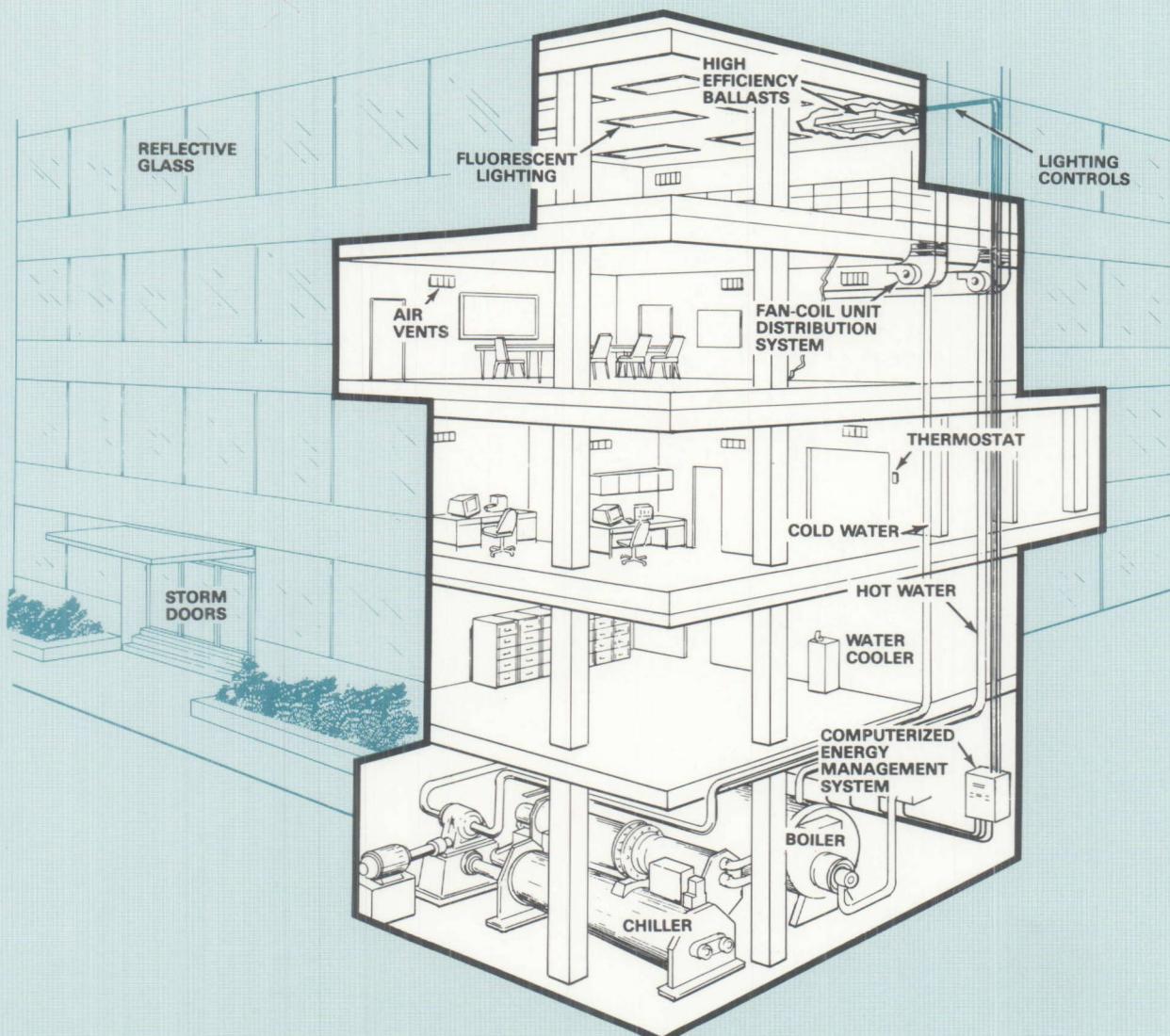


Commercial Buildings Energy Consumption and Expenditures

1989



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As part of EIA's mission to provide meaningful data, the consumption surveys have ongoing user needs efforts to ascertain the requirements of its users. Therefore, if you have any suggestions to make the data in this report more useful to your needs, please contact Ms. Martha M. Johnson, CBECS Manager, at 202/586-1135 or at the address below. A User Needs Study for the 1993 Residential Energy Consumption Survey (RECS) is underway. If you have any data or report-related requirements or suggestions for the residential survey, please contact Mr. Wendel Thompson, RECS Manager, at 202/586-1119 or at the address below. Your feedback is important to us and you are encouraged to provide your comments at any time to the survey managers.

