BASED ON DATA FROM THE 1978 ENERGY CONSUMPTION SURVEY.

CONSUMPTION IN THERMS AND DOLLARS IS BASED ON 1978 ENERGY PRICES.

NOTE: HOUSE CHARACTERISTICS AND CLIMATE FEATURES ARE NOT MUTUALLY EXCLUSIVE. THE TOTAL CONSUMPTION IS THE SUM OF ALL CONSUMPTIONS.



Summary of Findings (Continued)

Table 8. 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 1976

SOCIO-DEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (THOUSANDS)	END USE		
		SPACE HEATING (THERMS PER YEAR)	WATER HEATING (GALLONS PER YEAR)	INCALCULATED FOR TYPICAL USE
NATIONAL	14.8 (2.2)	129.7 (6.8)	8.3 (2.0)	4
GEOGRAPHIC REGION				
NORTHEAST.....	8.8 (2.6)	138.0 (6.8)	14.0 (2.3)	4
NORTH CENTRAL.....	3.1 (2.8)	145.6 (22.4)	6.3 (2.8)	4
SOUTH.....	4.8 (2.7)	78.8 (6.4)	6.2 (2.8)	4
WEST.....	8.8 (2.2)	102.4 (7.8)	6.2 (2.8)	4
HEATING DEGREE DAYS				
0-1,999.....	8.8 (2.2)	89.4 (3.4)	6.9 (2.2)	4
2,000-2,999.....	0	0	4	4
3,000-3,999.....	1.0 (2.4)	81.9 (5.1)	3.2 (2.0)	4
4,000-4,999.....	0.8 (2.8)	70.8 (5.4)	2.4 (2.4)	4
5,000-5,999.....	7.8 (2.2)	108.7 (6.4)	13.2 (2.7)	4
6,000-6,999.....	3.7 (2.8)	121.4 (7.5)	6.1 (2.4)	4
7,000-7,999.....	1.7 (2.4)	124.8 (22.4)	7.8 (2.7)	4
8,000 OR MORE.....	0.8 (2.2)	102.4 (22.2)	4.7 (2.2)	4
INCOME				
LESS THAN \$2,000.....	8.8 (2.2)	129.8 (6.8)	6.6 (2.0)	4
\$2,000-\$3,999.....	3.4 (2.4)	109.6 (9.8)	7.6 (2.5)	4
\$4,000-\$5,999.....	3.8 (2.2)	108.5 (7.8)	7.8 (2.2)	4
\$6,000-\$7,999.....	2.8 (2.2)	117.7 (12.1)	11.2 (2.5)	4
\$8,000-\$9,999.....	7.8 (2.2)	121.7 (12.9)	8.2 (2.5)	4
\$10,000-\$14,999.....	2.3 (2.2)	138.2 (8.8)	6.4 (2.6)	4
\$15,000 OR MORE.....	1.8 (2.2)	143.3 (22.4)	8.2 (2.2)	4
NUMBER OF HOUSEHOLD MEMBERS				
ONE.....	2.8 (2.4)	118.2 (7.4)	5.3 (2.2)	4
TWO.....	8.2 (2.8)	122.4 (8.2)	6.7 (2.8)	4
THREE.....	2.8 (2.2)	118.6 (8.2)	4.8 (2.2)	4
FOUR.....	3.8 (2.4)	122.9 (22.7)	14.0 (2.2)	4
FIVE OR MORE.....	2.8 (2.2)	118.5 (8.2)	12.3 (2.8)	4

* * * DATA WITHIN RANGE OF A LARGE VARIANCE.

NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.

MARKER 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 U.S. 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 1976

HOUSING CHARACTERISTICS	NUMBER OF HOUSEHOLDS INCLUDED	END USE		
		SPACE HEATING (THERMS PER YEAR)	WATER HEATING (GALLONS PER YEAR)	RECREATION USE (GALLONS PER YEAR)
UNITS	5.1 (0.2)	67.3 (4.8)	9.9 (1.2)	5.0 (0.4)
HOUSING STRUCTURE				
SINGLE-FAMILY DETACHED	1.9 (0.1)	74.3 (20.0)	11.7 (1.2)	5.2 (0.4)
SINGLE-FAMILY ATTACHED	0	0	0	0
APARTMENT HOUSE	0	0	0	0
MULTI-FAMILY	0	0	0	0
MOBILE HOME	0.7 (0.0)	58.8 (28.2)	0.2 (0.0)	0.8 (0.0)
YEAR BUILT				
1940-1949	0.8 (0.0)	65.8 (20.0)	8.4 (1.2)	0.4 (0.0)
1950-1959	0	0	0	0
1960-1969	0.4 (0.0)	71.7 (20.7)	9.7 (1.4)	0.7 (0.0)
1970-1975	0.4 (0.0)	68.3 (22.0)	10.7 (1.3)	1.0 (0.0)
1976-1979	0.3 (0.0)	50.8 (22.0)	13.9 (2.1)	0.8 (0.0)
1980 OR LATER	0.2 (0.0)	65.8 (8.2)	10.9 (1.3)	0.7 (0.0)
MONTHLY RENT RANGE				
\$0-\$99	0.4 (0.0)	64.8 (27.7)	10.7 (1.4)	0.7 (0.0)
\$100-\$199	0.8 (0.0)	60.2 (20.0)	8.4 (1.2)	0.7 (0.0)
\$200-\$299	0.4 (0.0)	64.3 (8.1)	14.3 (1.0)	0.5 (0.0)
\$300-\$399	0.3 (0.0)	64.8 (20.0)	10.8 (1.2)	0.7 (0.0)
\$400-\$499	0.4 (0.0)	64.9 (22.0)	10.8 (1.3)	0.7 (0.0)
\$500 OR MORE	0	0	0	0

NOTE: DATA WITHIN EACH CATEGORY OF A LARGE CATEGORY.
 NOTE: NUMBER OF HOUSEHOLDS. DATA NOT SHOWN IN TOTALS.
 NUMBER OF HOUSEHOLDS INCLUDED FOR EACH CATEGORY. END USES ARE IN THERMS PER YEAR.
 SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY RESOURCES AND THE U.S. ENERGY AND THE CONSUMER. THE 1976 HOUSEHOLD ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

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

SOCIO-DEMOGRAPHIC CHARACTERISTIC	NUMBER OF HOUSEHOLDS (MILLIONS)	1978 USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	HOUSEHOLD USE (MILLION BTU)
NATIONAL.....	3.1 (0.8)	67.5 (8.0)	9.9 (1.8)	3.0 (0.4)
STATISTICAL REGION				
NORTHEAST.....	0	0	0	0
MIDWEST.....	0.6 (0.0)	118.1 (23.8)	18.7 (2.0)	3.6 (0.8)
SOUTH.....	2.3 (0.5)	46.6 (8.7)	8.1 (2.1)	3.1 (0.5)
WEST.....	0.2 (0.0)	22.8 (26.5)	19.4 (9.4)	1.3 (1.2)
WEEKEND USAGE DAYS				
0-1978.....	0.2 (0.0)	19.8 (3.7)	6.4 (0.8)	2.5 (1.0)
2-31-1978.....	2.9 (0.0)	94.8 (24.8)	9.5 (1.5)	3.4 (0.7)
2-30-1978.....	0.6 (0.0)	30.3 (3.5)	7.8 (2.1)	2.7 (0.9)
4-1978.....	0	0	0	0
5-1978.....	0.5 (0.0)	44.2 (15.7)	11.8 (3.0)	3.6 (1.2)
6-1978.....	0.6 (0.0)	127.8 (19.3)	25.7 (4.8)	3.8 (1.0)
7-1978.....	0	0	0	0
8-1978 TO 1978.....	0	0	0	0
INCOME				
LESS THAN \$5,000.....	0.8 (0.1)	30.1 (7.4)	4.0 (1.0)	2.3 (0.4)
\$5,000-\$9,999.....	1.0 (0.0)	28.2 (10.0)	6.1 (1.8)	2.7 (0.7)
\$10,000-\$14,999.....	0.7 (0.1)	33.1 (4.4)	12.2 (2.1)	3.2 (0.7)
\$15,000-\$19,999.....	0.9 (0.1)	35.2 (14.0)	13.8 (2.0)	3.4 (1.1)
\$20,000-\$24,999.....	0.4 (0.0)	70.4 (26.8)	13.1 (4.8)	3.9 (1.7)
\$25,000-\$29,999.....	0	0	0	0
\$30,000 OR MORE.....	0	0	0	0
NUMBER OF HOUSEHOLD MEMBERS				
ONE.....	0.6 (0.1)	78.1 (18.7)	3.9 (1.0)	2.4 (1.0)
TWO.....	1.0 (0.0)	35.5 (8.0)	6.2 (1.8)	2.7 (1.0)
THREE.....	0.8 (0.1)	74.8 (16.4)	11.9 (3.0)	3.4 (1.0)
FOUR.....	0.6 (0.1)	41.0 (12.7)	17.9 (3.2)	3.4 (1.0)
FIVE OR MORE.....	0.3 (0.0)	20.6 (22.0)	17.0 (4.2)	2.8 (1.2)

*0 = DATA SUPPRESSED BECAUSE OF A LARGE VARIANCE.

NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.

MARKING IN PARENTHESES INDICATES ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.

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



Summary of Findings (Continued)

**Table 8. Average
Household Energy
Expenditures by End
Use by Selected
Housing
Characteristics for
1983**

Housing Characteristics	Total Expenditures	End Use			
		Water Heating	Space Heating	Water Heating	Electricity
Overall	274	100	100	100	100
Water Heating					
Electricity	100	100	100	100	100
Natural Gas	100	100	100	100	100
Oil	100	100	100	100	100
Coal	100	100	100	100	100
Propane	100	100	100	100	100
Space Heating					
Electricity	100	100	100	100	100
Natural Gas	100	100	100	100	100
Oil	100	100	100	100	100
Coal	100	100	100	100	100
Propane	100	100	100	100	100
Water Heating					
Electricity	100	100	100	100	100
Natural Gas	100	100	100	100	100
Oil	100	100	100	100	100
Coal	100	100	100	100	100
Propane	100	100	100	100	100

NOTE: END USES LISTED ARE IN PERCENT OF TOTAL. SOURCE: BUREAU OF ECONOMIC ANALYSIS, U.S. DEPARTMENT OF ENERGY. ENERGY CONSUMPTION AND EXPENDITURES, BUREAU OF ECONOMIC ANALYSIS, U.S. DEPARTMENT OF ENERGY. THIS TABLE PRESENTS AVERAGE CONSUMPTION DATA.



Summary of Findings (Continued)

Table 10. Average Household Energy Expenditures by End Use by Selected Sociodemographic Characteristics for 1976

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)	92 (3)	265 (6)
REGIONAL RESIDING					
NORTHEAST.....	607 (40)	458 (30)	18 (3)	104 (6)	226 (13)
MIDWEST.....	621 (20)	397 (17)	44 (5)	84 (3)	196 (9)
SOUTH.....	636 (15)	259 (10)	166 (7)	192 (3)	219 (5)
WEST.....	489 (24)	397 (24)	7 (1)	85 (3)	199 (11)
HEATING DEGREE DAYS					
0-1,000.....	691 (16)	111 (5)	174 (10)	103 (11)	203 (8)
1,000-2,000.....	652 (11)	168 (16)	78 (12)	76 (6)	230 (16)
2,000-3,000.....	648 (17)	221 (17)	64 (12)	45 (4)	218 (9)
3,000-4,000.....	633 (14)	131 (16)	82 (13)	64 (6)	256 (14)
4,000-5,000.....	621 (21)	167 (24)	48 (5)	65 (7)	241 (17)
5,000-6,000.....	708 (24)	375 (22)	20 (2)	47 (3)	266 (14)
6,000-7,000.....	752 (17)	388 (19)	17 (1)	74 (4)	353 (13)
6,000 OR MORE.....	715 (11)	347 (14)	29 (3)	92 (14)	347 (14)
INCOME					
LESS THAN \$4,000.....	592 (13)	254 (13)	28 (2)	50 (4)	260 (8)
\$4,000-\$6,999.....	627 (13)	295 (13)	24 (1)	74 (3)	234 (9)
\$7,000-\$9,999.....	659 (17)	288 (19)	46 (1)	68 (3)	257 (8)
\$10,000-\$14,999.....	749 (12)	328 (24)	25 (1)	105 (5)	291 (8)
\$15,000-\$24,999.....	830 (10)	536 (10)	70 (3)	102 (3)	322 (8)
\$25,000-\$34,999.....	876 (13)	361 (11)	71 (1)	113 (3)	331 (11)
\$35,000 OR MORE.....	1047 (10)	465 (16)	110 (10)	112 (7)	360 (14)
COLOUR OF HOUSEHOLD MEMBERS					
ONE.....	487 (11)	258 (11)	30 (1)	30 (1)	169 (6)
TWO.....	467 (14)	305 (9)	22 (1)	49 (2)	289 (8)
THREE.....	738 (13)	333 (11)	29 (1)	169 (3)	267 (6)
FOUR.....	663 (12)	338 (11)	24 (1)	124 (1)	277 (6)
FIVE OR MORE.....	689 (15)	332 (15)	24 (1)	168 (1)	285 (11)

*ND = 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 SURVEY, THE 1976 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

Table 11. Average Household Energy Expenditures for Space Heating by Major Heating Fuel by Statistical Reporting Communities for 1970

STATISTICAL REPORTING COMMUNITY	1970		
	PROPERTY TAXES	GENERAL GOV. SERVICES	STATE, LOCAL GOV. EMPLOYEES
TOTAL	100	100	100
RESIDENTIAL	100	100	100
Single-family detached	100	100	100
Single-family attached	100	100	100
Apartments	100	100	100
Hotels and motels	100	100	100
Other residential	100	100	100
NON-RESIDENTIAL	100	100	100
Business	100	100	100
Government	100	100	100
Institutional	100	100	100
Manufacturing	100	100	100
Retail	100	100	100
Other non-residential	100	100	100

NOTE: Data are based on a sample of 1,000 households. The sample is representative of the population of all households in the United States. The data are based on the 1970 Census of Housing and Economic Characteristics. The data are based on the 1970 Census of Housing and Economic Characteristics. The data are based on the 1970 Census of Housing and Economic Characteristics.



Summary of Findings (Continued)

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

SOCIO-DEMOGRAPHIC CHARACTERISTICS	MAIN HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
NATIONAL	269 (18)	228 (7)	478 (19)
REGIONAL REGION			
NORTHEAST	367 (27)	267 (19)	361 (24)
NORTH CENTRAL	492 (45)	318 (8)	338 (27)
SOUTH	318 (20)	160 (8)	269 (25)
WEST	278 (21)	171 (15)	297 (21)
REALTIVE HOUSEHOLD INCOME			
0-1,999	87 (10)	104 (20)	138 (21)
2,000-2,999	132 (16)	171 (12)	206 (20)
3,000-3,999	198 (18)	199 (16)	233 (20)
4,000-4,999	288 (25)	199 (17)	294 (24)
5,000-5,999	310 (26)	229 (17)	347 (25)
6,000-6,999	437 (29)	232 (18)	348 (24)
7,000-9,999	383 (24)	192 (15)	402 (25)
10,000 OR MORE	4	304 (16)	456 (17)
EDUCATION			
LESS THAN HS GRAD	278 (20)	228 (15)	428 (20)
HS GRAD-9th-11th	318 (22)	246 (13)	431 (24)
12th GRAD-14th-17th	337 (22)	207 (12)	424 (20)
18th GRAD-21st-24th	288 (26)	179 (15)	468 (24)
25th GRAD-30th-33rd	183 (27)	188 (13)	400 (23)
34th GRAD-37th-40th	184 (27)	311 (16)	348 (23)
41st GRAD OR MORE	374 (16)	188 (13)	428 (20)
BRANCH OF HOUSEHOLD RESPONSE			
ONE	229 (22)	229 (11)	434 (20)
TWO	347 (22)	246 (8)	428 (21)
THREE	308 (23)	228 (10)	430 (23)
FOUR	438 (25)	278 (11)	470 (22)
FIVE OR MORE	324 (27)	304 (14)	388 (23)

* * * DATA WITHIN RANGE OF A LOWER VARIANCE.
 NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
 DASHES IN PARALLELS INDICATE ONE STANDARD DEVIATION. SEE PARALLEL 11 FOR A DETAILED EXPLANATION.
 SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND THE USE, ENERGY AND USE DIVISION, THE INFO RESOURCES ENERGY ADMINISTRATION SURVEY.



Summary of Findings (Continued)

Table 12. Average Household Electricity Consumption When Main Heating Fuel is Electricity by Fuel Use by Selected Housing Characteristics for 1970

Housing Characteristics	NUMBER OF HOUSEHOLDS (THOUSANDS)	1970 USE			
		AVERAGE MONTHLY CONSUMPTION (KWH)	PERCENT OF TOTAL USE	AVERAGE MONTHLY CONSUMPTION (KWH)	PERCENT OF TOTAL USE
TOTAL	34.3 12.01	20.2 42.41	7.2 15.21	20.6 16.21	29.4 48.31
HOUSE TYPE					
SINGLE-FAMILY DETACHED	1.7 12.41	10.2 42.21	5.7 15.41	10.2 16.21	24.6 48.21
SINGLE-FAMILY ATTACHED	0.7 10.21	2.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
APARTMENT HOUSE	1.2 14.21	2.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
FLAT OR WALK-UP	2.7 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
HOTEL/MOTEL	1.4 12.21	2.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
NEW HOME ONLY					
1970-1974	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
1965-1969	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
1960-1964	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
1955-1959	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
1950-1954	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
1945-1949	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
1940 OR EARLIER	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
HOUSE VALUE RANGE					
\$100,000+	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
\$75,000-\$99,999	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
\$50,000-\$74,999	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
\$25,000-\$49,999	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
\$10,000-\$24,999	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
\$5,000-\$9,999	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41
\$0-\$4,999	0.2 12.41	0.2 12.41	0.2 12.41	0.2 12.41	12.2 12.41

* If a unit reported energy use in a given month, count number of units, kWh and kWh per unit. Exclude the following: multiple-unit buildings, and apartment buildings. Source: Energy Information Administration, Bureau of Economic Analysis and the U.S. Census Bureau, the 1970 Residential Energy Consumption Survey.



Summary of Findings (Continued)

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

SOCIOECONOMIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLIONS)	END USE			
		SPACE HEATING (MILLION BTU)	COOLING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
TOTAL	24.3 (2.8)	18.2 (3.5)	7.3 (2.5)	15.4 (2.4)	29.5 (2.6)
Geographic Region					
Northeast	1.6 (0.4)	24.3 (2.0)	1.7 (0.3)	12.8 (0.7)	17.9 (1.3)
North Central	5.1 (0.4)	24.2 (2.4)	4.3 (0.7)	12.3 (0.8)	29.4 (2.3)
South	7.7 (0.8)	14.9 (2.5)	11.0 (0.7)	20.2 (0.6)	28.6 (2.1)
West	9.9 (0.4)	17.6 (1.3)	8.0 (0.4)	8.2 (0.7)	22.4 (1.1)
HEATING DEGREE DAYS					
0-2,999	2.0 (1.1)	4.9 (2.0)	13.8 (1.2)	8.9 (0.5)	19.5 (1.3)
3,000-2,999	3.2 (0.3)	11.9 (1.2)	20.4 (2.2)	9.1 (0.7)	18.1 (2.0)
3,000-4,999	1.7 (0.4)	16.0 (2.4)	6.8 (0.7)	18.3 (1.2)	18.8 (1.4)
5,000-9,999	4.6 (0.3)	25.2 (1.0)	4.5 (1.0)	18.2 (0.9)	21.3 (1.2)
10,000-24,999	2.4 (0.3)	17.2 (1.0)	1.7 (0.5)	18.2 (1.7)	14.9 (0.8)
25,000-49,999	2.3 (0.2)	25.5 (0.7)	1.4 (0.0)	18.6 (1.0)	20.7 (2.0)
50,000-74,999	2.4 (0.1)	24.4 (0.5)	0.2 (0.1)	18.4 (0.9)	18.2 (2.0)
75,000 OR MORE	0.3 (0.1)	32.4 (0.7)	0.0 (0.0)	11.3 (0.5)	22.5 (0.3)
Income					
LESS THAN \$5,000	1.8 (0.3)	13.6 (2.2)	8.1 (0.3)	8.8 (0.3)	12.4 (0.9)
\$5,000-\$9,999	2.3 (0.3)	16.4 (2.0)	4.1 (0.5)	8.3 (0.5)	14.2 (0.8)
\$10,000-\$14,999	2.5 (0.2)	20.5 (1.8)	6.4 (0.5)	7.2 (0.3)	14.8 (1.1)
\$15,000-\$19,999	1.9 (0.3)	17.4 (2.2)	2.9 (1.0)	15.7 (0.6)	19.0 (0.8)
\$20,000-\$24,999	1.7 (0.2)	25.8 (2.5)	2.2 (0.2)	19.1 (0.9)	24.8 (1.1)
\$25,000-\$34,999	2.9 (0.3)	18.2 (2.1)	3.5 (1.1)	11.2 (1.1)	22.6 (1.5)
\$35,000 OR MORE	1.0 (0.1)	21.7 (2.4)	12.7 (1.2)	14.6 (1.0)	25.9 (1.0)
NUMBER OF HOUSEHOLD MEMBERS					
ONE	1.4 (0.4)	11.5 (1.4)	6.7 (0.8)	11.4 (0.9)	11.4 (0.9)
TWO	4.4 (0.3)	17.1 (1.0)	1.7 (0.3)	8.3 (0.4)	14.2 (0.8)
THREE	6.3 (0.2)	28.7 (1.4)	7.2 (0.8)	12.5 (0.7)	13.4 (1.1)
FOUR	1.5 (0.1)	20.6 (1.0)	14.4 (1.1)	10.3 (0.6)	25.2 (1.0)
FIVE OR MORE	1.7 (0.1)	28.5 (2.0)	6.4 (1.0)	16.4 (1.1)	27.4 (1.2)

*0 = DATA WITHIN RANGE OF A LARGE VARIANCE.
 NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
 SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY STATISTICS AND END USE, ENERGY END USE DIVISION, THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

Table 13. Average Household Material Use Characteristics by State and by Selected Housing Characteristics for 1998

Material	Average Household Consumption	1998 Use		
		Single-Family Detached	Single-Family Attached	Multi-Family
WOOD				
Flooring	11.5	12.5	10.5	10.5
Siding	1.5	1.5	1.5	1.5
Trim	0.5	0.5	0.5	0.5
Roofing	0.5	0.5	0.5	0.5
Decking	0.5	0.5	0.5	0.5
Other	0.5	0.5	0.5	0.5
CEMENT				
Foundation	0.5	0.5	0.5	0.5
Driveway	0.5	0.5	0.5	0.5
Walkway	0.5	0.5	0.5	0.5
Other	0.5	0.5	0.5	0.5
GLASS				
Windows	0.5	0.5	0.5	0.5
Doors	0.5	0.5	0.5	0.5
Other	0.5	0.5	0.5	0.5
BRICK				
Siding	0.5	0.5	0.5	0.5
Other	0.5	0.5	0.5	0.5
ROOFING				
Asphalt	0.5	0.5	0.5	0.5
Metal	0.5	0.5	0.5	0.5
Other	0.5	0.5	0.5	0.5

Notes: 1. All quantities are in thousands of square feet. 2. Single-family detached includes single-family detached houses and single-family detached townhouses. 3. Single-family attached includes single-family attached townhouses and single-family attached houses. 4. Multi-family includes multi-family houses and multi-family apartment buildings. 5. All quantities are in thousands of square feet. 6. All quantities are in thousands of square feet. 7. All quantities are in thousands of square feet. 8. All quantities are in thousands of square feet. 9. All quantities are in thousands of square feet. 10. All quantities are in thousands of square feet.



Summary of Findings (Continued)

Table 19. 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)	HOUSEHOLDERS USE (MILLION BTU)
NATIONAL.....	44.6 (1.8)	74.1 (1.5)	25.8 (0.8)	7.2 (0.4)
GEOGRAPHIC REGION				
NORTHEAST.....	8.8 (0.9)	94.9 (2.0)	25.1 (0.7)	6.6 (0.3)
NORTH CENTRAL.....	8.8 (0.6)	79.2 (2.2)	27.8 (0.6)	7.0 (0.4)
SOUTH.....	12.8 (0.7)	67.8 (2.0)	25.2 (1.3)	7.6 (0.7)
WEST.....	12.2 (0.8)	65.8 (1.9)	25.2 (1.0)	6.8 (0.9)
HEATING DEGREE DAYS				
0-1,000.....	6.0 (1.3)	27.2 (1.3)	25.6 (0.6)	3.8 (1.2)
1,000-2,000.....	8.0 (1.2)	40.4 (1.2)	25.7 (1.2)	6.0 (1.1)
2,000-3,000.....	5.0 (0.7)	30.8 (1.1)	24.6 (1.2)	4.2 (1.0)
3,000-4,000.....	2.3 (0.7)	22.3 (1.2)	22.6 (1.2)	2.3 (0.8)
4,000-5,000.....	0.3 (0.2)	15.4 (0.4)	16.5 (1.2)	7.0 (0.7)
5,000-6,000.....	20.1 (1.0)	100.2 (1.2)	27.3 (1.0)	7.0 (0.4)
7,000-7,999.....	0.6 (0.3)	104.2 (1.4)	26.9 (1.0)	6.7 (0.6)
8,000 OR MORE.....	3.8 (0.4)	107.1 (1.7)	22.2 (1.1)	5.4 (1.4)
INCOME				
LESS THAN \$5,000.....	5.5 (0.5)	60.8 (1.2)	25.0 (1.1)	5.9 (0.8)
\$5,000-\$9,999.....	7.3 (0.4)	62.7 (1.2)	23.1 (0.8)	6.0 (0.9)
\$10,000-\$14,999.....	6.7 (0.8)	60.4 (1.1)	23.5 (1.0)	6.7 (1.0)
\$15,000-\$19,999.....	6.6 (0.4)	70.3 (1.2)	25.8 (1.0)	6.0 (1.0)
\$20,000-\$24,999.....	4.0 (0.4)	78.2 (1.2)	29.4 (1.3)	7.3 (1.5)
\$25,000-\$34,999.....	4.7 (0.4)	74.2 (1.2)	28.2 (1.0)	7.9 (1.2)
\$35,000 OR MORE.....	6.4 (0.4)	87.9 (1.4)	29.2 (1.1)	9.2 (1.2)
NUMBER OF HOUSEHOLD MEMBERS				
ONE.....	8.2 (0.4)	40.6 (1.0)	34.4 (1.0)	6.4 (1.3)
TWO.....	24.4 (0.4)	72.8 (1.0)	23.2 (0.9)	6.8 (1.2)
THREE.....	6.3 (0.5)	74.2 (1.0)	26.0 (1.0)	6.2 (1.0)
FOUR.....	7.7 (0.5)	82.2 (1.0)	21.0 (0.9)	7.6 (1.4)
FIVE OR MORE.....	6.9 (0.4)	69.0 (1.0)	23.9 (1.2)	6.6 (1.0)

*0 = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
 NOTE: BECAUSE OF ROUNDING, DATA MAY NOT ADD TO TOTALS.
 FIGURES IN PARENTHESES INDICATE THE STANDARD DEVIATION. SEE APPENDIX D FOR A DETAILED EXPLANATION.
 SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY AND MINES 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 THOUSANDS	Btu per year		
		SPACE HEATING (EXCLUDING STOVE)	WATER HEATING (EXCLUDING STOVE)	HOUSEHOLD USE (EXCLUDING STOVE)
NATIONAL	102.4 (0.2)	36.2 (0.2)	18.4 (0.2)	0
HOUSING STRUCTURE				
SINGLE-FAMILY DETACHED	75.2 (0.2)	28.5 (0.2)	11.7 (0.2)	0
SINGLE-FAMILY ATTACHED	2.7 (0.2)	2.8 (0.2)	2.2 (0.2)	0
TWO TO FOUR UNITS	1.6 (0.2)	2.0 (0.2)	2.7 (0.2)	0
FIVE OR MORE UNITS	24.9 (0.2)	12.9 (0.2)	17.8 (0.2)	0
TYPE OF FUEL				
HEATING OIL	61.2 (0.2)	102.5 (0.2)	20.2 (0.2)	0
KEROSENE	1.8 (0.2)	2.2 (0.2)	17.7 (0.2)	0
OTHER	3.9 (0.2)	2.0 (0.2)	24.5 (0.2)	0
TYPE OF HEATING SYSTEM				
STOVE	1.2 (0.2)	2.2 (0.2)	22.5 (0.2)	0
WATER HEATER	1.7 (0.2)	2.2 (0.2)	14.7 (0.2)	0
WATER HEATER AND STOVE	1.2 (0.2)	2.2 (0.2)	11.4 (0.2)	0
WATER HEATER AND STOVE	0.5 (0.2)	2.2 (0.2)	18.4 (0.2)	0
HEATING SYSTEM EFFICIENCY				
80-90%	1.1 (0.2)	2.2 (0.2)	22.5 (0.2)	0
70-80%	2.2 (0.2)	2.2 (0.2)	18.5 (0.2)	0
60-70%	1.7 (0.2)	2.2 (0.2)	19.5 (0.2)	0
50-60%	1.2 (0.2)	2.2 (0.2)	22.5 (0.2)	0
40-50%	1.2 (0.2)	2.2 (0.2)	22.5 (0.2)	0
30-40%	1.2 (0.2)	2.2 (0.2)	22.5 (0.2)	0
20-30%	1.2 (0.2)	2.2 (0.2)	22.5 (0.2)	0
10-20%	1.2 (0.2)	2.2 (0.2)	22.5 (0.2)	0
Below 10%	1.2 (0.2)	2.2 (0.2)	22.5 (0.2)	0

*0 = DATA SUPPRESSED BECAUSE OF A LARGE VARIANCE.
 **0 = BECAUSE OF ROUNDING, DATA MAY NOT ADD TO TOTAL.
 SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY STATISTICS AND ANALYSIS, ENERGY USE IN THE RESIDENTIAL SECTOR: THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

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 1960

SOCIO-DEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (THOUSAND)	END USE		
		SPACE HEATING (GALLONS PER YEAR)	WATER HEATING (GALLONS PER YEAR)	MISCELLANEOUS USE (GALLONS PER YEAR)
NATIONAL.....	13.4 (8.7)	76.6 (8.3)	16.9 (1.2)	0
GEOGRAPHIC REGION				
NORTHEAST.....	6.5 (9.3)	104.6 (8.7)	23.4 (1.5)	0
MIDW. CENTRAL.....	3.8 (8.3)	68.6 (8.3)	3.3 (2.3)	0
SOUTH.....	3.3 (8.4)	76.5 (8.3)	6.9 (2.3)	0
WEST.....	2.8 (8.1)	65.8 (8.3)	3.2 (2.7)	0
HEATING DEGREE DAYS				
0-1,999.....	0	0	0	0
2,000-4,999.....	0	0	0	0
5,000-9,999.....	1.8 (8.3)	75.3 (8.6)	1.8 (2.3)	0
10,000-14,999.....	2.2 (8.4)	69.6 (8.7)	18.4 (8.3)	0
15,000-19,999.....	4.4 (8.7)	96.7 (8.3)	22.8 (8.3)	0
20,000-24,999.....	2.7 (8.3)	105.9 (8.3)	16.0 (8.3)	0
25,000-29,999.....	1.4 (8.3)	104.4 (8.3)	12.7 (8.3)	0
30,000 OR MORE.....	7.9 (8.3)	100.6 (8.3)	7.8 (8.3)	0
INCOME				
LESS THAN \$2,000.....	2.8 (8.3)	74.6 (8.3)	18.4 (8.3)	0
\$2,000-\$4,999.....	2.8 (8.3)	76.3 (8.3)	22.0 (8.3)	0
\$5,000-\$9,999.....	2.4 (8.3)	85.8 (8.3)	15.4 (8.3)	0
\$10,000-\$14,999.....	1.8 (8.3)	88.3 (8.3)	14.2 (8.3)	0
\$15,000-\$19,999.....	2.4 (8.3)	88.7 (8.3)	11.8 (8.3)	0
\$20,000-\$24,999.....	2.0 (8.3)	88.7 (8.3)	16.7 (8.3)	0
\$25,000 OR MORE.....	1.4 (8.3)	110.8 (8.3)	22.3 (8.3)	0
NUMBER OF HOUSEHOLD MEMBERS				
ONE.....	2.7 (8.3)	74.1 (8.3)	19.7 (8.3)	0
TWO.....	4.6 (8.3)	95.7 (8.3)	16.5 (8.3)	0
THREE.....	2.3 (8.3)	97.4 (8.3)	16.3 (8.3)	0
FOUR.....	2.2 (8.3)	71.7 (8.3)	18.0 (8.3)	0
FIVE OR MORE.....	1.6 (8.3)	109.1 (8.3)	19.5 (8.3)	0

*0 = DATA BEING SO SCARCELY OF A LARGE VARIANCE.

NOTE: BECAUSE OF ROUNDING, DATA MAY NOT ADD TO TOTALS.

VALUES 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 1960 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

Table 10. Average
Household LFG
Consumption Rates
From Heating Fuel in
LFG by Fuel Use by
District Heating
Consumption for
1980

FUEL TYPE	TOTAL CONSUMPTION	PER 100		
		HEATING FUEL	HEATING FUEL	HEATING FUEL
RESIDENTIAL	100 000	100 000	100 000	100 000
INDUSTRIAL	100 000	100 000	100 000	100 000
COMMERCIAL	100 000	100 000	100 000	100 000
TRANSPORTATION	100 000	100 000	100 000	100 000
UNDEVELOPED LAND	100 000	100 000	100 000	100 000
OTHER	100 000	100 000	100 000	100 000

NOTE: 1. ALL VALUES ARE IN THERMS PER YEAR.
 2. VALUES ARE BASED ON THE 1980 ENERGY CONSUMPTION SURVEY.
 3. VALUES ARE BASED ON THE 1980 ENERGY CONSUMPTION SURVEY.
 4. VALUES ARE BASED ON THE 1980 ENERGY CONSUMPTION SURVEY.
 5. VALUES ARE BASED ON THE 1980 ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

Table 20. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Socio-Demographic Characteristics for 1982

SOCIO-DEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLIONS)	DHS USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	HOUSEHOLD USE (MILLION BTU)
NATIONAL	2.7 (9.4)	18.7 (8.4)	18.8 (8.2)	8.5 (8.0)
REGIONAL REGION				
NORTHEAST.....	0.2 (8.2)	75.4 (26.2)	9.2 (8.2)	2.0 (8.4)
MIDWEST.....	1.2 (8.2)	49.5 (8.2)	26.4 (8.2)	6.2 (8.2)
SOUTH.....	0.8 (8.2)	42.7 (8.2)	6.2 (8.2)	6.7 (8.2)
WEST.....	0.5 (8.2)	27.7 (8.2)	7.7 (8.2)	9.4 (8.2)
HOUSEHOLD TYPE				
0-1,999.....	0.5 (8.2)	22.5 (8.2)	7.2 (8.2)	10.0 (8.2)
2,000-4,999.....	0.4 (8.2)	25.7 (8.2)	17.2 (8.2)	6.2 (8.2)
5,000-9,999.....	0.3 (8.2)	21.9 (8.2)	7.7 (8.2)	2.7 (8.2)
10,000-14,999.....	0.4 (8.2)	27.6 (8.2)	20.1 (8.2)	2.6 (8.2)
15,000-19,999.....	0.4 (8.2)	28.7 (8.2)	18.5 (8.2)	4.7 (8.2)
20,000-24,999.....	0.3 (8.2)	72.2 (8.2)	18.0 (8.2)	4.0 (8.2)
25,000-29,999.....	0.4 (8.2)	22.2 (8.2)	11.9 (8.2)	2.0 (8.2)
30,000 OR MORE.....	0	0	0	0
HOUSE				
LESS THAN 20,000.....	0.9 (8.2)	24.0 (8.2)	10.9 (8.2)	4.7 (8.2)
20,000-49,999.....	0.9 (8.2)	23.0 (8.2)	8.2 (8.2)	2.8 (8.2)
50,000-74,999.....	0.9 (8.2)	29.5 (8.2)	12.9 (8.2)	4.8 (8.2)
75,000-99,999.....	0.4 (8.2)	21.2 (8.2)	6.4 (8.2)	2.7 (8.2)
100,000-124,999.....	0.3 (8.2)	71.6 (8.2)	14.1 (8.2)	4.7 (8.2)
125,000-149,999.....	0.3 (8.2)	26.6 (8.2)	14.6 (8.2)	7.2 (8.2)
150,000 OR MORE.....	0.2 (8.2)	27.2 (8.2)	14.7 (8.2)	4.3 (8.2)
NUMBER OF HOUSEHOLD MEMBERS				
ONE.....	0.4 (8.2)	20.0 (8.2)	6.2 (8.2)	2.8 (8.2)
TWO.....	1.2 (8.2)	22.2 (8.2)	6.2 (8.2)	4.9 (8.2)
THREE.....	0.8 (8.2)	24.7 (8.2)	9.7 (8.2)	2.2 (8.2)
FOUR.....	0.2 (8.2)	22.2 (8.2)	15.0 (8.2)	4.5 (8.2)
FIVE OR MORE.....	0.3 (8.2)	21.7 (8.2)	20.2 (8.2)	12.1 (8.2)

* * * DATA SUPPLEMENTED BECAUSE OF A LARGE VARIANCE.
 NOTE: BECAUSE OF ROUNDING, DATA MAY NOT ADD UP TO TOTALS.
 SOURCE: INDEPENDENT ESTIMATES FOR SPACE HEATING. SEE APPENDIX B FOR A DETAILED EXPLANATION.
 SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY AND MINERALS, THE 1982 INDUSTRIAL ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

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

HOUSING CHARACTERISTICS	TOTAL EXPENDITURES (DOLLARS)	BY END USE			
		SPACE HEATING (DOLLARS)	CHEMICAL (DOLLARS)	WATER HEATING (DOLLARS)	APPLIANCES AND OTHER (DOLLARS)
TOTAL	208 730	105 1 30	45 1 30	30 4 31	28 1 39
HOUSE TYPE					
Single-Family Detached	214 234	107 1 34	48 1 30	30 4 31	28 1 39
Single-Family Attached	188 1 77	95 1 33	42 1 30	28 1 31	26 1 36
Two to Four Units	200 1 24	100 1 30	45 1 30	29 1 31	27 1 33
Five or More Units	194 1 33	97 1 31	43 1 30	29 1 31	27 1 31
Mobile Home	188 1 77	95 1 33	42 1 30	28 1 31	26 1 36
AGE GROUP					
1970-1974	201 1 34	100 1 30	45 1 30	30 4 31	28 1 39
1960-1969	198 1 77	98 1 31	44 1 30	29 1 31	27 1 35
1950-1959	200 1 24	100 1 30	45 1 30	29 1 31	27 1 33
1940-1949	195 1 33	98 1 31	43 1 30	29 1 31	27 1 31
1930-1939	190 1 24	95 1 33	42 1 30	28 1 31	26 1 36
1920-1929	185 1 33	92 1 33	41 1 30	28 1 31	26 1 36
1910-1919	180 1 24	89 1 33	40 1 30	27 1 31	25 1 36
1900 or earlier	175 1 33	86 1 33	39 1 30	27 1 31	25 1 36
HEATING SYSTEM					
Gas (Natural Gas or Propane)	200 1 24	100 1 30	45 1 30	29 1 31	27 1 33
Oil	195 1 33	98 1 31	44 1 30	29 1 31	27 1 31
Electric	190 1 24	95 1 33	43 1 30	28 1 31	26 1 36
Coal	185 1 33	92 1 33	42 1 30	27 1 31	25 1 36
Wood	180 1 24	89 1 33	41 1 30	27 1 31	25 1 36
Other	175 1 33	86 1 33	40 1 30	26 1 31	24 1 36

* "0" SIGN INDICATES NUMBER IS A LARGE NUMBER.
 DOLLAR FIGURES IN PARENTS; SOME MAY NOT ADD TO TOTAL.
 HOUSES IN MULTIFAMILY BUILDINGS ARE INCLUDED SEPARATELY. SEE APPENDIX B FOR A DETAILED BREAKDOWN.
 SOURCE: ENERGY INFORMATION ADMINISTRATION. EFFECTS OF ENERGY SHORTAGE AND THE 1980 ENERGY TAX ACT CONSIDERED.
 THE 1980 STATISTICAL ENERGY BULLETIN REPORT.



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)	NEEDLE AND/OR USE (DOLLARS)
NATIONAL.....	704 (24)	328 (9)	68 (3)	140 (3)	208 (4)
GEOGRAPHIC REGION					
NORTHEAST.....	1249 (24)	627 (24)	22 (4)	149 (3)	450 (8)
NORTH CENTRAL.....	419 (18)	308 (12)	35 (5)	124 (3)	156 (4)
SOUTH.....	276 (24)	251 (24)	122 (8)	144 (4)	136 (12)
WEST.....	603 (24)	170 (4)	34 (3)	189 (4)	290 (14)
HEATING DEGREE DAYS					
0-1,199.....	741 (24)	737 (24)	124 (24)	148 (3)	270 (14)
2,000-2,999.....	717 (24)	144 (9)	144 (12)	113 (3)	217 (14)
3,000-3,999.....	721 (25)	222 (17)	23 (7)	123 (3)	253 (12)
4,000-4,999.....	624 (23)	216 (12)	27 (12)	125 (12)	256 (12)
5,000-5,999.....	1079 (24)	429 (12)	50 (3)	144 (7)	446 (12)
6,000-6,999.....	478 (24)	427 (12)	14 (4)	148 (4)	270 (12)
7,000-7,999.....	281 (12)	216 (12)	4 (2)	148 (4)	201 (12)
8,000 OR MORE.....	277 (12)	42 (12)	4 (2)	148 (12)	270 (12)
INCOME					
LESS THAN \$5,000.....	723 (24)	347 (12)	24 (3)	124 (4)	226 (9)
\$5,000-10,000.....	602 (12)	242 (12)	26 (4)	122 (4)	212 (8)
\$10,000-15,000.....	377 (12)	227 (12)	42 (4)	125 (4)	163 (9)
\$15,000-20,000.....	400 (12)	228 (12)	21 (3)	125 (3)	154 (8)
\$20,000-25,000.....	520 (12)	247 (12)	72 (4)	124 (4)	277 (9)
\$25,000-30,000.....	1000 (12)	212 (12)	21 (4)	124 (4)	661 (12)
\$30,000 OR MORE.....	2240 (12)	424 (12)	122 (3)	124 (7)	470 (12)
NUMBER OF HOUSEHOLD MEMBERS					
ONE.....	604 (12)	222 (12)	42 (3)	44 (4)	296 (4)
TWO.....	629 (12)	224 (12)	42 (4)	122 (3)	241 (8)
THREE.....	401 (12)	222 (12)	72 (3)	122 (3)	225 (8)
FOUR.....	1023 (12)	222 (12)	72 (3)	122 (3)	627 (12)
FIVE OR MORE.....	1271 (12)	222 (12)	12 (2)	222 (4)	427 (12)

* = DATA SUPPRESSED BECAUSE OF A LARGE VARIANCE.

NOTE: BECAUSE OF ROUNDING, DATA MAY NOT ADD UP TO TOTALS.

NUMBERS 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 USE AND EXPENDITURES: THE 1980 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

Table 21. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Housing Characteristics for 1980

HEATING CHARACTERISTICS	AVERAGE ANNUAL PER HOUSEHOLD		
	ELECTRICITY DOLLARS	NATURAL GAS DOLLARS	FUEL OIL OR DISTRICT HEATING DOLLARS
HOUSING TYPE			
APARTMENT	\$55 \$284	\$70 \$ 84	\$60 \$ 371
SINGLE-FAMILY ATTACHED	\$52 \$280	\$70 \$280	\$52 \$ 280
SINGLE-FAMILY DETACHED	\$49 \$258	\$66 \$260	\$50 \$ 260
ROW OR ROW-UNIT	\$52 \$280	\$70 \$280	\$52 \$ 280
MOBILE HOME	\$24 \$121	\$26 \$124	\$26 \$ 124
ROOM HEATED			
APARTMENT	\$55 \$284	\$70 \$ 84	\$60 \$ 371
1-2 ROOMS	\$52 \$280	\$70 \$280	\$52 \$ 280
3-4 ROOMS	\$49 \$258	\$66 \$260	\$50 \$ 260
5-6 ROOMS	\$49 \$258	\$66 \$260	\$50 \$ 260
7-9 ROOMS	\$49 \$258	\$66 \$260	\$50 \$ 260
10 OR MORE ROOMS	\$49 \$258	\$66 \$260	\$50 \$ 260
HEATING EQUIPMENT			
1-100	\$52 \$280	\$70 \$280	\$52 \$ 280
101-200	\$52 \$280	\$70 \$280	\$52 \$ 280
201-300	\$52 \$280	\$70 \$280	\$52 \$ 280
301-400	\$52 \$280	\$70 \$280	\$52 \$ 280
401-500	\$52 \$280	\$70 \$280	\$52 \$ 280
501-600	\$52 \$280	\$70 \$280	\$52 \$ 280
601-700	\$52 \$280	\$70 \$280	\$52 \$ 280
701-800	\$52 \$280	\$70 \$280	\$52 \$ 280
801-900	\$52 \$280	\$70 \$280	\$52 \$ 280
901-1000	\$52 \$280	\$70 \$280	\$52 \$ 280

* \$0 = DATA AVAILABLE BECAUSE OF A LARGE VARIANCE.
 ** \$0 = MISSING OR UNKNOWN; DATA NOT SET FOR TO BE \$0.
 SOURCE: U.S. DEPARTMENT OF ENERGY, ENERGY CONSUMPTION AND EXPENDITURES SURVEY, 1980. FOR A DETAILED DESCRIPTION, SEE APPENDIX B OF THE SURVEY REPORT.
 SOURCE: U.S. DEPARTMENT OF ENERGY, ENERGY CONSUMPTION AND EXPENDITURES SURVEY, 1980. FOR A DETAILED DESCRIPTION, SEE APPENDIX B OF THE SURVEY REPORT.



Summary of Findings (Continued)

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

SOCIO-DEMOGRAPHIC CHARACTERISTICS	MAIN HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
TOTAL.....	242 (84)	208 (81)	175 (80)
Geographic Region			
NORTHEAST.....	424 (84)	426 (84)	527 (84)
MIDWEST.....	252 (82)	275 (82)	306 (82)
SOUTH.....	210 (82)	246 (82)	282 (82)
WEST.....	180 (81)	242 (81)	296 (81)
HEATING DEGREE DAYS			
0-3,999.....	86 (34)	202 (61)	0
4,000-5,999.....	204 (35)	255 (61)	0
6,000-7,999.....	265 (41)	322 (62)	596 (62)
8,000-9,999.....	370 (32)	402 (62)	642 (64)
10,000-11,999.....	484 (30)	466 (62)	732 (62)
12,000-13,999.....	552 (28)	522 (62)	842 (62)
14,000-15,999.....	672 (25)	622 (62)	972 (62)
16,000 OR MORE.....	872 (22)	772 (62)	1,072 (62)
INCOME			
LESS THAN \$2,000.....	222 (22)	221 (22)	262 (22)
\$2,000-\$3,999.....	222 (27)	221 (27)	262 (27)
\$4,000-\$5,999.....	222 (27)	271 (27)	312 (27)
\$6,000-\$7,999.....	222 (27)	262 (27)	362 (27)
\$8,000-\$9,999.....	222 (27)	262 (27)	372 (27)
\$10,000-\$14,999.....	222 (27)	262 (27)	372 (27)
\$15,000 OR MORE.....	222 (27)	262 (27)	372 (27)
NUMBER OF HOUSEHOLD MEMBERS			
ONE.....	222 (22)	222 (22)	262 (22)
TWO.....	222 (22)	272 (22)	312 (22)
THREE.....	222 (22)	272 (22)	312 (22)
FOUR.....	222 (22)	272 (22)	312 (22)
FIVE OR MORE.....	222 (22)	272 (22)	312 (22)

*0" A DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: NUMBER OF HOUSEHOLDS; DATA MAY NOT ADD TO TOTALS.

VALUES IN PARENTHESES INDICATED ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DESCRIPTION.

SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY RESOURCES AND USE AND USE, ENERGY AND USE DIVISION, THE 1980 DOMESTIC ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

Table 25. Average Annualized Electricity Consumption When Motor Heating Fuel is Electrically by Fuel Use by Industrial Division Characteristics for 1974

Division	Electricity Use (kWh/yr)	Annualized Electricity Consumption (kWh/yr)			
		Electricity Use (kWh/yr)	Electricity Use (kWh/yr)	Electricity Use (kWh/yr)	Electricity Use (kWh/yr)
Chemical and Allied Products	1.2	1.2	1.2	1.2	1.2
Food and Kindred Products	1.2	1.2	1.2	1.2	1.2
Textile, Apparel, and Furnishings	1.2	1.2	1.2	1.2	1.2
Nonferrous Metal Industries	1.2	1.2	1.2	1.2	1.2
Other	1.2	1.2	1.2	1.2	1.2

Notes: 1. The data are based on the 1974 Survey of Industrial Energy Consumption. 2. The data are based on the 1974 Survey of Industrial Energy Consumption. 3. The data are based on the 1974 Survey of Industrial Energy Consumption.



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 (THOUSANDS)	END USE			
		SPACE HEATING (KWH/100 SQ FT)	COOLING (KWH/100 SQ FT)	WATER HEATING (KWH/100 SQ FT)	MISCELLANEOUS (KWH/100 SQ FT)
NATIONAL	14.8 (11.1)	29.8 (11.3)	6.6 (10.6)	18.4 (18.6)	17.2 (18.5)
REGIONAL REGION					
NORTHEAST	3.5 (10.2)	31.5 (11.0)	1.1 (10.5)	18.2 (18.7)	18.0 (18.1)
NORTH CENTRAL	1.6 (10.1)	31.2 (11.2)	2.9 (10.3)	9.0 (18.8)	18.9 (18.3)
SOUTH	7.7 (10.7)	17.3 (11.4)	13.8 (10.8)	18.5 (18.0)	18.2 (18.2)
WEST	2.0 (10.2)	21.5 (11.5)	11.3 (11.7)	18.6 (18.4)	18.2 (18.9)
HEATING DEGREE DAYS					
0-1,999	1.5 (10.0)	4.1 (11.0)	15.2 (11.1)	4.2 (11.1)	16.7 (18.9)
2,000-3,999	3.7 (10.3)	11.7 (11.4)	7.8 (11.0)	9.3 (11.1)	16.1 (18.1)
4,000-5,999	8.1 (10.4)	20.3 (11.9)	6.8 (11.3)	12.0 (11.4)	18.0 (18.0)
6,000-7,999	8.8 (10.2)	22.9 (11.2)	5.8 (11.2)	12.1 (10.7)	18.2 (18.3)
8,000-9,999	12.0 (10.7)	30.4 (11.1)	1.7 (10.5)	12.0 (10.7)	18.4 (18.1)
10,000-11,999	14.7 (10.3)	30.2 (11.2)	0.8 (10.4)	12.0 (10.7)	17.8 (18.2)
12,000-13,999	11.6 (10.2)	30.1 (11.0)	0.2 (10.2)	8.7 (10.4)	11.7 (10.6)
14,000 OR MORE	11.4 (10.1)	22.9 (10.9)	0.9 (10.3)	8.6 (11.3)	16.8 (18.7)
INCOME					
LESS THAN \$2,000	2.9 (10.1)	16.8 (11.0)	4.9 (10.8)	7.1 (10.7)	13.7 (10.6)
\$2,000-\$3,999	8.2 (10.3)	17.2 (11.7)	4.3 (10.6)	2.8 (10.5)	15.8 (10.7)
\$4,000-\$5,999	11.2 (10.3)	17.3 (10.6)	4.5 (10.8)	10.3 (10.5)	16.6 (18.5)
\$6,000-\$9,999	11.7 (10.4)	22.1 (11.1)	4.3 (10.4)	11.1 (10.7)	17.7 (11.2)
\$10,000-\$14,999	11.8 (10.3)	18.2 (11.1)	3.9 (10.4)	11.0 (10.4)	16.3 (11.1)
\$15,000-\$19,999	11.9 (10.2)	20.9 (11.2)	4.9 (10.6)	11.2 (11.1)	17.7 (11.5)
\$20,000 OR MORE	11.1 (10.5)	20.8 (11.5)	12.6 (11.1)	13.9 (10.8)	13.2 (10.9)
NUMBER OF APPLIANCES OWNED*					
NONE	3.1 (10.1)	16.7 (11.0)	3.6 (10.3)	8.6 (11.0)	15.2 (10.4)
1-2	11.0 (10.2)	18.3 (11.1)	6.0 (10.7)	9.1 (10.2)	15.7 (10.4)
3-4	2.9 (10.2)	19.9 (11.4)	7.1 (11.3)	12.8 (10.3)	14.1 (10.7)
5-6	8.3 (10.2)	20.5 (11.6)	7.0 (11.4)	14.3 (10.4)	15.2 (11.4)
7 OR MORE	1.5 (10.1)	22.5 (11.2)	7.2 (11.2)	13.2 (11.1)	16.1 (11.4)

*NO DATA BETWEEN BECAUSE OF A LARGE VARIANCE.

NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.

NUMBERS IN PARENTHESES INDICATE ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.

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



Summary of Findings (Continued)

Table IV. Average Household Natural Gas Consumption When Main Heating Fuel Is Natural Gas by Heat Use by Statistical Heating Classification for 1974

Statistical Heating Classification	Total Natural Gas Consumption (Btu)	per sq ft		
		Heating	Water Heating	Other
Single-Family Detached	10,000	100	100	100
Single-Family Attached	10,000	100	100	100
Multi-Family Detached	10,000	100	100	100
Multi-Family Attached	10,000	100	100	100
Commercial	10,000	100	100	100
Industrial	10,000	100	100	100
Public Buildings	10,000	100	100	100
Other	10,000	100	100	100

NOTE: Total natural gas consumption of a house includes space heating, water heating, and other uses. The amount of natural gas used for space heating is shown in Table III. The amount of natural gas used for water heating is shown in Table V. The amount of natural gas used for other uses is shown in Table VI.



Summary of Findings (Continued)

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 (THOUSANDS)	END USE		
		SPACE HEATING (BILLION BTU)	WATER HEATING (BILLION BTU)	RESIDENTIAL USE (BILLION BTU)
NATIONAL	46.8 (1.84)	21.8 (12.7)	21.6 (10.4)	21.7 (10.6)
REGIONAL REGION				
NORTHEAST	7.8 (1.0)	10.5 (7.8)	20.4 (6.7)	8.4 (7.0)
MIDWEST	12.4 (1.0)	11.9 (12.1)	22.0 (6.7)	8.2 (10.8)
SOUTH	15.1 (1.4)	20.9 (7.1)	19.4 (11.1)	8.5 (10.7)
WEST	11.5 (1.3)	11.5 (1.7)	22.3 (10.7)	7.6 (11.4)
HOUSEHOLD INCOME				
\$-1,999	9.4 (1.0)	11.8 (10.0)	20.7 (11.4)	10.8 (11.4)
2,000-2,999	8.4 (1.0)	10.0 (11.1)	22.7 (11.9)	11.7 (12.7)
3,000-3,999	8.4 (1.0)	10.7 (10.7)	27.0 (11.4)	8.6 (10.3)
4,000-4,999	2.0 (1.0)	10.8 (12.4)	20.9 (11.4)	7.6 (12.3)
5,000-5,999	7.4 (1.0)	11.1 (11.1)	20.8 (10.1)	7.0 (10.1)
6,000-6,999	9.0 (1.0)	11.0 (10.0)	20.8 (10.9)	8.5 (10.2)
7,000-7,999	4.7 (1.0)	11.8 (11.0)	22.5 (11.0)	8.1 (10.4)
8,000 OR MORE	2.8 (1.0)	11.8 (11.2)	19.3 (11.4)	8.3 (10.4)
HOUSE				
LESS THAN 10,000	8.1 (1.0)	10.5 (10.0)	19.8 (11.0)	7.8 (10.7)
10,000-19,999	7.1 (1.0)	10.8 (10.0)	17.6 (11.1)	7.3 (10.4)
20,000-29,999	6.7 (1.0)	10.9 (10.0)	19.3 (10.7)	7.8 (10.3)
30,000-39,999	8.5 (1.0)	10.1 (10.1)	19.8 (11.7)	7.8 (10.3)
40,000-49,999	8.8 (1.0)	10.1 (10.1)	20.9 (10.7)	8.8 (10.7)
50,000 OR MORE	7.0 (1.0)	10.7 (10.7)	18.8 (11.4)	11.0 (11.4)
NUMBER OF PERSONS IN HOUSEHOLD				
ONE	8.5 (1.0)	10.5 (10.0)	9.0 (10.7)	8.9 (10.4)
TWO	10.0 (1.0)	10.8 (10.0)	18.5 (10.4)	8.9 (10.7)
THREE	6.5 (1.0)	10.8 (10.0)	15.3 (10.1)	8.9 (10.4)
FOUR	8.1 (1.0)	10.3 (10.4)	18.6 (10.7)	10.4 (10.1)
FIVE OR MORE	8.1 (1.0)	10.3 (10.1)	10.4 (11.1)	10.8 (11.4)

*0% = DATA NOTEDLY BELONGS IN A LARGE VARIANCE.

NOTE: BECAUSE OF ROUNDING, DATA MAY NOT ADD TO TOTALS.

VALUES IN PARENTHESES INDICATE ONE STANDARD DEVIATION. SEE APPENDIX D FOR A DETAILED DISCUSSION.

SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY STATISTICS AND USE DIVISION, ENERGY AND USE DIVISION, THE BUREAU OF ECONOMIC ANALYSIS, ENERGY AND USE DIVISION, THE BUREAU OF ECONOMIC ANALYSIS, ENERGY AND USE DIVISION.

Summary of Findings (Continued)

Table 2. Summary of Findings from the Investigation of the Health Planning Process in Four States for Selected Funding Mechanisms for Health Care

Funding Mechanism	State	Findings		
		Health Planning Process	Health Care Delivery	Health Care Financing
Statewide Health Planning	California	Health planning is required by law for all health care organizations. The process is largely top-down and focused on facility-level planning.	Health care delivery is largely fragmented, with a focus on acute care and hospital-based services.	Health care financing is primarily through state and federal taxes, with a focus on general revenue.
	Florida	Health planning is required by law for all health care organizations. The process is largely top-down and focused on facility-level planning.	Health care delivery is largely fragmented, with a focus on acute care and hospital-based services.	Health care financing is primarily through state and federal taxes, with a focus on general revenue.
	Illinois	Health planning is required by law for all health care organizations. The process is largely top-down and focused on facility-level planning.	Health care delivery is largely fragmented, with a focus on acute care and hospital-based services.	Health care financing is primarily through state and federal taxes, with a focus on general revenue.
Regional Health Planning	California	Health planning is required by law for all health care organizations. The process is largely top-down and focused on facility-level planning.	Health care delivery is largely fragmented, with a focus on acute care and hospital-based services.	Health care financing is primarily through state and federal taxes, with a focus on general revenue.
	Florida	Health planning is required by law for all health care organizations. The process is largely top-down and focused on facility-level planning.	Health care delivery is largely fragmented, with a focus on acute care and hospital-based services.	Health care financing is primarily through state and federal taxes, with a focus on general revenue.
	Illinois	Health planning is required by law for all health care organizations. The process is largely top-down and focused on facility-level planning.	Health care delivery is largely fragmented, with a focus on acute care and hospital-based services.	Health care financing is primarily through state and federal taxes, with a focus on general revenue.

Notes: The findings in this table are based on the results of the investigation of the health planning process in four states for selected funding mechanisms for health care. The findings are based on the results of the investigation of the health planning process in four states for selected funding mechanisms for health care. The findings are based on the results of the investigation of the health planning process in four states for selected funding mechanisms for health care.



Summary of Findings (Continued)

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 (MILLIONS)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL.....	12.8 (4.8)	87.9 (2.8)	18.1 (1.8)	0
GEOGRAPHIC REGION				
NORTHEAST.....	7.9 (2.8)	74.4 (2.9)	22.7 (2.4)	0
NORTH CENTRAL.....	2.7 (4.2)	74.2 (4.2)	2.7 (4.7)	0
SOUTH.....	2.2 (6.4)	82.7 (10.3)	2.8 (1.5)	0
WEST.....	4.4 (4.1)	67.3 (5.2)	0	0
HEATING DEGREE DAYS				
0-1,999.....	2.4 (0.3)	35.6 (2.0)	2.1 (0.1)	0
2,000-2,999.....	0	0	0	0
3,000-3,999.....	6.6 (0.3)	87.8 (14.4)	0	0
4,000-4,999.....	2.8 (0.4)	70.8 (2.2)	2.9 (2.0)	0
5,000-5,999.....	4.9 (0.6)	73.8 (4.0)	21.5 (4.9)	0
6,000-6,999.....	2.8 (0.5)	54.4 (2.3)	27.3 (2.1)	0
7,000-7,999.....	2.1 (0.3)	49.7 (2.0)	14.1 (2.0)	0
8,000 OR MORE.....	1.4 (0.5)	62.0 (2.0)	4.2 (1.2)	0
INCOME				
LESS THAN \$5,000.....	1.2 (4.2)	74.9 (1.0)	21.1 (7.8)	0
\$5,000-\$9,999.....	2.2 (4.3)	83.2 (4.5)	15.0 (8.7)	0
\$10,000-\$14,999.....	2.2 (4.2)	84.8 (7.3)	14.8 (2.0)	0
\$15,000-\$19,999.....	1.5 (4.3)	83.4 (2.4)	10.8 (2.8)	0
\$20,000-\$24,999.....	1.6 (4.3)	87.0 (2.0)	15.9 (4.3)	0
\$25,000-\$34,999.....	1.6 (4.2)	84.0 (2.0)	18.2 (2.2)	0
\$35,000 OR MORE.....	3.8 (4.2)	111.3 (7.6)	20.3 (2.8)	0
NUMBER OF HOUSEHOLD MEMBERS				
ONE.....	2.4 (4.3)	67.7 (10.8)	7.0 (2.3)	0
TWO.....	4.2 (4.2)	89.7 (3.4)	12.4 (1.8)	0
THREE.....	2.1 (4.2)	77.6 (2.3)	12.8 (3.4)	0
FOUR.....	2.7 (4.2)	88.4 (3.0)	12.0 (3.0)	0
FIVE OR MORE.....	1.4 (4.2)	100.2 (9.5)	22.0 (4.2)	0

*0" = DATA WITHIN ROUNDING OF A LARGE NUMBER.

NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.

NUMBER OF HOUSEHOLDS INDICATES ONE ROUNDING UPWARD. SEE APPENDIX 2 FOR A DETAILED EXPLANATION.

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



Summary of Findings (Continued)

Table 21. Average Household LPG Consumption When Main Heating Fuel Is LPG by End Use by Selected Heating Characteristics for 1961

HEATING CHARACTERISTIC	NUMBER OF HOUSEHOLDS (1950-60)	END USE		
		WATER HEATING (1950-60)	SPACE HEATING (1950-60)	WATER HEATING AND SPACE HEATING (1950-60)
HEATING	5.7 (21.0)	10.2 (41.0)	6.6 (26.0)	2.0 (8.0)
WATER HEATING				
WATER HEATING - YEAR ROUND	3.2 (12.4)	7.0 (31.0)	4.0 (16.0)	0.5 (2.0)
WATER HEATING - SEASONAL	2.5 (9.6)	3.2 (12.0)	2.6 (10.0)	1.5 (6.0)
SPACE HEATING				
SPACE HEATING - YEAR ROUND	2.5 (9.6)	2.0 (8.0)	2.6 (10.0)	0.5 (2.0)
SPACE HEATING - SEASONAL	3.2 (12.4)	8.2 (33.0)	4.0 (16.0)	1.5 (6.0)
WATER HEATING AND SPACE HEATING				
WATER HEATING AND SPACE HEATING - YEAR ROUND	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
WATER HEATING AND SPACE HEATING - SEASONAL	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
WATER HEATING AND SPACE HEATING				
WATER HEATING AND SPACE HEATING - YEAR ROUND	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
WATER HEATING AND SPACE HEATING - SEASONAL	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)

* If a city contains a mixture of a space heating system, water heating, and both, the total consumption for the city is the sum of the water heating and space heating consumption for the city. The total consumption for the city is the sum of the water heating and space heating consumption for the city.



Summary of Findings (Continued)

Table 32. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Socio-demographic Characteristics for 1989

SOCIO-DEMOGRAPHIC CHARACTERISTICS	NUMBER OF HOUSEHOLDS (MILLIONS)	END USE		
		SPACE HEATING (MILLION BTU)	WATER HEATING (MILLION BTU)	MISCELLANEOUS USE (MILLION BTU)
NATIONAL	5.7 (8.8)	30.8 (4.8)	8.2 (6.0)	3.1 (6.3)
GEOGRAPHIC REGION				
NORTHEAST.....	0.1 (0.1)	95.8 (37.5)	12.0 (6.7)	2.6 (3.0)
MIDWEST.....	2.0 (9.2)	66.7 (6.3)	21.2 (2.1)	2.5 (0.6)
SOUTH.....	0.1 (0.0)	37.0 (4.0)	4.0 (1.0)	0.1 (0.0)
WEST.....	0.5 (0.1)	27.0 (20.4)	10.7 (3.0)	3.8 (0.6)
HEATING DEGREE DAYS				
0-1,799.....	0.7 (0.1)	20.0 (0.2)	2.0 (1.3)	4.0 (0.4)
2,000-2,999.....	0.0 (0.0)	30.0 (0.3)	10.0 (0.1)	2.0 (0.7)
3,000-3,999.....	0.0 (0.0)	40.0 (0.3)	2.7 (0.0)	1.0 (0.7)
4,000-4,999.....	0.0 (0.0)	50.0 (0.4)	0.0 (0.0)	2.0 (1.0)
5,000-5,999.....	0.0 (0.0)	60.0 (0.2)	12.0 (2.0)	0.0 (0.0)
6,000-6,999.....	0.0 (0.0)	220.0 (20.0)	0.0 (0.0)	2.0 (1.0)
7,000-7,999.....	0.0 (0.0)	0.0 (0.0)	10.0 (0.0)	0.1 (0.0)
8,000 OR MORE.....	0.0 (0.0)	10.0 (10.0)	0.0 (0.0)	1.0 (0.0)
INCOME				
LESS THAN \$5,000.....	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
\$5,000-\$7,999.....	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
\$8,000-\$10,999.....	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
\$11,000-\$14,999.....	0.0 (0.0)	0.0 (11.0)	10.0 (0.0)	0.0 (0.0)
\$15,000-\$24,999.....	0.0 (0.0)	0.0 (20.0)	0.0 (0.0)	0.0 (0.0)
\$25,000-\$34,999.....	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
\$35,000 OR MORE.....	0.0 (0.0)	10.0 (10.0)	10.0 (0.0)	0.0 (0.0)
NUMBER OF HOUSEHOLD MEMBERS				
ONE.....	0.0 (0.0)	10.0 (0.0)	0.0 (0.0)	0.0 (0.0)
TWO.....	0.0 (0.0)	10.0 (0.0)	0.0 (0.0)	0.0 (0.0)
THREE.....	0.0 (0.0)	10.0 (0.0)	0.0 (0.0)	0.0 (0.0)
FOUR.....	0.0 (0.0)	10.0 (10.0)	0.0 (0.0)	0.0 (0.0)
FIVE OR MORE.....	0.0 (0.0)	10.0 (10.0)	10.0 (0.0)	0.0 (0.0)

*0" or DATA WITHIN because of a large variance.

NOTE: BECAUSE OF ROUNDING, DATA MAY NOT ADD TO TOTALS.

NUMBERS IN PARENTHESES INDICATE ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED EXPLANATION.

SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKET AND END USE, ENERGY USE DIVISION, THE 1989 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

Table 11. Average
Removals of
Organic Compounds by
Units by Chemical
Group

Chemical Group	Total Removal (%)	Unit Type			Average Removal (%)
		Unit 1	Unit 2	Unit 3	
Aliphatics	85	80	90	85	85
Aromatics	75	70	80	75	75
Halogenated	65	60	70	65	65
Organic Acids	90	85	95	90	90
Organic Bases	80	75	85	80	80
Organic Sulfides	70	65	75	70	70
Organic Nitriles	60	55	65	60	60
Organic Phosphates	50	45	55	50	50
Organic Amines	85	80	90	85	85
Organic Alcohols	95	90	100	95	95
Organic Esters	75	70	80	75	75
Organic Ketones	80	75	85	80	80
Organic Aldehydes	65	60	70	65	65
Organic Oxides	55	50	60	55	55
Organic Sulfonates	45	40	50	45	45
Organic Carboxylic Acids	90	85	95	90	90
Organic Amides	70	65	75	70	70
Organic Nitriles	60	55	65	60	60
Organic Phosphates	50	45	55	50	50
Organic Amines	85	80	90	85	85
Organic Alcohols	95	90	100	95	95
Organic Esters	75	70	80	75	75
Organic Ketones	80	75	85	80	80
Organic Aldehydes	65	60	70	65	65
Organic Oxides	55	50	60	55	55
Organic Sulfonates	45	40	50	45	45

NOTE: Removal percentages are based on the total organic carbon (TOC) in the influent. The removal percentages for individual compounds are based on the TOC of the compound. The removal percentages for the units are based on the TOC of the influent to the unit.



Summary of Findings (Continued)

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

SOCIODEMOGRAPHIC CHARACTERISTIC	TOTAL EXPENDITURES (DOLLARS)	END USE			
		SPACE HEATING (DOLLARS)	COOLING (DOLLARS)	WATER HEATING (DOLLARS)	MISCELLANEOUS USE (DOLLARS)
NATIONAL	1402 (121)	403 (121)	72 (8)	126 (5)	306 (7)
GEOGRAPHIC REGION					
NORTHEAST.....	1422 (121)	472 (121)	22 (4)	112 (10)	387 (12)
MIDWEST.....	1442 (121)	467 (121)	42 (4)	127 (4)	397 (12)
SOUTH.....	972 (121)	292 (121)	122 (9)	120 (2)	357 (12)
WEST.....	732 (121)	222 (8)	31 (5)	112 (4)	322 (12)
HEATING DEGREE DAYS					
0-1,999.....	922 (121)	122 (121)	222 (121)	127 (121)	372 (121)
2,000-2,999.....	722 (121)	122 (2)	22 (2)	122 (2)	372 (121)
3,000-3,999.....	222 (121)	222 (121)	22 (2)	122 (121)	372 (121)
4,000-4,999.....	722 (121)	122 (121)	72 (121)	122 (121)	372 (121)
5,000-5,999.....	1222 (121)	222 (121)	42 (2)	122 (7)	422 (121)
6,000-6,999.....	1222 (121)	222 (121)	22 (2)	122 (2)	422 (121)
7,000-7,999.....	1222 (121)	222 (121)	22 (2)	122 (121)	422 (121)
8,000 OR MORE.....	1222 (121)	222 (121)	7 (2)	122 (121)	422 (121)
INCOME					
LESS THAN \$2,000.....	722 (121)	122 (121)	22 (2)	122 (2)	372 (121)
\$2,000-\$4,999.....	722 (121)	122 (121)	42 (2)	122 (7)	372 (121)
\$5,000-\$9,999.....	722 (121)	122 (121)	22 (2)	122 (2)	372 (121)
\$10,000-\$14,999.....	722 (121)	122 (121)	22 (2)	122 (2)	372 (2)
\$15,000-\$19,999.....	722 (121)	122 (121)	22 (2)	122 (2)	372 (2)
\$20,000-\$24,999.....	722 (121)	122 (121)	22 (2)	122 (2)	372 (121)
\$25,000-\$29,999.....	722 (121)	122 (121)	22 (2)	122 (2)	372 (121)
\$30,000 OR MORE.....	722 (121)	122 (121)	22 (121)	122 (2)	372 (121)
NUMBER OF HOUSEHOLD MEMBERS					
ONE.....	722 (121)	122 (121)	22 (2)	122 (2)	372 (121)
TWO.....	722 (121)	122 (121)	22 (2)	122 (2)	372 (2)
THREE.....	722 (121)	122 (121)	22 (2)	122 (2)	372 (2)
FOUR.....	722 (121)	122 (121)	22 (121)	122 (2)	372 (2)
FIVE OR MORE.....	722 (121)	122 (121)	22 (2)	122 (2)	372 (121)

*0 = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: BECAUSE OF ROUNDING, DATA MAY NOT ADD TO TOTALS.