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Commercial Buildings Energy Consumption and Expenditures 1989

April 1992

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

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The previous title of this report was *Nonresidential Buildings Energy Consumption Survey: Commercial Buildings Consumption and Expenditures*, including the proper survey year.

Contents

| | |
|--|-----|
| Executive Summary | vii |
| Introduction | 1 |
| Background | 1 |
| Organization of this Report | 3 |
| Statistics Reported | 3 |
| Commercial Buildings Energy Consumption Patterns | 5 |
| Net Energy Consumption and Expenditures in 1989 | 5 |
| Changes in Energy Consumption Over 3- and 10-Year Periods | 8 |
| Energy Consumption by Construction Year | 11 |
| Geographical Variation in Energy Use | 14 |
| Energy Consumption by Building Activity | 19 |
| Energy Efficiency Across Building Types | 20 |
| Energy Source Mix by Building Type | 21 |
| Factors Related to Specific Energy Source Consumption | 21 |
| Energy Source-Specific Issues | 29 |
| District Heating and Cooling | 29 |
| Gas Transported for the Account of Others | 30 |
| Fuel Switching | 31 |
| Energy Suppliers Account Classification | 33 |
| Detailed Tables | 35 |
| Table Organization | 35 |
| Row and Column Factors | 36 |
| Quick-Reference Guide | 38 |
| Appendices | |
| A. How the Survey Was Conducted | 275 |
| B. Nonsampling and Sampling Errors | 307 |
| C. CBECS Coverage Related to EIA Supply Surveys | 343 |
| D. Types of Buildings | 351 |
| E. U.S. Climate Zone and Census Regions and Divisions Maps | 362 |
| F. Survey Forms | 363 |
| G. Related EIA Publications on Energy Consumption | 439 |
| Glossary | 445 |

Tables

1. Net Energy Consumption and Expenditures Indices in Commercial Buildings by Energy Source, 1989
2. Energy Consumption and Expenditures in Commercial Buildings Over 1,000 Square Feet, 1979, 1986, and 1989