VALUES IN PARENTHESES INDICATED 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 20. Average
Hazardous Waste
Management for
Superfund Sites by
State. Hazardous Waste
Management for
Superfund Sites

State	Date of Report		
	1980-1984	1985-1989	1990-1994
Alabama	100%	100%	100%
Alaska	100%	100%	100%
Arizona	100%	100%	100%
Arkansas	100%	100%	100%
California	100%	100%	100%
Colorado	100%	100%	100%
Connecticut	100%	100%	100%
Delaware	100%	100%	100%
Florida	100%	100%	100%
Georgia	100%	100%	100%
Idaho	100%	100%	100%
Illinois	100%	100%	100%
Indiana	100%	100%	100%
Iowa	100%	100%	100%
Kansas	100%	100%	100%
Kentucky	100%	100%	100%
Louisiana	100%	100%	100%
Maine	100%	100%	100%
Maryland	100%	100%	100%
Massachusetts	100%	100%	100%
Michigan	100%	100%	100%
Minnesota	100%	100%	100%
Mississippi	100%	100%	100%
Missouri	100%	100%	100%
Montana	100%	100%	100%
Nebraska	100%	100%	100%
Nevada	100%	100%	100%
New Hampshire	100%	100%	100%
New Jersey	100%	100%	100%
New Mexico	100%	100%	100%
New York	100%	100%	100%
North Carolina	100%	100%	100%
North Dakota	100%	100%	100%
Ohio	100%	100%	100%
Oklahoma	100%	100%	100%
Oregon	100%	100%	100%
Pennsylvania	100%	100%	100%
Rhode Island	100%	100%	100%
South Carolina	100%	100%	100%
South Dakota	100%	100%	100%
Tennessee	100%	100%	100%
Texas	100%	100%	100%
Utah	100%	100%	100%
Vermont	100%	100%	100%
Virginia	100%	100%	100%
Washington	100%	100%	100%
West Virginia	100%	100%	100%
Wisconsin	100%	100%	100%
Wyoming	100%	100%	100%

NOTE: 100% indicates that all sites in the state have been managed in accordance with RCRA requirements. Data are based on the most recent report available for each state. Data for Alaska and Hawaii are not available.



Summary of Findings (Continued)

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

SOCIO-DEMOGRAPHIC CHARACTERISTICS	SPACE HEATING FUEL		
	ELECTRICITY (DOLLARS)	NATURAL GAS (DOLLARS)	FUEL OIL OR KEROSENE (DOLLARS)
NATIONAL	299 ± 221	267 ± 71	799 ± 221
DEMOGRAPHIC GROUPS			
AGE	299 ± 221	267 ± 71	799 ± 221
SEX	299 ± 221	267 ± 71	799 ± 221
RACE	299 ± 221	267 ± 71	799 ± 221
EDUCATION	299 ± 221	267 ± 71	799 ± 221
INCOME	299 ± 221	267 ± 71	799 ± 221
HEATING SPACE SIZE			
0-2,000	77 ± 32	229 ± 111	208 ± 42
2,000-2,999	149 ± 51	181 ± 61	181 ± 61
3,000-3,999	209 ± 82	209 ± 82	187 ± 127
4,000-4,999	219 ± 81	135 ± 32	279 ± 79
5,000-5,999	272 ± 101	101 ± 111	201 ± 61
6,000-6,999	282 ± 71	171 ± 111	141 ± 71
7,000-7,999	242 ± 101	227 ± 121	127 ± 41
8,000 OR MORE	221 ± 121	221 ± 121	111 ± 41
INCOME			
LESS THAN \$4,000	147 ± 51	127 ± 101	71 ± 41
\$4,000-\$9,999	271 ± 71	121 ± 111	101 ± 41
\$10,000-\$14,999	221 ± 41	127 ± 121	71 ± 41
\$15,000-\$24,999	161 ± 101	101 ± 111	71 ± 41
\$25,000-\$34,999	171 ± 111	101 ± 111	71 ± 41
\$35,000 OR MORE	207 ± 101	111 ± 121	101 ± 71
NUMBER OF HOUSEHOLD MEMBERS			
ONE	121 ± 101	121 ± 121	71 ± 41
TWO	101 ± 101	121 ± 121	71 ± 41
THREE	101 ± 101	121 ± 121	71 ± 41
FOUR	101 ± 101	121 ± 121	71 ± 41
FIVE OR MORE	101 ± 101	121 ± 121	71 ± 41

* = DATA WITHFIELD INDICATE OF A LARGE VARIANCE.
 NOTE: BECAUSE OF ROUNDING, DATA MAY NOT ADD TO TOTALS.
 NUMBER OF HOUSEHOLDS BY FUEL TYPE AND HEATING SPACE SIZE, SEE APPENDIX B FOR A DETAILED DISCUSSION.
 SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND ANALYSIS, ENERGY AND USE DIVISION, THE LAST RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Summary of Findings (Continued)

Table 17. Percent of Average Household Electricity Consumption Used for Space Heating When Main Heating Fuel is Electricity by Statistical Reporting Districts for 1970, 1980, and 1981

STATISTICAL REPORTING DISTRICT	PERCENT OF ELECTRICITY USED FOR SPACE HEATING BY YEAR		
	1970	1980	1981
ALABAMA	15.87	11.01	12.46
ALASKA	12.01	12.01	12.01
ARIZONA	12.01	12.01	12.01
ARKANSAS	12.01	12.01	12.01
CALIFORNIA	12.01	12.01	12.01
COLORADO	12.01	12.01	12.01
CONNECTICUT	12.01	12.01	12.01
DELAWARE	12.01	12.01	12.01
FLORIDA	12.01	12.01	12.01
GEORGIA	12.01	12.01	12.01
IDAHO	12.01	12.01	12.01
ILLINOIS	12.01	12.01	12.01
INDIANA	12.01	12.01	12.01
IOWA	12.01	12.01	12.01
KANSAS	12.01	12.01	12.01
KENTUCKY	12.01	12.01	12.01
Louisiana	12.01	12.01	12.01
MAINE	12.01	12.01	12.01
MARYLAND	12.01	12.01	12.01
MASSACHUSETTS	12.01	12.01	12.01
MICHIGAN	12.01	12.01	12.01
MINNESOTA	12.01	12.01	12.01
MISSISSIPPI	12.01	12.01	12.01
MISSOURI	12.01	12.01	12.01
MONTANA	12.01	12.01	12.01
NEBRASKA	12.01	12.01	12.01
NEVADA	12.01	12.01	12.01
NEW HAMPSHIRE	12.01	12.01	12.01
NEW JERSEY	12.01	12.01	12.01
NEW MEXICO	12.01	12.01	12.01
NEW YORK	12.01	12.01	12.01
NORTH CAROLINA	12.01	12.01	12.01
NORTH DAKOTA	12.01	12.01	12.01
OHIO	12.01	12.01	12.01
OKLAHOMA	12.01	12.01	12.01
OREGON	12.01	12.01	12.01
PENNSYLVANIA	12.01	12.01	12.01
RHODE ISLAND	12.01	12.01	12.01
SOUTH CAROLINA	12.01	12.01	12.01
SOUTH DAKOTA	12.01	12.01	12.01
TENNESSEE	12.01	12.01	12.01
TEXAS	12.01	12.01	12.01
UTAH	12.01	12.01	12.01
Vermont	12.01	12.01	12.01
VIRGINIA	12.01	12.01	12.01
WASHINGTON	12.01	12.01	12.01
WEST VIRGINIA	12.01	12.01	12.01
WISCONSIN	12.01	12.01	12.01
WYOMING	12.01	12.01	12.01

* If a non-reporting district is a large district, the percent of electricity used for space heating is based on the total electricity used for space heating in that district. For small districts, the percent is based on the total electricity used for space heating in the State.



Summary of Findings (Continued)

Table 35. Percent of Average Household Electricity Consumption When Main Heating Fuel Is Electricity by Selected Socio-demographic Characteristics for 1974, 1980, and 1991

SOCIOECONOMIC CHARACTERISTICS	PERCENT OF ELECTRICITY USED FOR HEATING BY YEAR		
	1974	1980	1991
NATIONAL	46 12.01	52 12.02	56 12.01
REGIONAL GROUPS			
NORTHEAST.....	48 14.01	46 12.01	50 12.01
NORTH CENTRAL.....	44 12.01	42 12.01	45 12.01
SOUTH.....	32 12.01	34 12.01	28 12.01
WEST.....	54 12.01	58 12.01	62 12.01
HEATING HEATERS USED			
0-1,000.....	14 12.01	12 12.01	10 12.01
1,000-2,000.....	26 12.01	23 12.01	25 12.01
2,000-3,000.....	37 12.01	32 12.01	35 12.01
3,000-4,000.....	45 12.01	42 12.01	43 12.01
4,000-5,000.....	50 12.01	48 12.01	49 12.01
5,000-6,000.....	57 12.01	55 12.01	56 12.01
6,000-7,000.....	64 12.01	61 12.01	63 12.01
8,000 OR MORE.....	6	42 12.01	51 12.01
SCHOOLING			
LESS THAN HS GRAD.....	44 12.01	40 12.01	40 12.01
HS GRAD-1Y, HYP.....	45 12.01	50 12.01	44 12.01
2Y, 2-4Y, 5Y.....	42 12.01	43 12.01	42 12.01
6Y, 7Y, 8Y.....	43 12.01	43 12.01	41 12.01
9Y, 10Y, 11Y.....	41 12.01	40 12.01	39 12.01
12Y, 13Y, 14Y.....	43 12.01	42 12.01	42 12.01
15Y, 16Y OR MORE.....	42 12.01	42 12.01	42 12.01
NUMBER OF ROOMS IN HOUSES			
ONE.....	44 12.01	47 12.01	46 12.01
TWO.....	46 12.01	47 12.01	47 12.01
THREE.....	44 12.01	41 12.01	42 12.01
FOUR.....	45 12.01	43 12.01	43 12.01
FIVE OR MORE.....	41 12.01	39 12.01	38 12.01

*% & DATA SUBJECTS SUBJECT OF A LARGE VARIATION.

NOTE: PERCENT OF ELECTRICITY USED FOR HEATING MAY VARY FROM 10 TO 100.

FIGURES IN PARENTHESES INDICATE ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED EXPLANATION.

SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY DELIVERY AND THE GRID, ENERGY USE AND DIVISIONS, THE 1974, 1980, 1991 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

Table 28. Percent of Average Municipal Natural Gas Consumption Used for Space Heating When Main Heating Fuel is Natural Gas by Selected Housing Characteristics for 1974, 1981, and 1987

Housing Characteristics	Percent of Natural Gas Used for Space Heating in 1987		
	1974	1981	1987
All housing units	57 28.21	61 28.44	63 28.97
By housing type			
Single-family detached	54 25.21	58 27.01	61 28.21
Single-family attached	62 31.21	65 32.01	68 33.21
Apartments in buildings with 5 or more units	65 32.21	68 33.01	71 34.21
Apartments in buildings with 2 to 4 units	60 30.21	63 31.01	66 32.21
Hotels, motels, and other transient lodgings	68 34.21	71 35.01	74 36.21
Other nonresidential buildings	64 32.21	67 33.01	70 34.21
By housing tenure			
Owner-occupied	56 27.21	60 28.01	63 29.21
Renter-occupied	60 30.21	64 31.01	67 32.21
By housing value			
Less than \$10,000	55 26.21	59 27.01	62 28.21
\$10,000 to \$20,000	58 28.21	62 29.01	65 30.21
\$20,000 to \$40,000	60 30.21	64 31.01	67 32.21
\$40,000 to \$60,000	62 32.21	66 33.01	69 34.21
\$60,000 to \$100,000	64 34.21	68 35.01	71 36.21
\$100,000 and over	66 36.21	70 37.01	73 38.21
By heating system			
Natural gas furnace	58 29.21	62 30.01	65 31.21
Natural gas boiler	60 31.21	64 32.01	67 33.21
Natural gas hot water heater	62 33.21	66 34.01	69 35.21
Natural gas space heater	64 35.21	68 36.01	71 37.21
Natural gas fireplace	66 37.21	70 38.01	73 39.21
Other	68 39.21	72 40.01	75 41.21

NOTE: Percentages are based on a sample survey. Some percentages may not sum to 100 percent due to rounding. Percentages are based on the number of units in the sample. Percentages are based on the number of units in the sample. Percentages are based on the number of units in the sample.



Summary of Findings (Continued)

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

SOCIO-DEMOGRAPHIC CHARACTERISTICS	PERCENT OF NATURAL GAS USED FOR SPACE HEATING BY YEAR		
	1978	1980	1981
NATIONAL	74 (1.0)	69 (1.0)	72 (1.0)
REGIONAL REGION			
NORTHEAST.....	81 (1.0)	70 (1.0)	76 (1.0)
MIDWEST.....	80 (1.0)	76 (1.0)	79 (1.0)
SOUTH.....	71 (1.0)	63 (1.0)	67 (1.0)
WEST.....	77 (1.0)	69 (1.0)	63 (1.0)
HEATING SOURCE TYPE			
0-1,999.....	56 (1.0)	43 (1.0)	52 (1.0)
2,000-2,999.....	67 (1.0)	57 (1.0)	64 (1.0)
3,000-3,999.....	76 (1.0)	66 (1.0)	72 (1.0)
4,000-4,999.....	80 (1.0)	72 (1.0)	73 (1.0)
5,000-5,999.....	81 (1.0)	72 (1.0)	77 (1.0)
6,000-6,999.....	80 (1.0)	74 (1.0)	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.....	61 (1.0)	71 (1.0)	70 (1.0)
\$5,000-\$9,999.....	70 (1.0)	70 (1.0)	77 (1.0)
\$10,000-\$14,999.....	74 (1.0)	70 (1.0)	76 (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)	76 (1.0)
\$25,000-\$29,999.....	78 (1.0)	69 (1.0)	76 (1.0)
\$30,000 OR MORE.....	81 (1.0)	70 (1.0)	69 (1.0)
NUMBER OF HOUSEHOLD MEMBERS			
ONE.....	80 (1.0)	76 (1.0)	80 (1.0)
TWO.....	67 (1.0)	72 (1.0)	76 (1.0)
THREE.....	69 (1.0)	68 (1.0)	71 (1.0)
FOUR.....	72 (1.0)	64 (1.0)	68 (1.0)
FIVE OR MORE.....	78 (1.0)	63 (1.0)	64 (1.0)

*0% = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.
 NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.
 DASHES IN PARENTHESES INDICATE ONE STANDARD DEVIATION. SEE APPENDIX B FOR A DETAILED DISCUSSION.
 SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY RESOURCES AND USE, ENERGY USE AND EXPENDITURE, THE 1978, 1980, 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



Summary of Findings (Continued)

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 1972, 1982, 1991

Heating Characteristics	Percent of Total Oil or Kerosene Used for Space Heating		
	1972	1982	1991
All	71.0	69.0	67.0
By Heating System			
- Single-Fuel Heating	72.0	70.0	68.0
- Dual-Fuel Heating	70.0	68.0	66.0
- No Heating	68.0	66.0	64.0
- Other	70.0	68.0	66.0
By Fuel Type			
- Fuel Oil	72.0	70.0	68.0
- Kerosene	70.0	68.0	66.0
- Other	68.0	66.0	64.0
By Heating System and Fuel Type			
- Single-Fuel Heating - Fuel Oil	73.0	71.0	69.0
- Single-Fuel Heating - Kerosene	71.0	69.0	67.0
- Dual-Fuel Heating - Fuel Oil	70.0	68.0	66.0
- Dual-Fuel Heating - Kerosene	69.0	67.0	65.0
- No Heating	68.0	66.0	64.0
- Other	70.0	68.0	66.0

* This table shows the percent of a household's total oil or kerosene consumption used for space heating. It does not show the percent of total energy consumption used for space heating. The percent of total energy consumption used for space heating is shown in Table 40. The percent of total energy consumption used for space heating is shown in Table 40. The percent of total energy consumption used for space heating is shown in Table 40.



Summary of Findings (Continued)

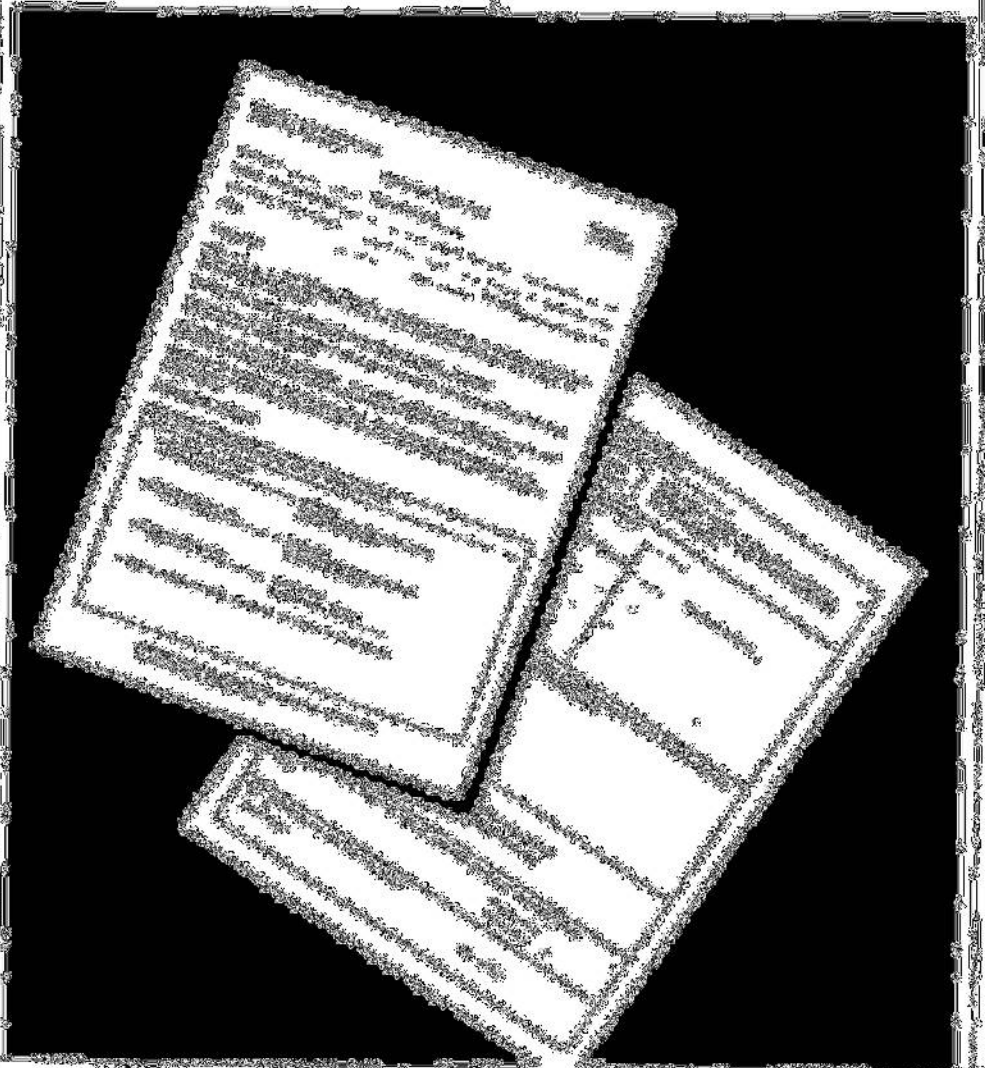
Table 42. Percent of Average Household Fuel Oil or Kerosene Consumption Used for Space Heating When Main Heating Fuel is Fuel Oil or Kerosene by Selected Sociodemographic Characteristics for 1978, 1980, and 1981

SOCIOECONOMIC CHARACTERISTICS	PERCENT OF FUEL OIL OR KEROSENE USED FOR SPACE HEATING BY YEAR		
	1978	1980	1981
TOTAL	95 12.07	86 12.01	86 12.07
REGIONAL REGION			
NORTHEAST.....	93 12.51	87 12.01	87 12.01
MIDWEST.....	97 12.03	76 12.00	79 12.01
SOUTH.....	87 12.03	78 12.00	76 12.01
WEST.....	100 12.21	92 12.01	97 12.01
HOUSEHOLD SIZE			
1-2.....	98 12.03	8	100 12.01
2,000-2,999.....	8	8	8
3,000-3,999.....	76 12.01	70 12.01	8
4,000-4,999.....	97 12.02	87 12.01	79 12.01
5,000-5,999.....	71 12.01	81 12.00	81 12.01
6,000-6,999.....	76 12.01	87 12.01	86 12.01
7,000-7,999.....	86 12.01	87 12.01	87 12.01
8,000 OR MORE.....	100 12.01	92 12.01	85 12.01
INCOME			
LESS THAN \$2,000.....	72 12.01	86 12.01	88 12.01
\$2,000-\$4,999.....	79 12.01	82 12.01	87 12.01
\$5,000-\$9,999.....	89 12.01	82 12.01	86 12.01
\$10,000-\$14,999.....	73 12.01	87 12.01	84 12.01
\$15,000-\$19,999.....	76 12.01	87 12.01	86 12.01
\$20,000-\$24,999.....	76 12.01	87 12.01	86 12.01
\$25,000-\$29,999.....	83 12.01	87 12.01	74 12.01
\$30,000 OR MORE.....	85 12.01	84 12.01	86 12.01
NUMBER OF HOUSEHOLD MEMBERS			
ONE.....	97 12.01	85 12.01	92 12.01
TWO.....	92 12.01	85 12.01	87 12.01
THREE.....	74 12.01	87 12.01	83 12.01
FOUR.....	75 12.01	82 12.01	80 12.01
FIVE OR MORE.....	89 12.01	82 12.01	75 12.01

*0 = DATA DEVIATES BECAUSE OF A LARGE VARIANCE.
 NA = BECAUSE OF ROUNDING, ONLY MAY NOT ADD UP TO TOTAL.
 FIGURES IN PARENTHESES INDICATE SEE STATISTICAL REVIEWS. SEE APPENDIX B FOR A DETAILED DESCRIPTION.
 SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY RESOURCES AND USE, ENERGY USE AND EXPENDITURE, THE 1978, 1980, 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

Appendix A

Illustration of The Study



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 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 regional sample of households. Rights to actual total consumption and expenditures were obtained from the household's fuel suppliers. Expenditures are end-use data and residential, rather than industry data.

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

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

1979 SURVEY	1980 SURVEY	1981 SURVEY
Sample design was specifically created for EIA's needs. Design included an all purpose design.	Sample design related to 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 respondent's measurement of square footage for dwelling.	Same as 1980
Heating degree-days calculated using a base of 65° F.	Heating degree-days calculated using base of 65° F through 68° F.	Same as 1980
Weather data obtained using long-term averages adjusted by degree days for April 1978 through March 1978.	Weather data obtained using recorded daily highs and lows in the National Oceanic and Atmospheric Administration's (NOAA) district weather stations.	Same as 1980
Geographic areas were four Census regions: Northeast, South, Central, North, West.	The four geographic regions were further divided into nine Census divisions.	Same as 1980

¹ Residential Energy Consumption Survey, Consumption and Expenditures, April 1981 through March 1982, District Office Washington D.C., May 1982. Residential Energy Consumption Survey, Consumption and Expenditures, April 1980 through March 1981, District Office Washington D.C., December 1980. Residential Energy Consumption Survey, Consumption and Expenditures, April 1979 through March 1980, District Office Washington D.C., September 1980.



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(1.8)	44.8(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 billion 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, cooling², 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.

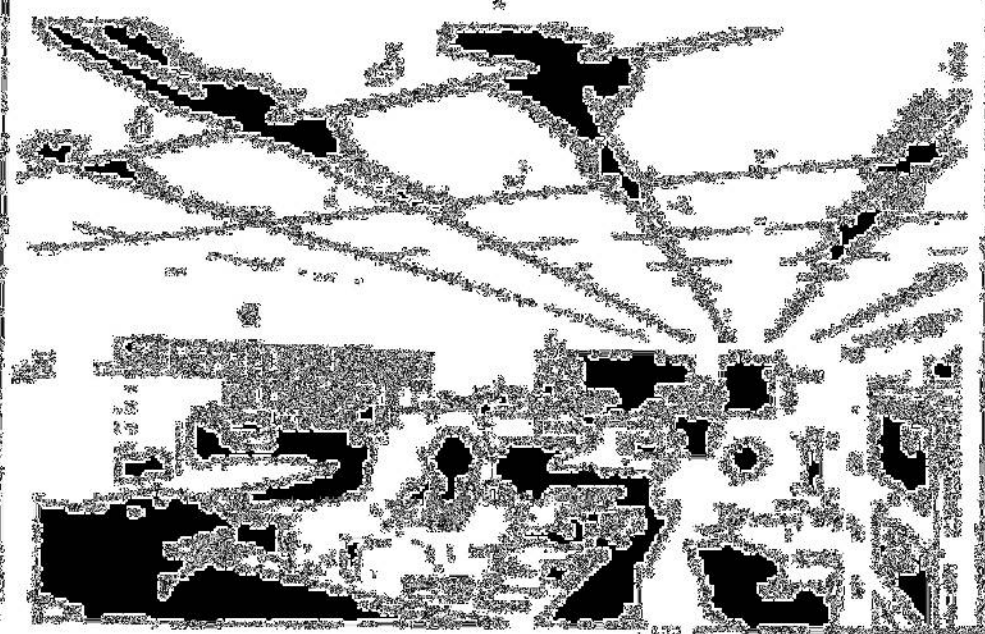
² Cooling applies only to electricity consumption. The small amount of natural gas used for air-conditioning was included in the miscellaneous use for natural gas.

Appendix B

Methodology

1

2





Appendix B

The methods of residential energy consumption and expenditures by use are outlined in this report. The first step was to use a process regression technique to provide a quantitative equation that relates energy consumption, energy expenditures were estimated based on the regression equations.

Further sampling was required. For each of the three groups, a separate equation was developed for each of the four main energy categories, natural gas, fuel oil, and electricity. In each equation, the dependent variable was energy consumption from April to March of the following year. Thus, for the 1978 survey, natural gas consumption was from April 1978 to March 1979 for the 1978 survey, electricity was from April 1978 to March 1979, and so forth.

For electricity, the statistical model that was used for all energy use

$$\text{Total Consumption} = \text{Space Heating Component} + \text{Water Heating Component} + \text{Air Conditioning} + \text{Miscellaneous Equipment}$$

The space heating component consisted of all electricity used in electric space heating equipment. Initially, for space heating and air conditioning, the dependent variable 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 three end uses. This miscellaneous use included refrigeration, washing, lighting, entertainment, clothes drying as well as other other uses. In many households, the miscellaneous component equaled the total consumption.

As is seen, the electricity used for many other uses were during the winter will contribute to the space heating component. To this extent, the necessary amount of miscellaneous consumption will be ignored. The water heating component only included a provision used to heat water for hot running water at bath units. It did not include energy used for heating water at a stove or on an appliance for cooking or similar purposes. The initial use of electricity was included in the miscellaneous component.

The statistical model used the survey, gas, fuel oil, and electricity considered 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 one of independent variables corresponding to the dependent. The regression can be estimated by using the linear equation form. The independent variables in the corresponding model are those variables representing characteristics.

¹For a more detailed explanation of the regression process, see Chapter 1 and 2 in Residential Energy Consumption Expenditures: Expenditures on Energy Consumption by Use, U.S. Energy Information Administration, DOE, October 1981.



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, some households used natural gas for space heating then 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 quantities 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 collinear. 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 collinearity is greatly reduced by creating terms that were highly collinear.

Appendix B (Continued)

The second step in producing and analyzing summarized data for the regression models is produce and use weights for the individual observations for each household. The first two variables were assigned so that the sum of the two variables was equal to the value of reported family consumption. In a similar manner, the regression weights were used only on households that produced all energy used by both men and women. The individual and two household variables were assigned by matching the proportions of income spent on each and was set the same as the proportion of energy used. This assignment depends on the nature of the energy data available.

The third step in the analysis consisted of producing and using weights for each energy expenditure based on demographic characteristics and housing characteristics. Tables and figures in this report describe estimates of the average household household and individual and household variables both nationally and for selected age groups. The weights are calculated by the number of households in the population that the sample represents. Demographic figures are given in the and demographic figures are given in Table 2. Housing figures for Table 2 have been adjusted for number. In this chapter, the usual population figures for each household are based on the household's actual number of housing people-days, but the figures are based on the number of people in the household. The values in Table 2 are the average value of the number of observations per housing people-days.

The analysis for the individual energy uses showed a general pattern of regression coefficients. The analysis was run in gender on variables of the household characteristics and the household characteristics of the individual. The results showed that the regression coefficients were not equal to the regression coefficients. The regression coefficients were calculated by the standard error that applied to all households. The regression coefficients were calculated based on regression analysis. The regression coefficients were calculated based on regression analysis. The regression coefficients were calculated based on regression analysis. The regression coefficients were calculated based on regression analysis.

In calculating standard errors for percentage change, the following approximation was used. Let E be the percentage change and X be the value of the variable. Then, the standard error of E equals $SE(E) = SE(X) / X$. Thus, the standard error of E equals $SE(E)$ when the standard error of X is 1%. The standard error of E is calculated using the approximation $SE(E) = SE(X) / X$, where $SE(X)$ is the standard error of X . The approximation is valid when X is 1% or greater. When X is less than 1%, the standard error of E is calculated using the approximation $SE(E) = SE(X) / X$.

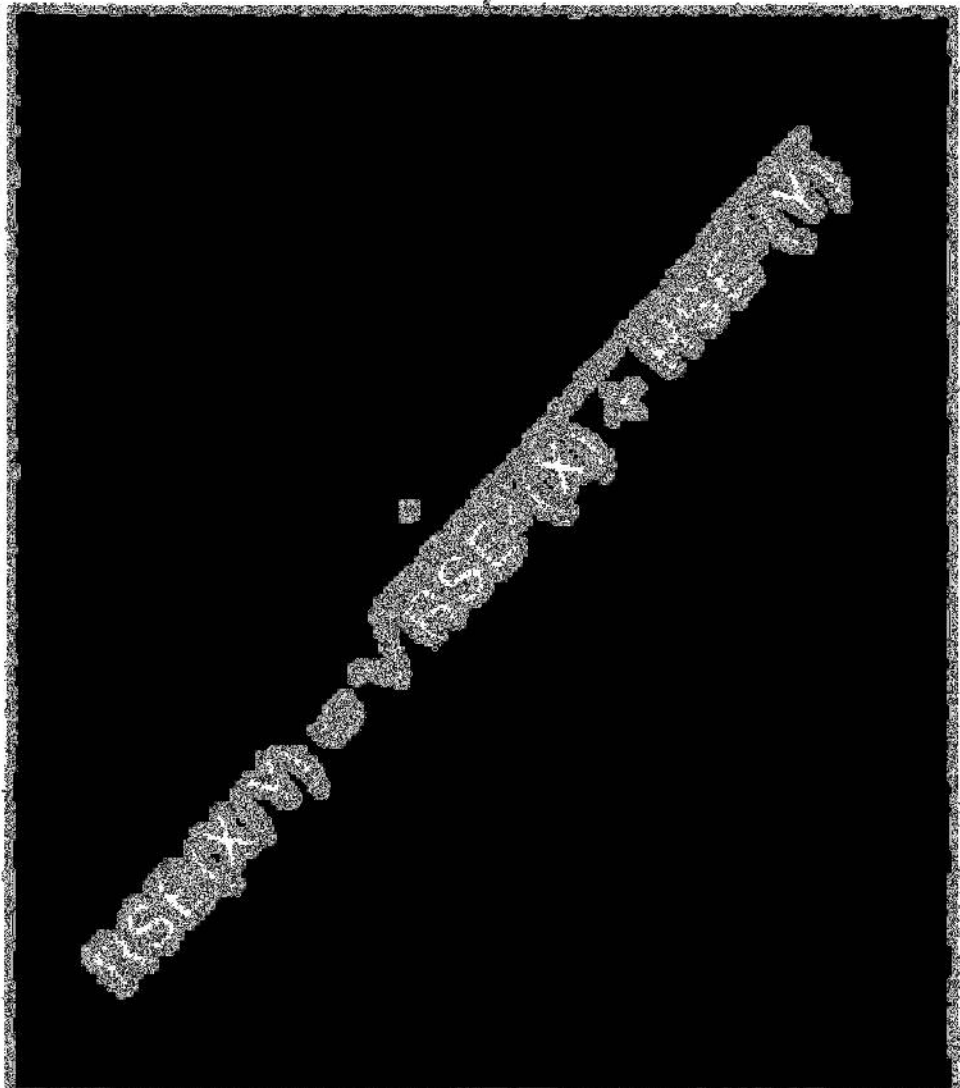
The error term variable variation in the regression of the first equation was investigated by each equation. The standard errors of these equations were calculated directly using the half-weight method. The error approximation was not used.

The error term variation is presented in the tables and text on an annual basis.

¹ Household Energy Expenditures Survey, Government Accounting Office, Washington, D.C., Report 1973.
² Household Energy Expenditures Survey, Government Accounting Office, Washington, D.C., Report 1973, Appendix B.

Appendix C

Limitations of the Data





Appendix C

The instructions of the data can be divided into three groups. First, studies which are general, comprehensive and representative data were cited. The cut-out materials were largely correct, problems with the classification techniques, and cited, problems with the statistical methods.

The cut-out materials were checked by reorganizing the general, comprehensive and representative data. The instructions in the general studies were checked more than the cut-out materials. The quality of the materials that was used here, and the percentage of errors shown the quality check was based upon certain assumptions that were in particular interest. Table II shows the nature of errors in the studies that are used here, along with the percentage of errors with particular studies based upon certain assumptions. The study that by having type for the 1971 survey. The results for the other studies were similar except the main sample size was 25 percent smaller for the 1971 survey. Other data sources shown in detail throughout of the data, including in comprehensive and representative reports.

¹ "Statistical Tables: Comprehensive Survey: Instructions and Assumptions." U.S. Dept. of Commerce, Bureau of Economic Analysis, Washington, D.C., July 1971. Available from the Superintendent of Documents, Washington, D.C. Order form: GPO: 1971: 250-111-1. (Washington, D.C. Government Printing Office, 1971.)



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 One or More Units	Units in Buildings With More Than One Unit
Electricity					
Number of Households	4,263	390	4,340	697	833
Percent with Usable Fuel Records	60.8	60.2	58.8	67.3	52.1
Natural Gas					
Number of Households	2,530	118	2,050	344	537
Percent with Usable Fuel Records	71.7	69.7	68.2	69.5	73.0
Fuel Oil or Kerosene					
Number of Households	1,122	70	724	259	169
Percent with Usable Fuel Records	48.7	37.1	45.2	30.7	0
LPG					
Number of Households	627	144	482	16	2
Percent with Usable Fuel Records	61.3	55.6	61.8	56.2	33.0

^aData were available for electricity and natural gas if the records covered less than 3 months and for fuel oil, kerosene, and LPG if the records covered less than 1 year.

^bResidential Energy Consumption Survey: Consumption and Expenditures, April 1981 through March 1982, Part 1, National Data, DOE/EIA-1021/1 (Washington, D.C.), Table A11.

For those households whose annual energy consumption data were missing or unstable, 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 1977 survey, adjustments were made to the population projections for electricity and natural gas consumption. These adjustments take into account such differences between energy consumption patterns for households likely to occupy vacant buildings and those living in buildings with electrical service. Future surveys will report and reflect these adjustments.

Additional questions about the annual data that are needed to derive the electric distribution use requirements and requirements. The annual requirements are based upon the assumption that the requirements and requirements requirements have similar energy characteristics. While there may be differences between requirements requirements, any systematic differences between requirements requirements and requirements will result in biased estimates.

The 1977 data did not cover certain types of residential or commercial buildings. This agreement resulted in an underestimation of the total energy used in the residential sector. The results in this report also reflect the coverage and non-coverage of the residential primary requirements. In the future data and secondary data were included in the coverage, then it is expected that the results would be lower.

The sample design for the 1977 survey did not cover Alaska, Hawaii, and residential housing units in military bases. The 1977 and 1978 survey did cover these residential units. However, in military bases were not included in residential units. The results for the 1977 survey were based by this undercoverage. This estimate comparison between the 1977 results and the results for 1977 and 1978.

The effects of not covering Alaska and Hawaii in the 1977 survey are estimated by analyzing the results for the 1977 and 1978 surveys. The results of the electric requirements showed that dropping Alaska and Hawaii would increase the average electricity consumption in the West Census region by approximately 1.5 percent, increase the average annual electricity consumption by approximately 1 percent, increase the average peak and average requirements by approximately 1 percent, and decrease the average 1977 consumption by approximately 1 percent. The effects on the national averages were approximately a .1 percent decrease in electricity, a .1 percent increase, and a .1 percent decrease for residential, commercial, and total, 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 water utility during or after 1977, the population in 1977 includes units built in 1975 through the center of 1977. The population in 1978 includes units built in 1975 through the center of 1978. If the type of units built in 1975 through the center of 1978 are the type of units built from the center of 1977 through the center of 1978, then the change in population housing characteristics will give an interpretation of any comparison in energy consumption between the 1977 survey and the 1978 survey.

The disaggregation technique used the population weights to estimate only the percentage of each fuel consumed by each end use. Initially, in this technique the disaggregation was of a household and not fuel or heat fuel in the average for use and use. It will be in the all end uses by the same percentage. The results, as a household consumed the electricity fuel by reducing the household energy use in the future. When looking into the future, the household will have also consumed the energy of air conditioning. The percentage of the electricity used from the use of air conditioning and use. In the change



Appendix C (Continued)

that every 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 estimates were 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 use 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 actual 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)

In a form of the record of the investigation, except separate sub-
categories for each sub-sample were prepared for the reporting purposes
for the 1954 survey. Individual categories of the categories were
prepared for the three sub-categories for the national, foreign and
the categories for each survey. The standard errors of the
separate sub-categories for each sub-sample were listed with the
standard errors of the sub-categories. Individual errors were in the
survey, but general errors for the same category, and they were
listed for the separate categories.

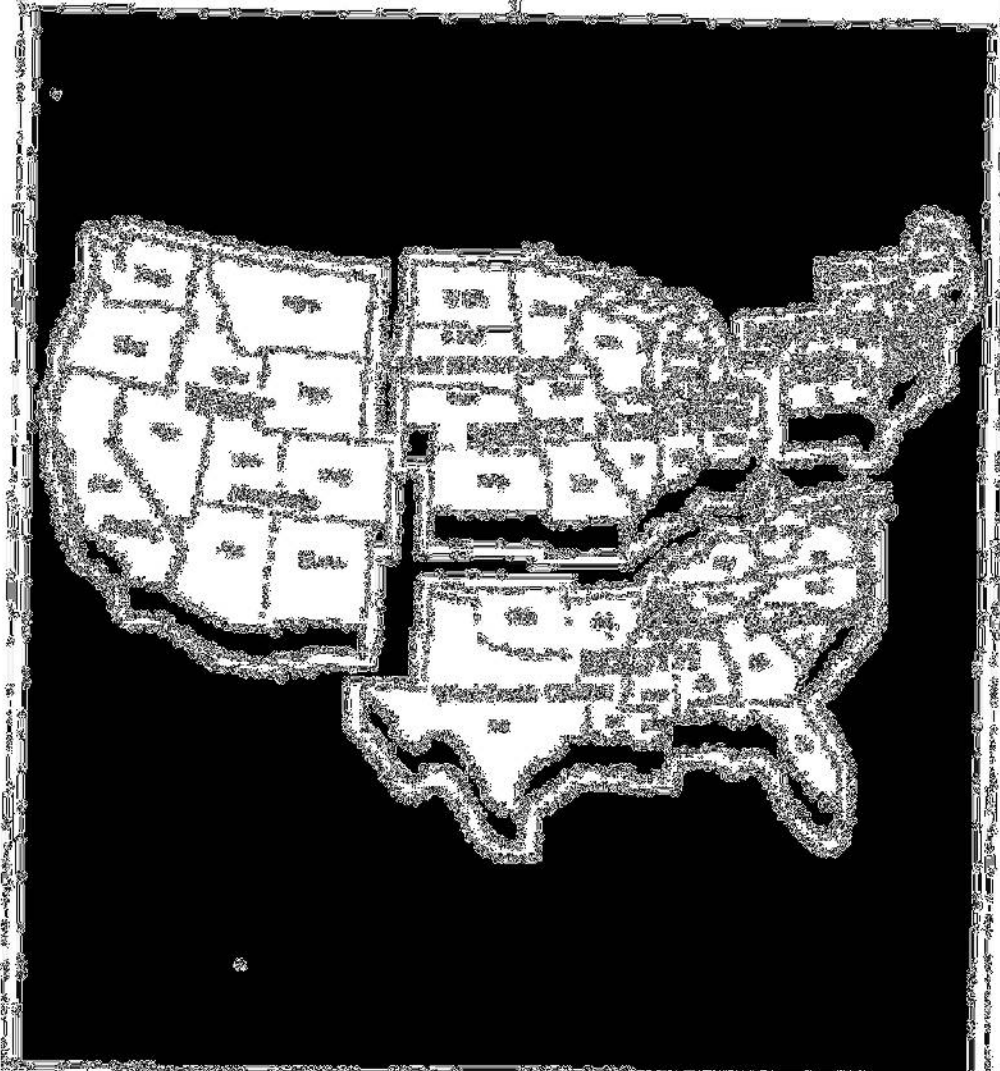
In the appendix, based on the results of the sub-sample categories
of the survey for the 1954 survey, that the representation of
the standard errors was prepared for the categories since the
differences between the two basic periods. First,
the representation should be prepared for the same category category
the 1954 and the 1951, separately, the representation could be
prepared for the same category category for all levels and periods
for the separate category for each category. Additionally, the
standard errors of the separate categories could be prepared for
each since the categories were separate and each could be prepared a
separate preparation of categories with separate preparation data,
such as the two categories in each category.

The procedure for preparing the sub-sample categories has been prepared
with each survey. First, it can be understood that the standard
errors between the two 1954 surveys will be prepared as same
preparation, since the standard errors between the 1954 and
1951 surveys.

Appendix B

U.S.

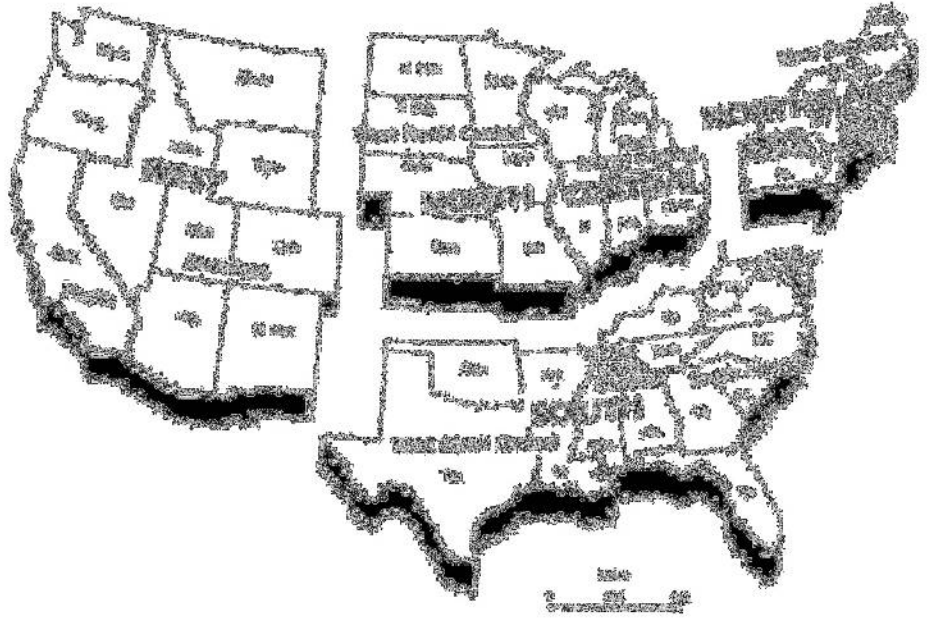
Census Regions
and Divisions



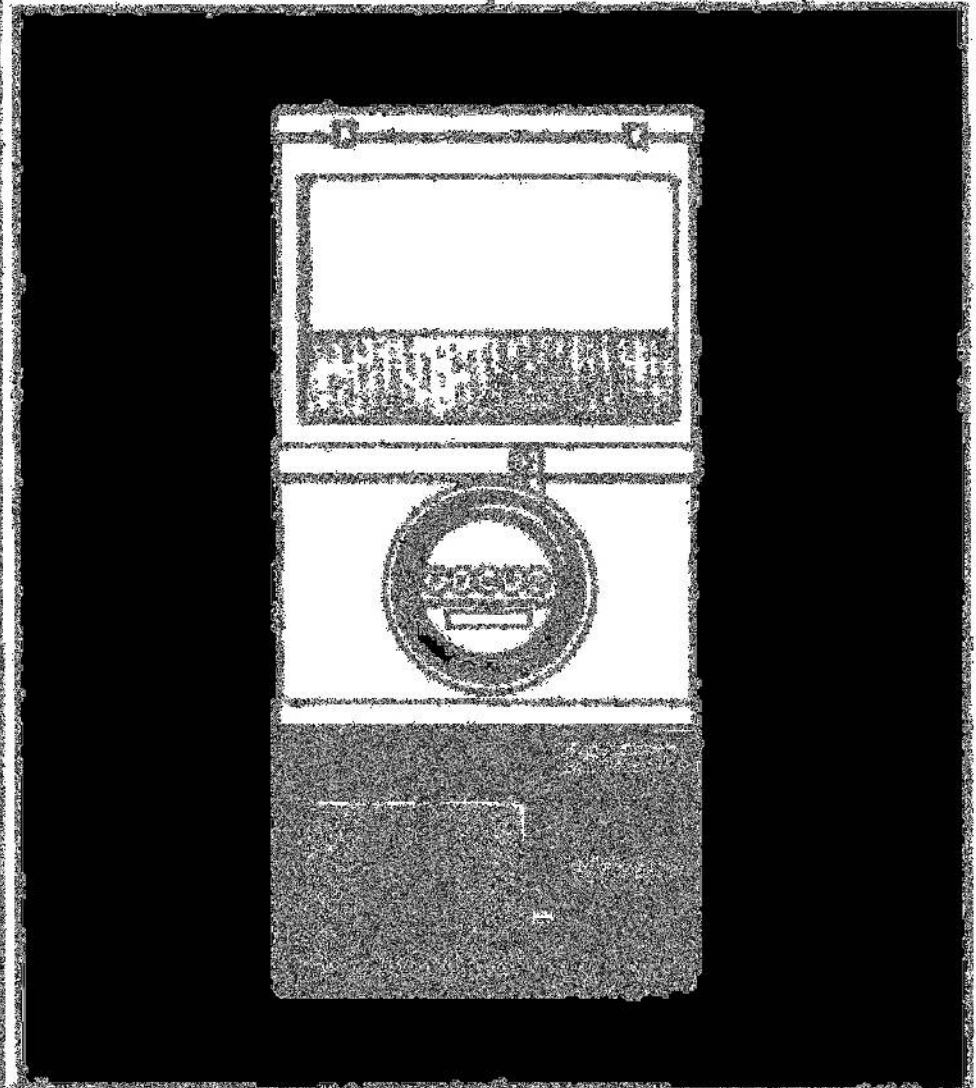


Appendix D

U.S. Census Regions and Divisions



Glossary



Glossary

Air-conditioning: Heating of air by a refrigeration unit, this does not include fans, blowers, or supplementary heating systems not connected to a refrigeration unit. Air-conditioning units that are not connected to a heating unit at any one time, but are in place in the heating unit, are included in this category.

"Number of units that are air-conditioned" means the number of units the air-conditioning equipment is capable of meeting when the equipment is used. Whether or "the same power in your home (apartment) can be used by air-conditioning" means to mean that would be used if the air-conditioning equipment were used. There are three cases, or more in the case of a household with air-conditioning equipment that would use more.

"All units air-conditioned" means that 100 percent of the units are air-conditioned. "Some units air-conditioned" means that more than 100 percent are air-conditioned.

"Permanent air-conditioning system" means is a system that air-conditioning a number of units in a home. For this purpose, the unit for the building. For a definition of units, see Number of Units.

Ex-empted units: Units exempted by the agency, under heating, and cooling. Other units may be used for supplementary heating or other purposes.

Appliances used: Appliances purchased and used by the household, appliances provided by the landlord but not used are not included. Air-conditioning units are an exception. Air-conditioning is treated as present whether or not it is in use. The air-conditioning's appliances listed in the household are those reported and are included. Appliances temporarily not in working condition but available and by the household are included only if a repair person has been called on the appliance has been taken to a repair shop. "Including gas heaters" applies only to working units that are for the exclusive use of the heating unit. Working units in apartment buildings, condominiums, or cooperatives are not for the use of any particular household and are not included. "Gas" includes oil, coal, and wood-burning units, but does not include kerosene units. "In operation under (ready to use)" is an air-conditioning unit that does not have a gas, and air by introducing the air with other units. (See also Appliances.)