| | |
|---|-----|
| 3. Net Energy Consumption and Expenditures in Commercial Buildings by Year Constructed | 12 |
| 4. Energy Conservation Features in Commercial Buildings by Year Constructed | 14 |
| 5. Gross Energy Intensity in Commercial Buildings by U.S. Census Divisions | 17 |
| 6. Net Energy Consumption in Commercial Buildings by Principal Building Activity | 19 |
| 7. Transported Gas Consumption as a Percent of Natural Gas Consumption in Commercial Buildings | 30 |
| 8. Long-Term Potential for Fuel Switching | 32 |
| 9. Short-Term Capability to Switch Fuels Within a Week's Time | 33 |
| 10. Consumption by Energy Source and Energy Supplier's Account Classification | 34 |
| 11. Commercial Buildings Energy Consumption by Major Fuel | 39 |
| 12. Commercial Buildings Energy Expenditures by Major Fuel | 43 |
| 13. Commercial Buildings Consumption for Sum of Major Fuels | 47 |
| 14. Commercial Buildings Expenditures for Sum of Major Fuels | 54 |
| 15. Gross Expenditures Intensities for Sum of Major Fuels by Main Heating Fuel | 61 |
| 16. Consumption and Gross Energy Intensity by Census Region for Sum of Major Fuels | 66 |
| 17. Expenditures by Census Region for Sum of Major Fuels | 71 |
| 18. Consumption and Gross Energy Intensity by Building Size for Sum of Major Fuels | 76 |
| 19. Consumption and Gross Energy Intensity by Selected Principal Building Activities for Sum of Major Fuels | 80 |
| 20. Consumption and Gross Energy Intensity by Year Constructed for Sum of Major Fuels | 84 |
| 21. Electricity Consumption | 90 |
| 22. Electricity Expenditures | 97 |
| 23. Electricity Consumption and Conditional Energy Intensity by Census Region | 104 |
| 24. Electricity Expenditures by Census Region | 109 |
| 25. Electricity Consumption and Conditional Energy Intensity by Building Size | 114 |
| 26. Electricity Consumption and Conditional Energy Intensity for Selected Principal Building Activities | 118 |
| 27. Electricity Consumption and Conditional Energy Intensity by Year Constructed | 122 |
| 28. Electricity Consumption and Conditional Energy Intensity for Buildings Cooled with Electricity | 128 |
| 29. Electricity Consumption and Conditional Energy Intensity for Buildings Heated with Electricity | 134 |
| 30. Electricity Peak Demand-Metered Buildings | 140 |
| 31. Season of Peak Electricity Demand for Number of Buildings and Floorspace | 146 |
| 32. Electricity Consumption and Conditional Energy Intensity by Season of Peak Demand | 152 |
| 33. Peak Electricity Demand Category for Number of Buildings | 158 |
| 34. Peak Electricity Demand Category for Floorspace | 163 |
| 35. Distribution of Peak Watts per Square Foot | 168 |
| 36. Distribution of Electricity Load Factors | 173 |
| 37. Electricity Conditional Energy Intensity and Distribution of Building-Level Intensities | 178 |
| 38. Natural Gas Consumption | 183 |
| 39. Natural Gas Expenditures | 190 |
| 40. Natural Gas Consumption and Conditional Energy Intensity by Census Region | 197 |
| 41. Natural Gas Expenditures by Census Region | 202 |
| 42. Natural Gas Consumption and Conditional Energy Intensity by Building Size | 207 |
| 43. Natural Gas Consumption and Conditional Energy Intensity for Selected Principal Building Activities | 211 |
| 44. Natural Gas Consumption and Conditional Energy Intensity by Year Constructed | 215 |
| 45. Consumption and Conditional Energy Intensity for Buildings Heated with Natural Gas | 221 |
| 46. Natural Gas Conditional Energy Intensity and Distribution of Building-Level Intensities | 227 |
| 47. Fuel Oil Consumption | 232 |
| 48. Fuel Oil Expenditures | 239 |
| 49. Fuel Oil Consumption and Conditional Energy Intensity by Census Region | 246 |

| | |
|---|-----|
| 50. Fuel Oil Expenditures by Census Region | 249 |
| 51. Consumption and Conditional Energy Intensity for Buildings Heated with Fuel Oil | 252 |
| 52. District Heat Consumption | 258 |
| 53. District Heat Expenditures | 265 |
| A1. Number and Distribution of 1989 CBECS Sample Buildings by Building Disposition | 284 |
| A2. Number of In-Person Contacts to Obtain a Completed Building Questionnaire | 285 |
| A3. Facility Form Responses by Disposition and Census Region | 294 |
| A4. Reporting Facilities by Principal Activity and Square Footage of the Facility | 295 |
| A5. Response Rates by Energy Source | 295 |
| A6. Frequency of Technical Edit Failures by Failure Type | 298 |
| B1. Days of Data from Outside Calendar Year 1989 Used to Obtain Annual Estimates | 313 |
| B2. Days of Reported Consumption and Expenditures Data for Electricity | 313 |
| B3. Days of Reported Consumption and Expenditures Data for Natural Gas | 314 |
| B4. Days of Reported Consumption and Expenditures Data for District Heat | 314 |
| B5. Completeness of Reported Consumption and Expenditures Data for Fuel Oil | 315 |
| B6. Item Response for Peak Electricity Demand Data | 322 |
| B7. Energy Sources Used as Reported on Building Questionnaire and Energy Supplier Survey, Number of Buildings | 324 |
| B8. Energy Sources Used as Reported on Building Questionnaire and Energy Supplier Survey, Floorspace | 324 |
| B9. Seasonal Proportion of Fuel Oil Consumption for Buildings Using Fuel Oil, 1989 | 327 |
| B10. Seasonal Proportion of Fuel Oil Consumption for Buildings Using Fuel Oil for Main Heating, 1989 | 327 |
| B11. Consumption of Fuel Oil in All Buildings Using Fuel Oil, 1989 | 328 |
| B12. Estimates of Consumption of Fuel Oil in Buildings Heating Primarily with Fuel Oil, 1989 | 329 |
| B13. Estimates of District Heat Floorspace, Consumption and Intensity for Buildings Constructed 1979 or Before, by Survey Year | 330 |
| B14. CBECS Coverage Completeness by Survey Year | 334 |
| B15. Consumption and Expenditures Indices by Survey Year | 335 |
| B16. Results of Energy Intensity Regressions | 336 |
| B17. Selected Building Characteristics and Energy Consumption by Survey Year | 337 |
| B18. Square Foot-Hours by Building Characteristics | 338 |
| C1. Commercial Buildings Energy Consumption by Account Classification and Energy Source | 344 |