April 1971 through March 1972, April 1972 through March 1973, April 1973 through March 1974: The annual maintenance period is a 180-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 to either December 31 or January 31 depending on the household's billing cycle. For fuel oil or kerosene and LP, the beginning date is always April 1, but the amount reported shall be based on the household during the 180-day period, not further extended. The expenditure for fuel oil or kerosene and LP reported shall be for the amount of that delivered to the heat, not the amount of fuel received. (See Expenditure.)

Expenditure: An amount of money in which a person can use without cost all or part of the building. A "small space" is the space between the ground and the floor of a house. An "apartment" is a space in the ground that the ceiling of the house is above the ceiling of the space ground or into the ceiling. A small space "open to the outside" is a space that is available for heat and energy in any way by ground or a window or doorway. It does not include an enclosed area above the ceiling of the ground.



Glossary (Continued)

Bathrooms: 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	1,047 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
	1,510 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 space 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)

Gasoline is the amount of electricity of natural gas used by the household during the 30-day period. For fuel oil, however, and LP, the quantity represents fuel purchased, not fuel consumed. In the event of fuel oil the meter was the basis of 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.

Heating degree-days refers to the number of degrees per day the daily average temperature is above 65 degrees Fahrenheit. Usually, cooling is not required in a building when the outside average daily temperature is below 65 degrees. Heating degree-days are calculated by subtracting the base of 65 from the daily average temperature. For example, a day with an average temperature of 65 degrees has 0 heating degree-days (65-65 = 0), while one with an average temperature of 68 degrees has three heating degree-days (68-65 = 3). The average daily temperature is the sum of the number and minutes temperatures for a 24-hour period. The cooling degree-days are 65th Fahrenheit in the 65th degree and the number of Fahrenheit above 65th Fahrenheit according to the 65th Fahrenheit. The whole each household was located from 1960-1969. Heating degree-day records for Alaska and Republic households were acquired by appropriate nearby weather stations.

Heats (thermal units) are heat energy in the electric or by an electrical area, such as a porch or garage, down to a heated hallway in an apartment building. These particularly cooled areas, and down to an adjacent area of passage were not included because these areas are not usually fitted with space heaters. The 1960 survey covered down to an adjacent area of basement, but this rule was not followed in the 1969 survey. Inside doors were opened on one side. 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 1969 survey. "Standard" doors include doors with and without glass panels.

Illustration See "Data."

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 used. 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 30-day period. Expenditures include state and local taxes, but exclude surcharges, penalties, or special service charges. For households on a budget plan, the expenditures are for the actual consumption. Fuel oil, however, and LP expenditures are for the amount of fuel purchased, which may differ from the amount of fuel consumed (see **Gasoline**). For households that do not pay directly for their fuel supplies, 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.

Fuel: 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 10,359 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. 1 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)

"Gasoline" refers to a distillate fraction of oil or coal with the gasoline name "gasoline." Gasoline is similar to No. 1 distillate fuel oil and is used for space heating or water heating or lighting equipment using stoves. It is sometimes sold under the name "kerosene" or "stove oil."

"Gas or liquid 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 liquid petroleum gas supplied to RHH households. Household use of LPG safety for non-fuel gas grills is not considered sufficient use to mark the household as an LPG user.

"Heating gas" is utility gas supplied by independent pipelines to individual heating units by a natural gasifier company. It does not refer to privately owned gas stoves operated by the household.

Heating degree-days: The number of degrees per day the daily average temperature is below 65 degrees Fahrenheit. Usually, 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 temperatures for a 24-hour period.

The heating degree-days for RHH households at the 45 States and the District of Columbia were analyzed according to the State division in which each household is located (See Table B-1). Heating degree-days for Alaska and Hawaii 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 units. It generally consists of a compressor, both indoor and outdoor coils, and a thermostat.

When the heat pump is attached to a cooling furnace, the heat pump is either the only 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 degrees needed, the heat pump is the main heating equipment.

Heat-loss coefficient: A parameter by which the household size is scaled by variables related to the heating area. A household is then selected that has the same value on the matching variables, and this "near" household supplies the value for the heating area. (See Department).

Household: A group of up to 12 persons occupying the same housing unit. "Occupant" means the housing unit was the person's usual or permanent place of residence at the time of the 1970 field contact. The household includes babies, toddlers, 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 vacations or military of the armed forces at the time of the census.

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 foster 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 building and the outdoor environment, reduces the rate of heat loss to the environment or heat gain from the environment. The most forms of insulation, illustrated in a drawing shown in response sheets, are listed below:

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

"Loose particles or loose fill"--loose insulation added to a bag and is packed between joists (batts). Loose insulation can also be blown into attic spaces. Loose fill can be glass fiber, rock wool fibers, cellulose fibers, or vermiculite.

"Thin layers of thin plastic"--rigid boards (such as styrofoam) that can be cut to size and either glued, nailed, or glued into place.

"Sprayed-on cellulose foam" is not shown separately as a category because the description used in the survey was insufficient. However, foam is not sprayed in houses in Canada as much as it is in the United States. The term "sprayed foam" will be used in the future to include all types of foam insulation.

"Thin insulation" is insulation between the house floor and the outdoors (usually in attic space). Carpeting or carpeting pads are not insulation.

Heat Seeking Fuel: In the answer to the question "Considering all of the different kinds of heating fuel used, including wood in the area, in a house, and with wall appliances, which fuel is used most?"

Heat Seeking Equipment: (The description of specific heating equipment.) Heat seeking equipment, if temporarily out of order, is reported as the heat seeking equipment. If the type of heating equipment used is not listed, the heat equipment is the one used most. If both are used equally, the heat equipment is the one that appears first on the list in the question.

Heat Seeking Fuel: The fuel mentioned by the respondent is reported as the heat seeking fuel. "None is the main fuel, used for heating this house (apartment)?"

Heat Seeking Method: 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.

HEAT: The National Institute Energy Consumption Survey, the first detailed survey in the planned series of Residential Energy Consumption Surveys. The NIECS reported 4,001 households in October and November 1978. Fuel suppliers provided data on consumption and expenditures for the period April 1978 through March 1979.

Heat Exchanges: One of the 14 heating appliances designed by the National Bureau of Standards Administration (NBS) manufacturing line is called Heat Exchanges. Heat exchangers usually follow energy meters or meters are meters with similar energy exchangers. The NBS exchanger does not follow energy meters with similar exchangers very consistently which is usually such as to likely to happen when the energy meters are given an unusual high number. A large number of energy meters are given an unusual high number is likely to happen an average of many meters.

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, porches, 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 rented 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 within houses, single-family housing units (detached and attached), 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 definitions.)

Residential Energy Consumption Survey (RECS) 1980, 1981, 1982: The Residential Energy Consumption Survey was conducted in 1980, 1981, and 1982. The survey provided data on consumption and expenditures for the period April 1980 through March 1981 and April 1981 through March 1982.

Room: (See Room or Room.)

Rooms: With no further comment are included in the non-Room category. "Front-door" means that front door not built up on the inside of the front section or on the side section.

Room Heating Unit, Oil, Kerosene: Are circulating heaters, radiators, radiant gas heaters, space heaters, or other Room Heating Unit when located that way or may not be connected to a flue, vent, or chimney.

Survey Survey: The Residential Energy Consumption Survey (RECS) conducted 2,500 households in October and November 1979. Most responses provided data on consumption and expenditures for the period April 1979 through March 1980. This survey was used in the Household Income Survey because it was used to select households for participation in the Household Transportation Panel.

Survey 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 heating unit that is enclosed from the weather. Balconies 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 access that have some heated space are included. Crawl spaces are not included even if they are sheltered from the weather. Porches and other buildings that are not attached to the house are not included. "Structural" square feet means that the measurement of the dimensions of the house did not rely on the respondent's response but was an actual measurement by the interviewer using a suitable, 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 drafty during the heating season to some or full are not counted as heated square feet. Attached garages that are sheltered and enclosed access to basements and attics are not counted as heated square feet.

Room or Hot Water System with Radiators or Convector: A central heating system supplying steam or hot water to conventional radiators, baseboard radiators, heating pipes attached to 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 buried in a concrete, slab floor.

Storm Doors and Windows: Storm doors made of double or insulating glass and no windows. Glass or plexiglass placed over a sliding glass door or window can 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.

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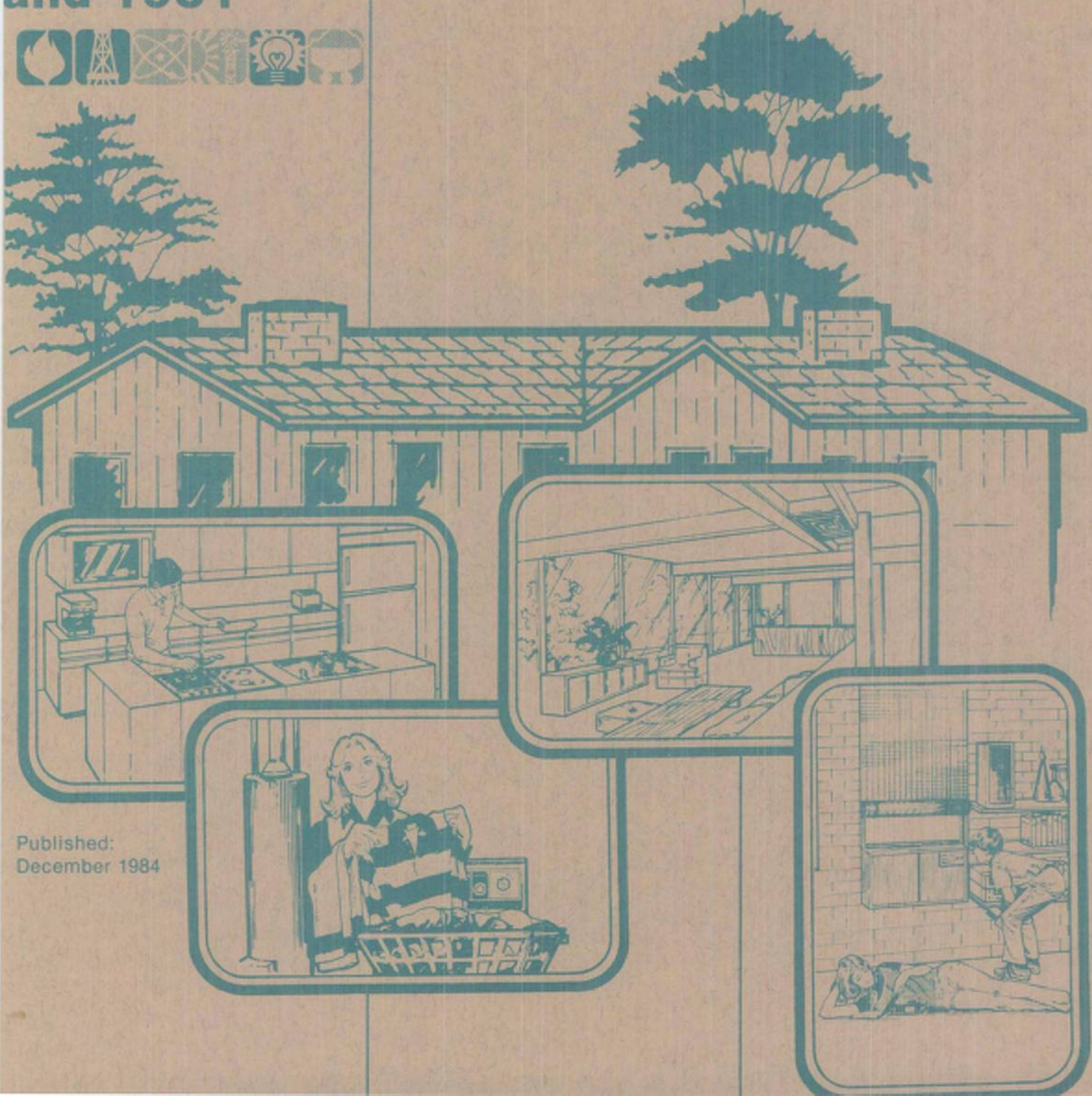
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Residential Energy Consumption and Expenditures by End Use for 1978, 1980, and 1981

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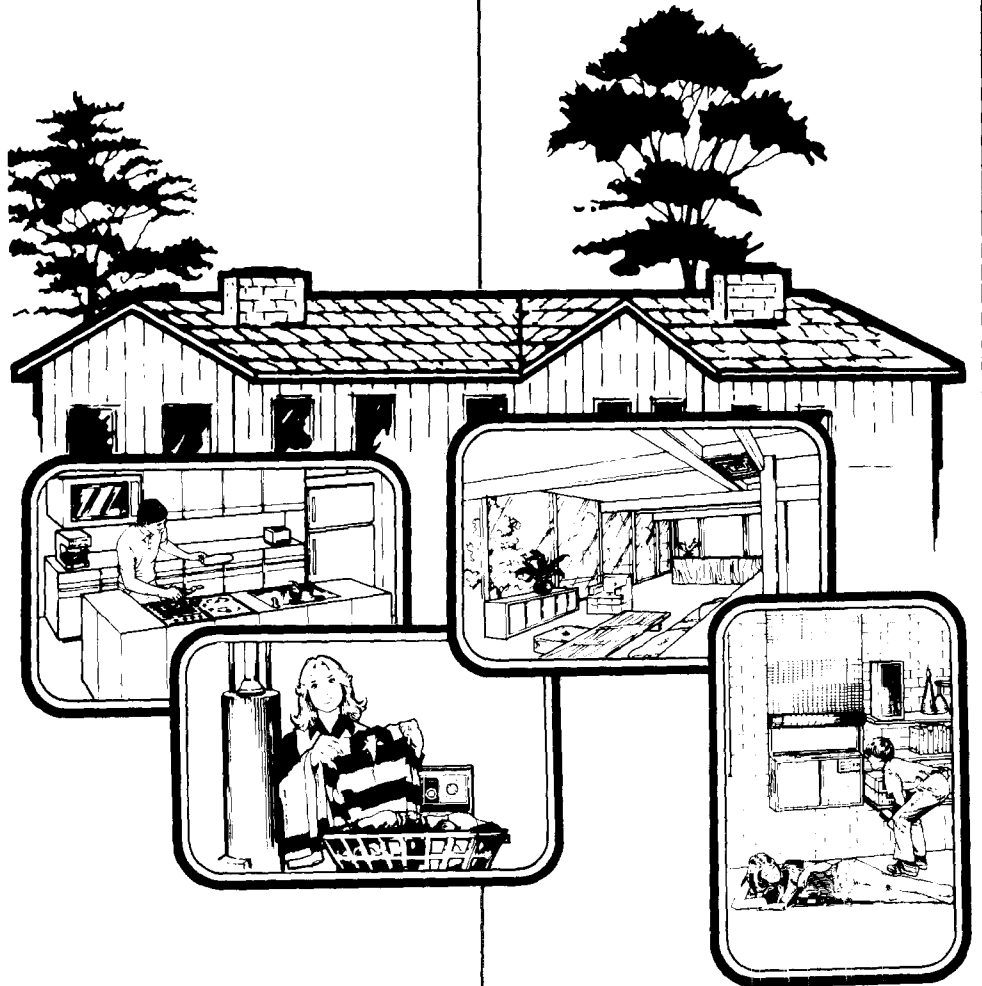
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Contents

Summary of Findings

Appendixes

Figures

	Page
Introduction	1
Significant Findings	2
Energy End Use Trends	4
Electricity Consumption and Expenditures	9
Natural Gas Consumption and Expenditures	15
A. Sources of the Data	63
B. Methodology	67
C. Limitations of the Data	73
D. U.S. Census Regions	81
Glossary	85
1. Average Household Energy Consumption by Main Heating Fuel for 1978, 1979, 1980 and 1981 (Million Btu)	4
2. Average Household Electricity Consumption for Space Heating and Water Heating When Main Heating Fuel is Electricity (Million Btu)	5
3. Average Household Natural Gas Consumption for Space Heating and Water Heating When Main Heating Fuel is Natural Gas (Million Btu)	6
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)	7
5. Average Household Energy Expenditures for 1978, 1979, 1980, and 1981 (Dollars)	8
6. Average Household Electricity Expenditures for Space Heating for 1978 and 1981 by Selected Level of Income (Dollars)	11
7. Average Household Electricity Consumption for All Households that Use Electricity by End Use for 1981 (Million Btu)	12
8. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use for 1978 (Million Btu)	13
9. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use for 1980 (Million Btu)	13
10. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use for 1981 (Million Btu)	14
11. Average Household Electricity Expenditures When Main Heating Fuel is Electricity by End Use for 1978, 1980, and 1981 (Dollars)	14
12. Average Natural Gas Consumption for Space Heating When Main Heating Fuel is Natural Gas by Selected Year House Was Built (Million Btu)	15
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	16
14. Average Household Natural Gas Consumption for All Households that Use Natural Gas by End Use for 1981 (Million Btu)	17



Contents (Continued)

Tables

	Page
15. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1978 (Million Btu)	18
16. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1980 (Million Btu)	18
17. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1981 (Million Btu)	19
18. Average Household Natural Gas Expenditures When Main Heating Fuel is Natural Gas by End Use for 1978, 1980, and 1981 (Dollars)	19
S1. Average Household Consumption and Expenditures for Space Heating by Main Heating Fuel	2
S2. Average Household Energy Expenditures by End Use by Income for 1981 (Dollars)	3
T1. Average Household Energy Consumption for Space Heating per Heating Degree-Day by Main Heating Fuel (Thousand Btu)	8
T2. Average Household Consumption and Expenditures for Space Heating by Main Heating Fuel (Percent Differences 1978-1981, 1978-1980, 1980-1981)	9
E1. Average Household Electricity Consumption and Expenditures for Space Heating When Main Heating Fuel is Electricity by Region	9
E2. Average Household Electricity Consumption for Space Heating When Main Heating Fuel is Electricity by Square Footage of Home	10
1. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Housing Characteristics for 1978	21
2. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Sociodemographic Characteristics for 1978	22
3. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Housing Characteristics for 1978	23
4. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Sociodemographic Characteristics for 1978	24
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	25
6. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Sociodemographic Characteristics for 1978	26
7. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Housing Characteristics for 1978	27
8. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Sociodemographic Characteristics for 1978	27
9. Average Household Energy Expenditures by End Use by Selected Housing Characteristics for 1978	29
10. Average Household Energy Expenditures by End Use by Selected Sociodemographic Characteristics for 1978	30
11. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Housing Characteristics for 1978	30



Contents (Continued)

	Page
12. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Sociodemographic Characteristics for 1978	32
13. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Housing Characteristics for 1980	33
14. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Sociodemographic Characteristics for 1980	33
15. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Housing Characteristics for 1980	35
16. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Sociodemographic Characteristics for 1980	36
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	37
18. Average Household Fuel Oil or Kerosene Consumption When Main Heating Fuel is Fuel Oil or Kerosene by End Use by Selected Sociodemographic Characteristics for 1980	37
19. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Housing Characteristics for 1980	39
20. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Sociodemographic Characteristics for 1980	40
21. Average Household Energy Expenditures by End Use by Selected Housing Characteristics for 1980	41
22. Average Household Energy Expenditures by End Use by Selected Sociodemographic Characteristics for 1980	42
23. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Housing Characteristics for 1980	43
24. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Sociodemographic Characteristics for 1980	44
25. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Housing Characteristics for 1981	45
26. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use by Selected Sociodemographic Characteristics for 1981	46
27. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Housing Characteristics for 1981	47
28. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use by Selected Sociodemographic Characteristics for 1981	48
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	49
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	50
31. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Housing Characteristics for 1981	51



Contents (Continued)

	Page
32. Average Household LPG Consumption When Main Heating Fuel is LPG by End Use by Selected Sociodemographic Characteristics for 1981	52
33. Average Household Energy Expenditures by End Use by Selected Housing Characteristics for 1981	53
34. Average Household Energy Expenditures by End Use by Selected Sociodemographic Characteristics for 1981	54
35. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Housing Characteristics for 1981	55
36. Average Household Energy Expenditures for Space Heating by Main Heating Fuel by Selected Sociodemographic Characteristics for 1981	55
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	57
38. Percent of Average Household Electricity Consumption Used for Space Heating When Main Heating Fuel is Electricity by Selected Sociodemographic Characteristics for 1978, 1980, 1981	58
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	59
40. Percent of Average Household Natural Gas Consumption Used for Space Heating When Main Heating Fuel is Natural Gas by Selected Sociodemographic Characteristics for 1978, 1980, 1981	60
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	61
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	62
A1. Comparison of Three Residential Energy Consumption and Expenditures Surveys	63
A2. Number of Households by Main Heating Fuel by Survey Year	64
C1. Number of Sample Households that Use Each Fuel and Percent of Households with Usable Fuel Records by Fuel Used and Type of Housing Structure	65



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.

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

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 West¹ 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

¹Appendix 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 17² percent decrease in Btu consumption in homes constructed before 1975.

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 use³ 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.

²Homes 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."

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



Summary of Findings (Continued)

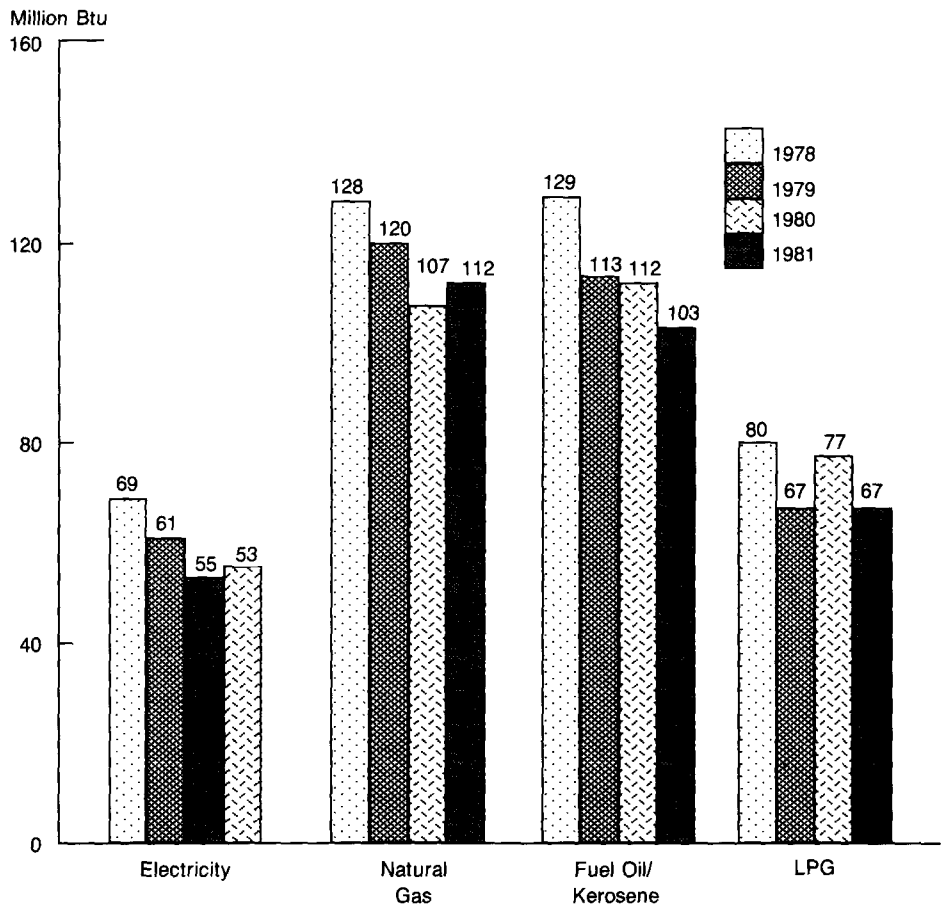
Energy End Use Trends

Average Household Consumption

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

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.



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.

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

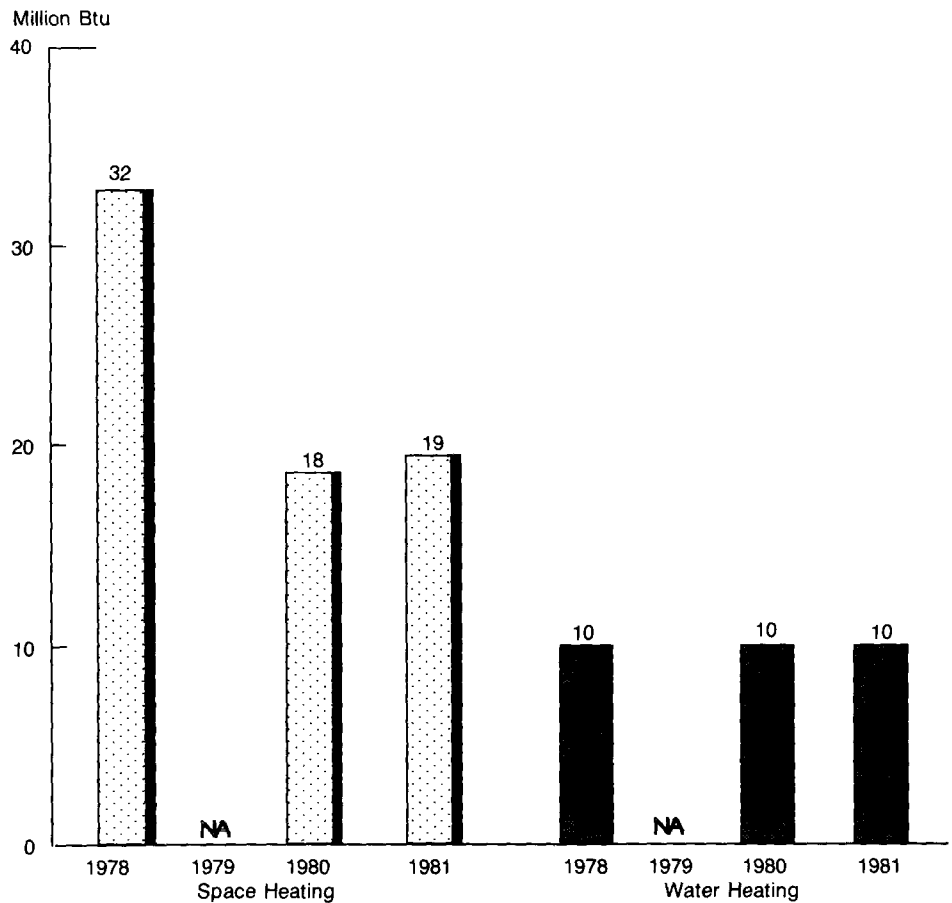


Summary of Findings (Continued)

Space Heating Consumption

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

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.



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

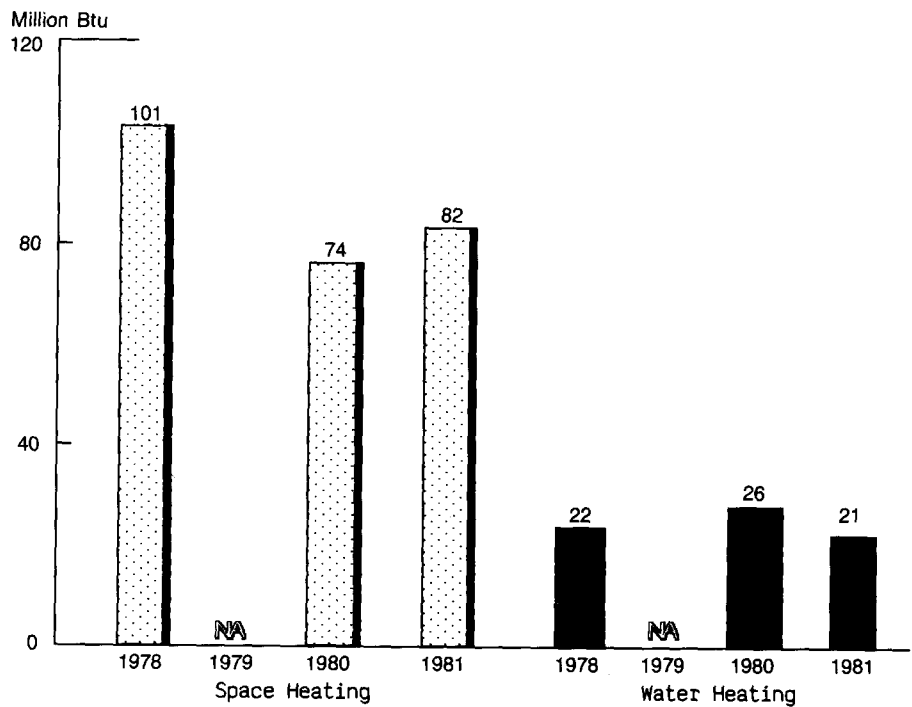
²Miscellaneous use refers to other uses such as lighting, cooking, appliance use.



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.

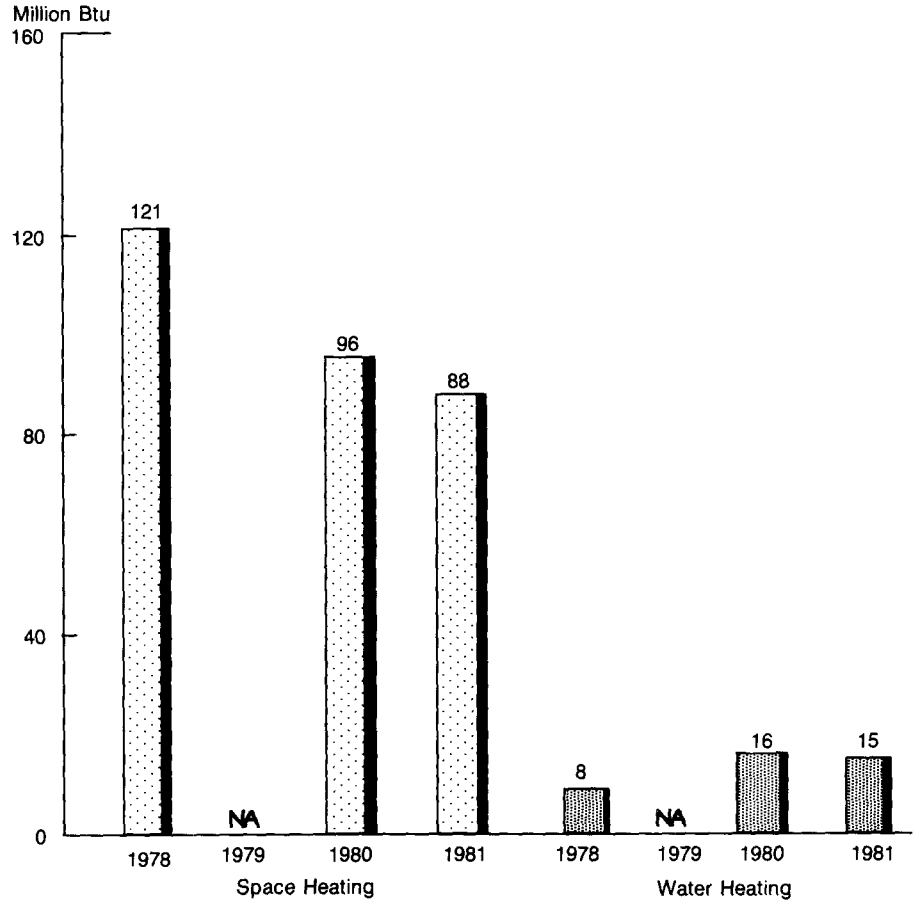
³See Appendix C "Limitations of the Data" for a discussion on the variability of the amount of natural gas consumed for water heating.



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.

⁴Heating 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)

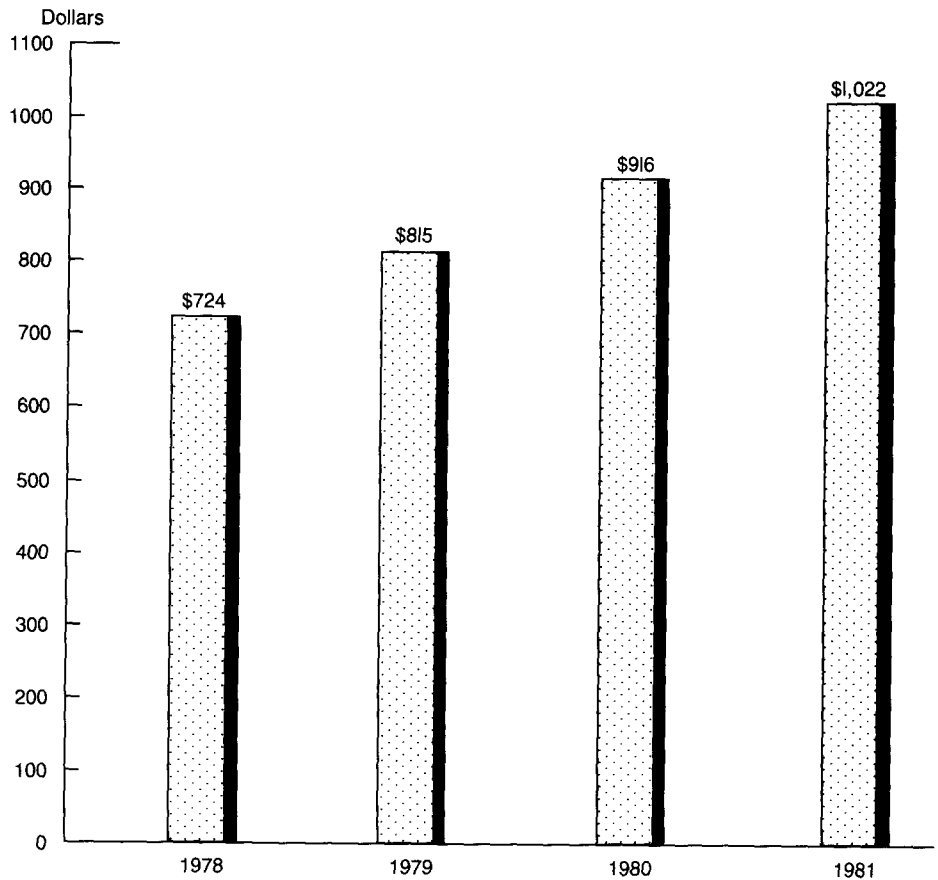
Note: The value in parenthesis represents one standard error of the statistic.

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.

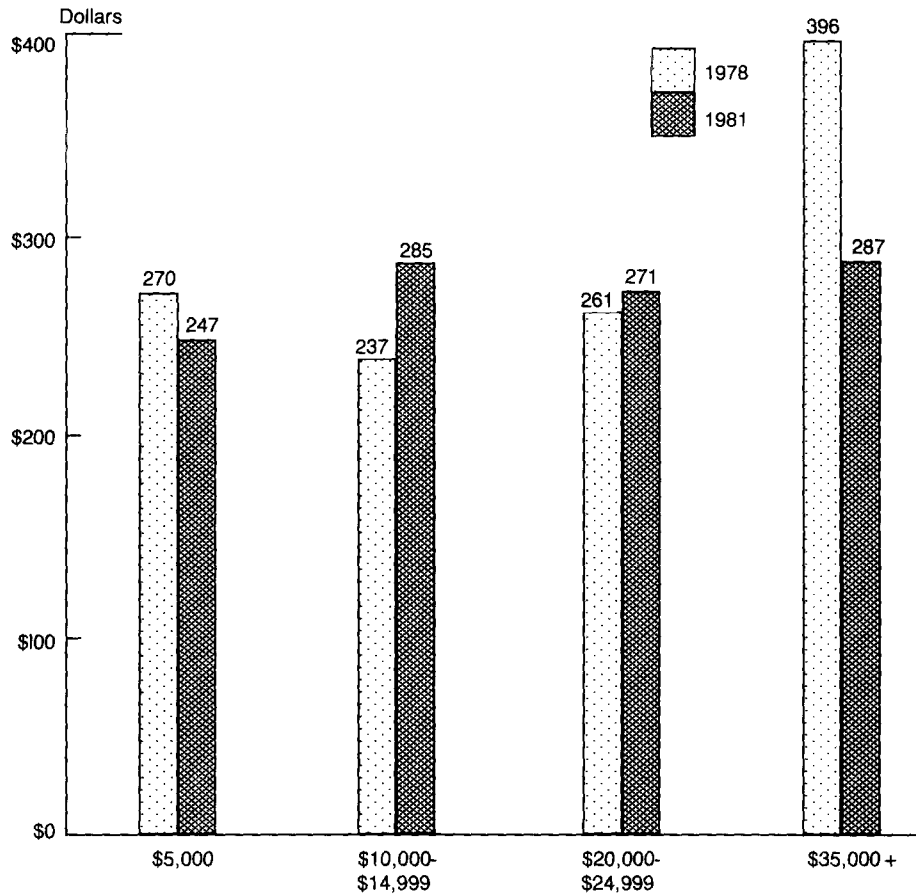
Energy expenditures, particularly for space heating, varied by income, and by geographic region. In 1978, the average space heating cost for electrically heated homes in the Northeast was approximately \$347 (57). By 1981, this cost had almost doubled to \$644 (81). However, other regions in the United 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.



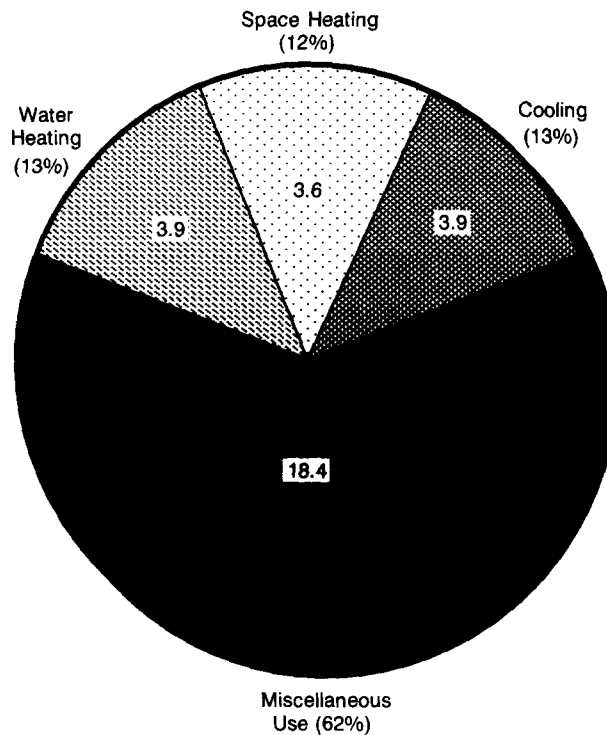
Summary of Findings (Continued)

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)



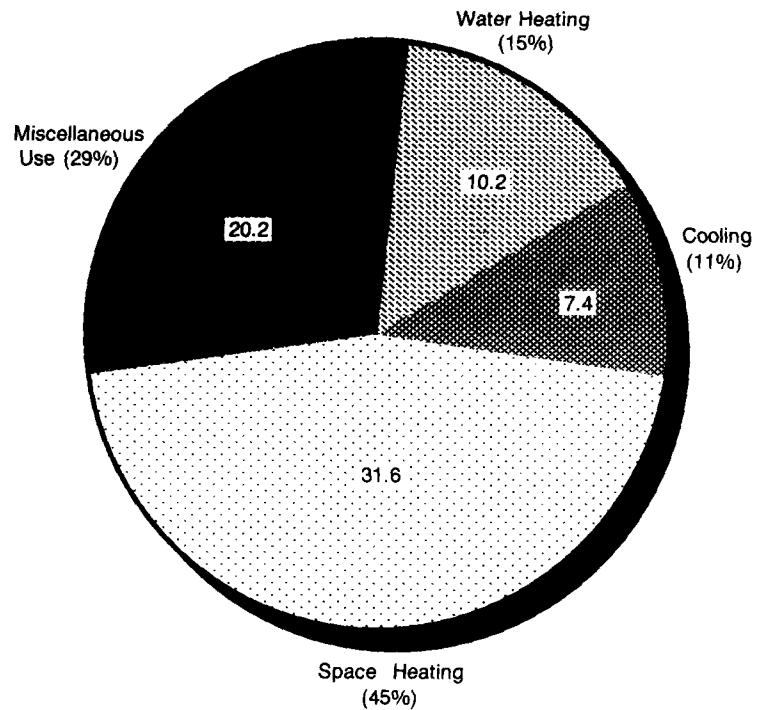
Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

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.



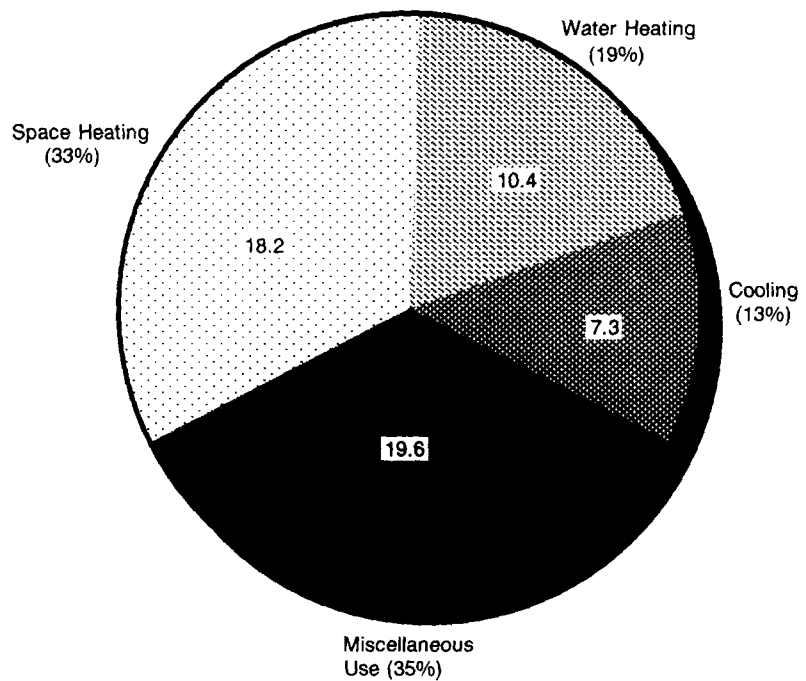
Summary of Findings (Continued)

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)

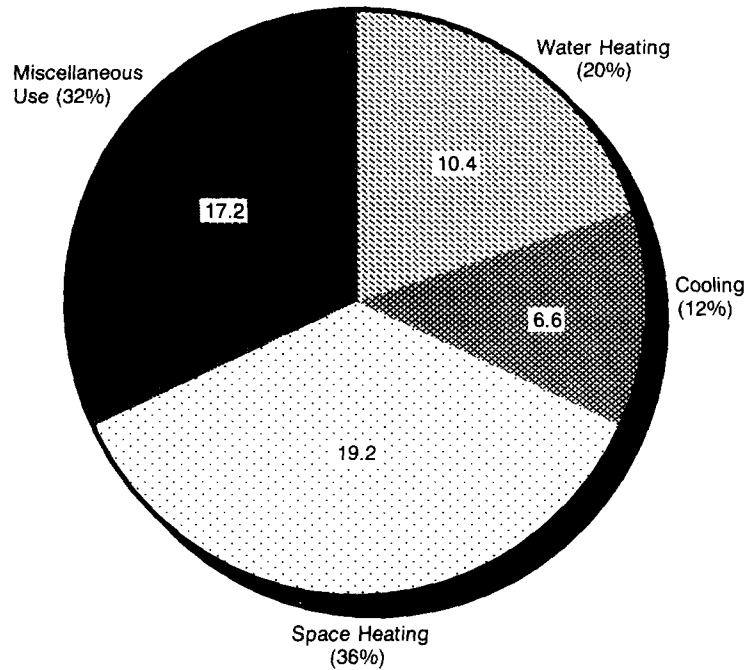


Source: Energy Information Administration, 1980 Residential Energy Consumption Survey.



Summary of Findings (Continued)

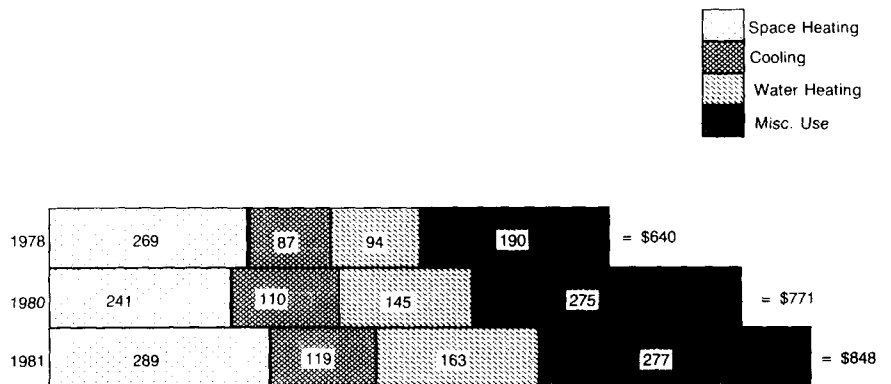
Figure 10. Average Household Electricity Consumption When Main Heating Fuel is Electricity by End Use for 1981 (Million Btu)



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)





Summary of Findings (Continued)

Natural Gas Consumption and Expenditures

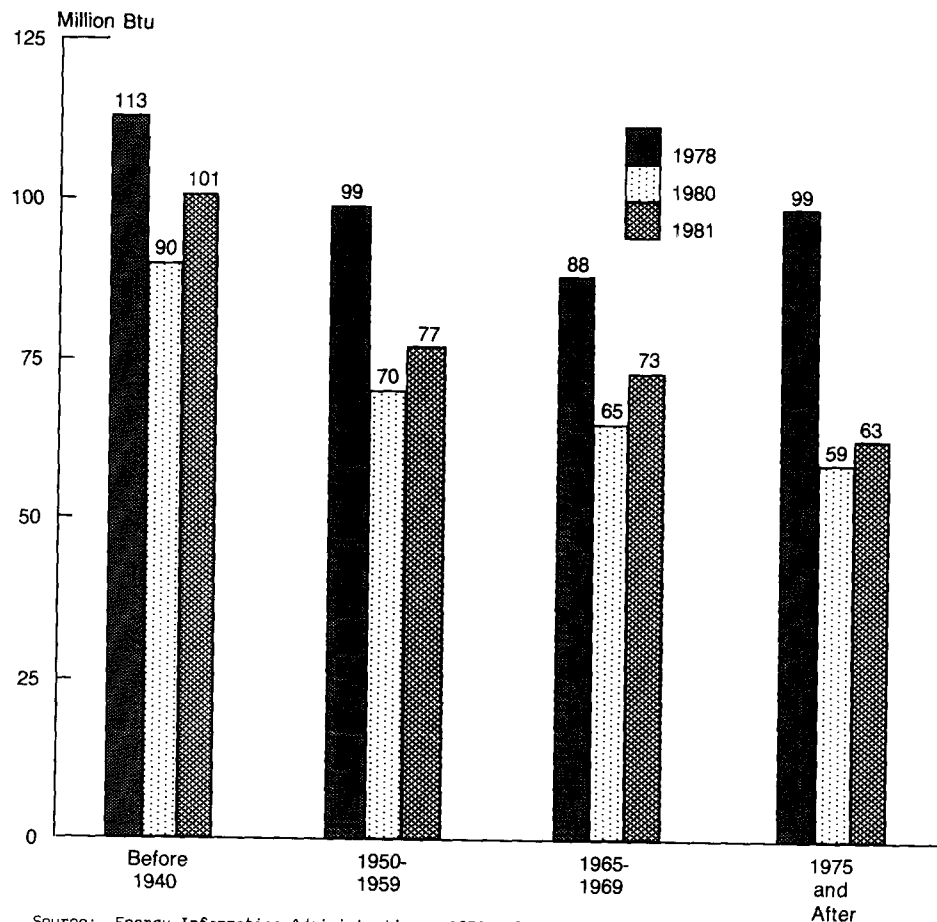
Space Heating

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)



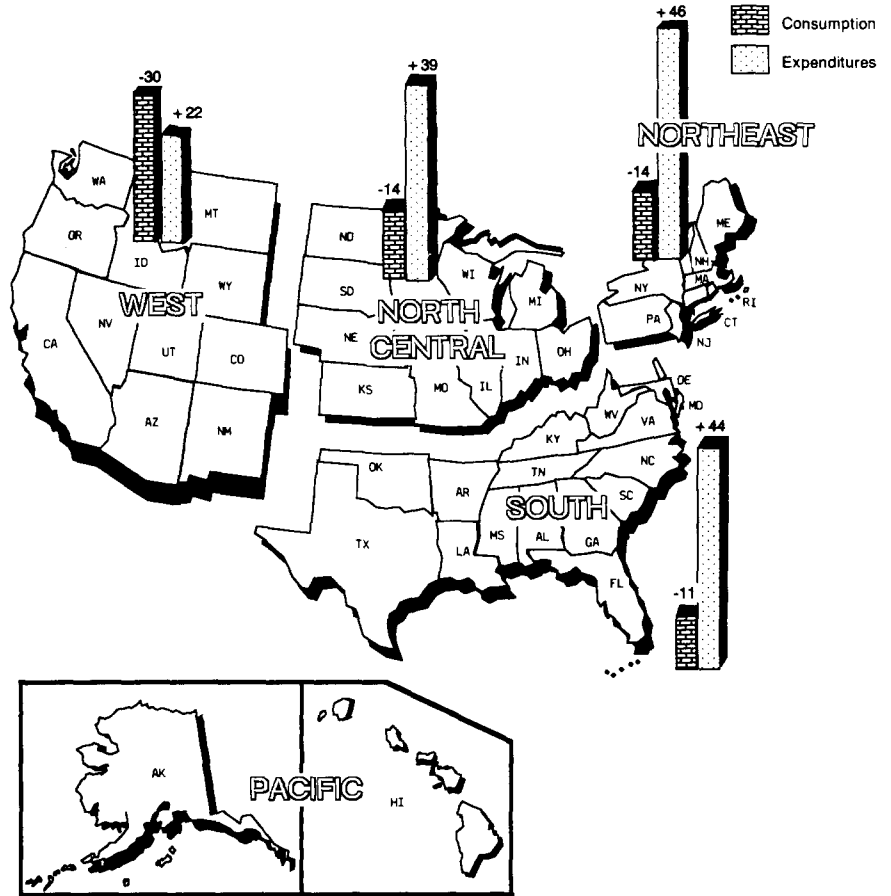
Source: Energy Information Administration. 1978, 1980, and 1981 Residential Energy Consumption Surveys.



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.



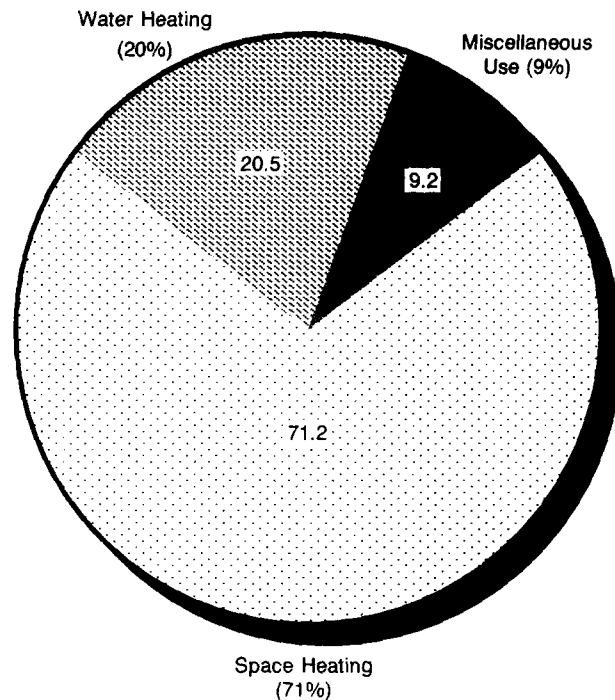
Summary of Findings (Continued)

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)

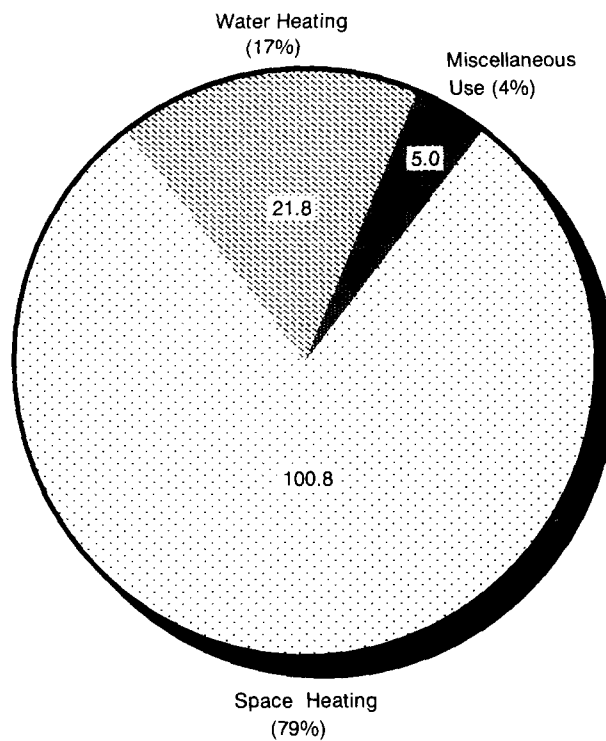


Source: Energy Information Administration, 1978 Residential Energy Consumption Survey.



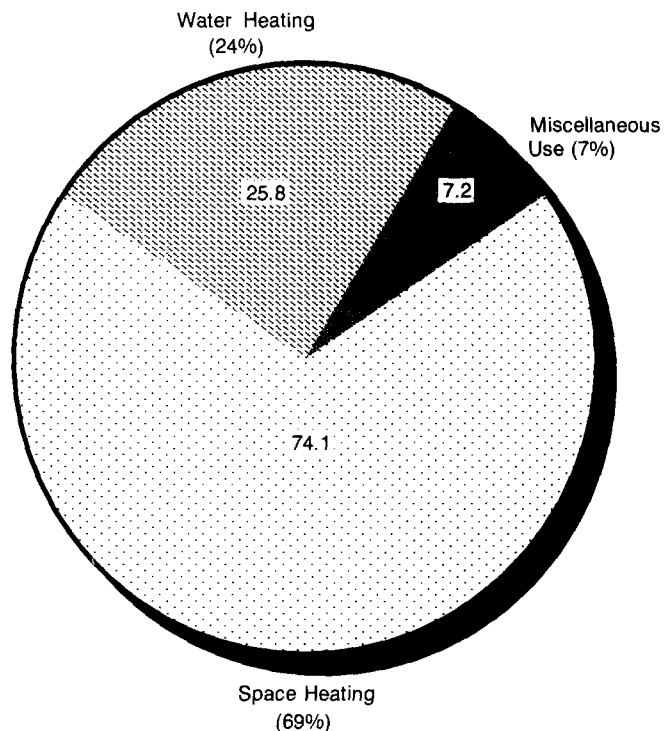
Summary of Findings (Continued)

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)

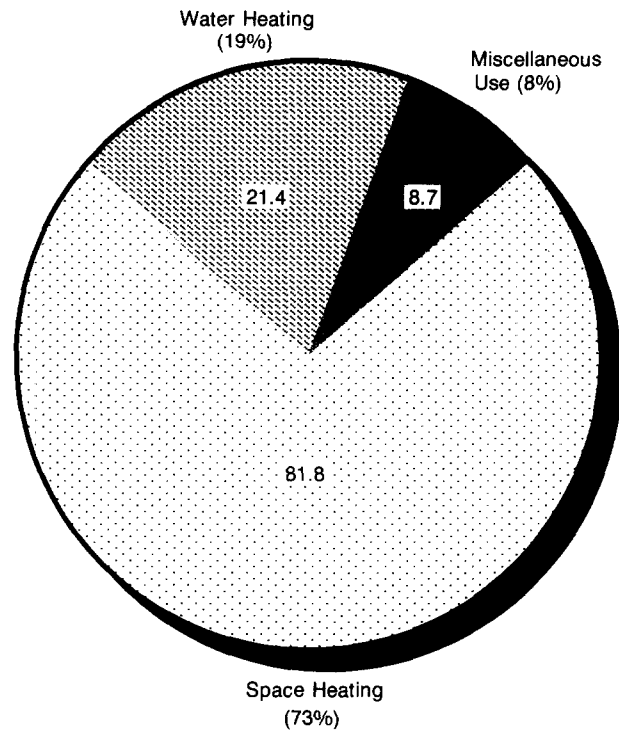


Source: Energy Information Administration, 1980 Residential Energy Consumption Survey.



Summary of Findings (Continued)

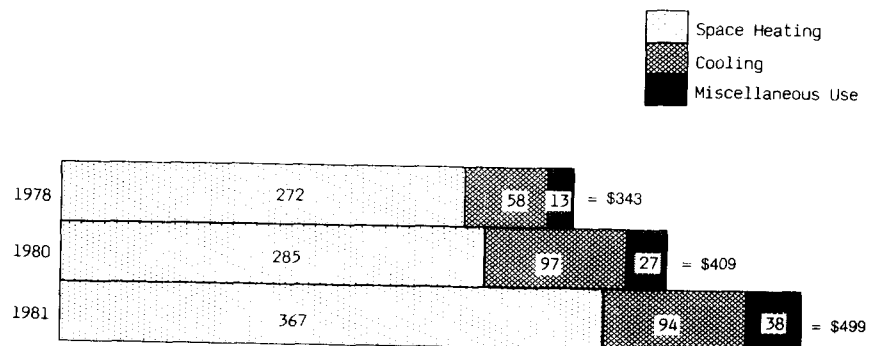
Figure 17. Average Household Natural Gas Consumption When Main Heating Fuel is Natural Gas by End Use for 1981 (Million Btu)



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)





Summary of Findings (Continued)

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 DETACHED.....	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.



Summary of Findings (Continued)

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.



Summary of Findings (Continued)

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 DETACHED.....	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.



Summary of Findings (Continued)

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)

"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.



Summary of Findings (Continued)

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 DETACHED.....	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

"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.



Summary of Findings (Continued)

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

"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.



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 (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 DETACHED.....	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

"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.



Summary of Findings (Continued)

Table 8. Average Household LPG Consumption When Main Heating Fuel is LPG 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.....	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)

"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.



Summary of Findings (Continued)

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 DETACHED.....	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)

"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.



Summary of Findings (Continued)

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)

"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.



Summary of Findings (Continued)

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 DETACHED.....	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)

"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.



Summary of Findings (Continued)

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	386 (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.



Summary of Findings (Continued)

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 DETACHED.....	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.



Summary of Findings (Continued)

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.



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

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 DETACHED.....	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.



Summary of Findings (Continued)

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)

"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.



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 (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 DETACHED.....	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

"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.



Summary of Findings (Continued)

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.



Summary of Findings (Continued)

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 DETACHED.....	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.



Summary of Findings (Continued)

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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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.



Summary of Findings (Continued)

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 DETACHED.....	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)

"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.



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.....	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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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.



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.....	241 (24)	285 (5)	773 (20)
HOUSING STRUCTURE			
SINGLE-FAMILY DETACHED.....	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)

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

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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.



Summary of Findings (Continued)

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)

"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.



Summary of Findings (Continued)

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 DETACHED.....	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.



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 (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)

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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.



Summary of Findings (Continued)

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 DETACHED.....	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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Summary of Findings (Continued)

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)

"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 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 DETACHED.....	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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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 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

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.



Summary of Findings (Continued)

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 DETACHED.....	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)

"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 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.



Summary of Findings (Continued)

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 DETACHED.....	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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Summary of Findings (Continued)

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)

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Summary of Findings (Continued)

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 DETACHED.....	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)

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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.



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.....	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)	465 (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.



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
NATIONAL.....	46 (2.0)	33 (2.0)	36 (1.0)
HOUSING STRUCTURE			
SINGLE-FAMILY DETACHED.....	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.



Summary of Findings (Continued)

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.



Summary of Findings (Continued)

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 DETACHED.....	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.



Summary of Findings (Continued)

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.



Summary of Findings (Continued)

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 DETACHED.....	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.



Summary of Findings (Continued)

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.

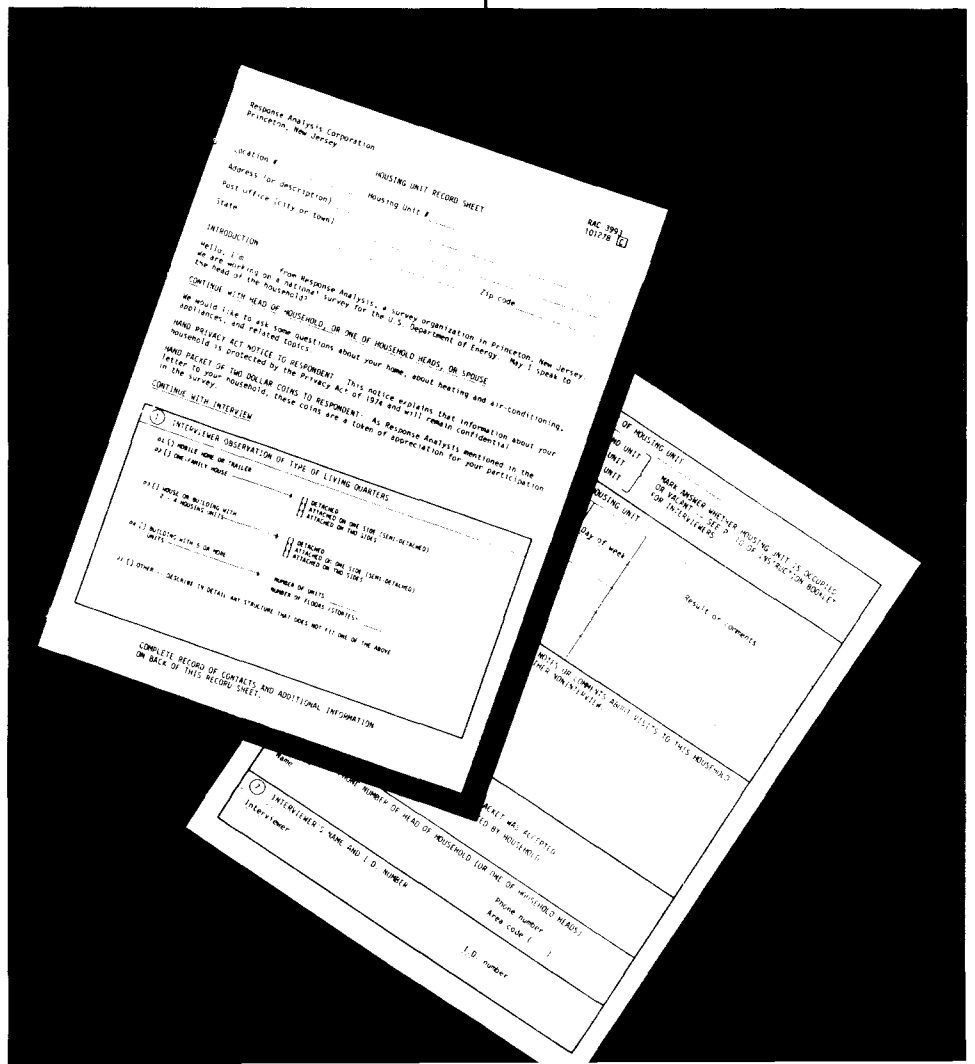
NOTE: BECAUSE OF ROUNDING, DATA MAY NOT SUM TO TOTALS.

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.

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, cooling², 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.

²Cooling 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.

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

$$\text{Total Consumption} = \text{Space Heating Component} + \text{Water Heating Component} + \text{Air-Conditioning} + \text{Miscellaneous Component}.$$

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.

¹For 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. 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 cited 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.

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

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

$$RSE(X/Y) = \sqrt{RSE^2(X) + RSE^2(Y)}$$



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

¹Residential 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

^aData 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.

^bResidential Energy Consumption Survey: Consumption and Expenditures, April 1981 through March 1982, Part I: 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



Appendix C (Continued)

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)

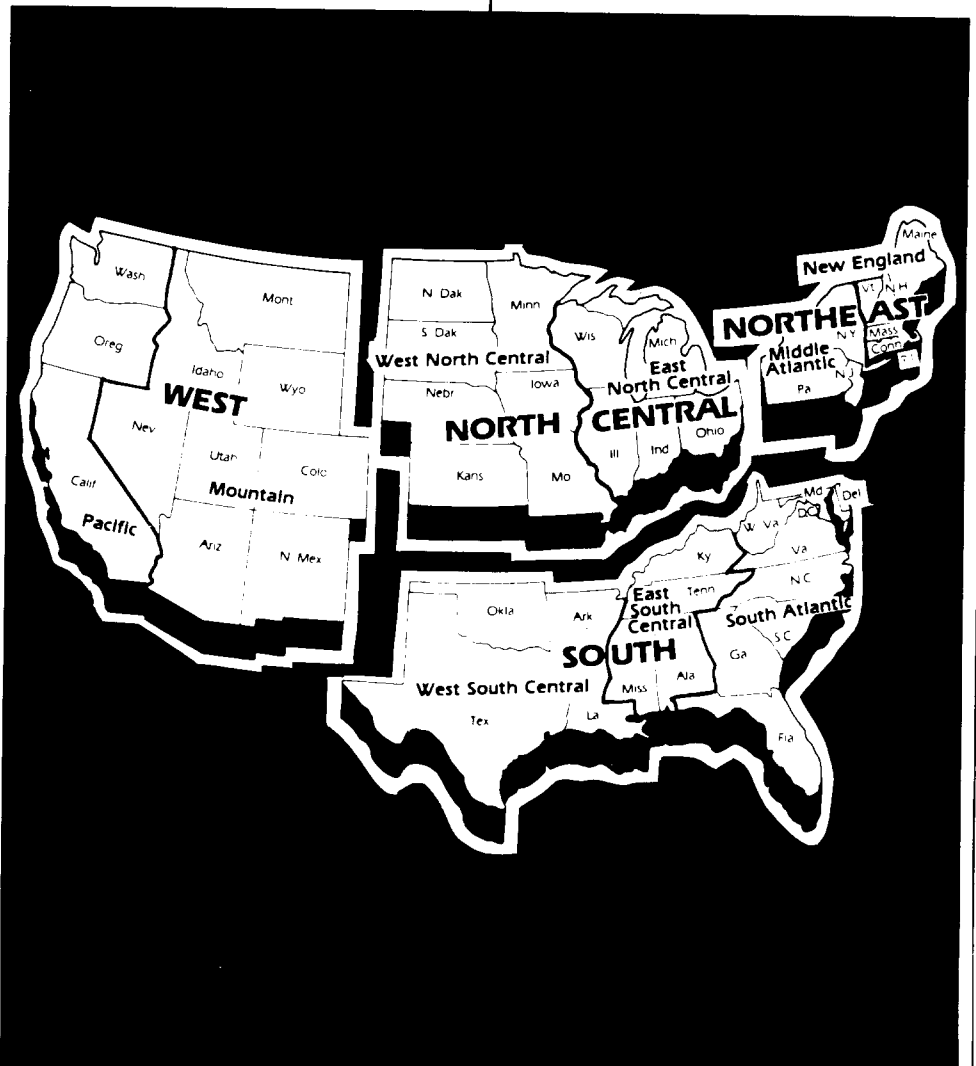
As a test of the effect of the disaggregation error, separate end-use estimates for each half-sample were computed for LPG consumption amounts for the 1980 survey. Half-sample estimates of the variance were computed for the three LPG components for the national averages and the averages for each Census 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

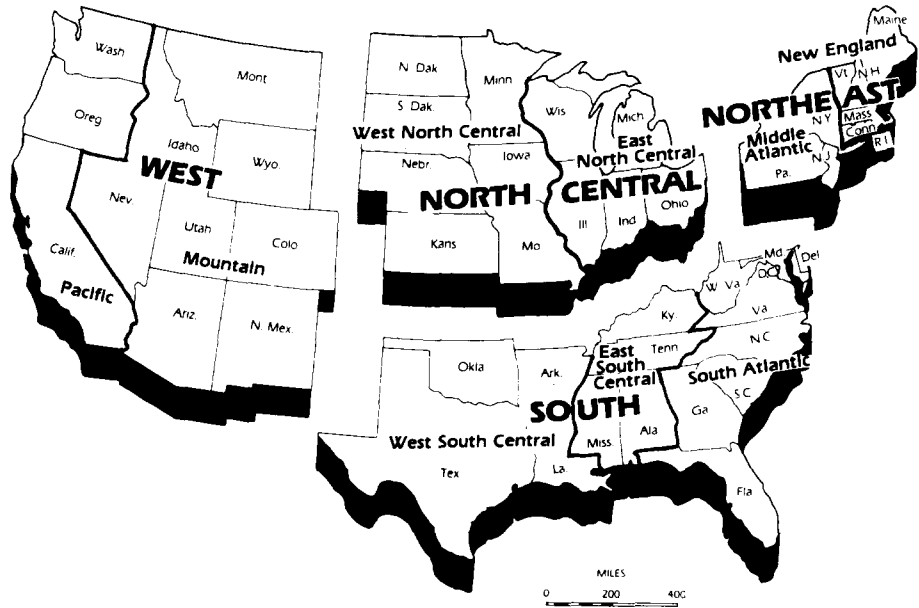
U.S. Census Regions and Divisions



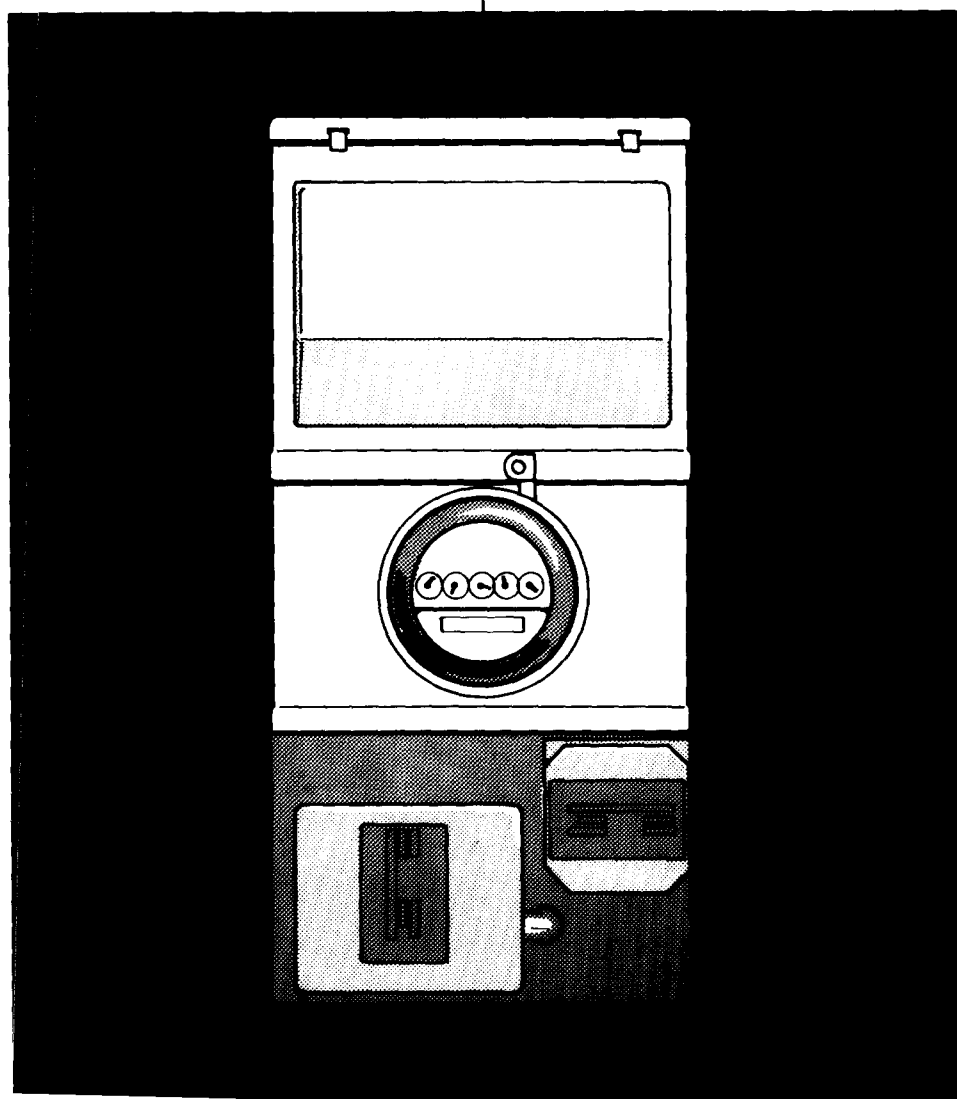


Appendix D

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:

<u>Region</u>	<u>States</u>
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 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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