Figures

| | |
|--|-----|
| 1. Floorspace and Net Energy Consumption Trends in Commercial Buildings | 10 |
| 2. Gross Energy Intensity per Hour of Operation by Year Constructed | 12 |
| 3. Gross Energy Intensity per Hour of Operation for Major Energy Sources by Year Constructed .. | 13 |
| 4. Net Energy Consumption in U.S. Census Divisions | 15 |
| 5. Consumption Patterns in Commercial Buildings | 22 |
| 6. Consumption of Major Energy Sources by Building Activity | 23 |
| 7. Consumption in Buildings with Selected Activities by Major Energy Source | 25 |
| 8. Gross Energy Intensity by Building Activity | 26 |
| 9. Use of RSE Row and Column Factors | 37 |
| A1. Multistage Area Probability Sample Stages and Activities | 278 |
| A2. 1989 CBECS Sample Design | 281 |
| C1. State Energy Data System (SEDS) versus Commercial Buildings Energy Consumption Survey (CBECS) | 346 |

Executive Summary

This report, *Commercial Buildings Energy Consumption and Expenditures 1989*, is based upon data from the 1989 Commercial Buildings Energy Consumption Survey (CBECS). Focusing on energy end-use consumption and expenditures pertaining to commercial buildings, the 1989 CBECS was the fourth in a series conducted since 1979 by the Energy Information Administration (EIA) of the U.S. Department of Energy.

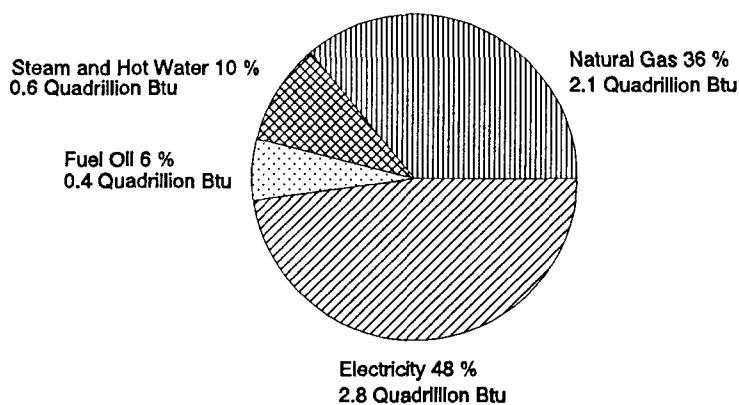
The results of the 1989 CBECS reflect the energy-related characteristics of a sample of the Nation's 4.5 million commercial buildings, which account for about 10 percent of total net energy consumption nationwide.¹ In addition to statistics on quantities of energy consumed and the factors that were related to energy consumption in the commercial sector in 1989, this report also reviews key energy consumption developments in commercial buildings during the period 1979 to 1989.

Commercial Buildings' Energy Consumption Patterns

What were commercial buildings' energy consumption and expenditures in 1989?

- U.S. commercial buildings consumed 5.8 quadrillion Btu of four major energy sources: electricity, natural gas, fuel oil, and district heat.
- Of the four energy sources, electricity accounted for 48 percent of the consumption; natural gas, 36 percent; district heat, 10 percent; and fuel oil, 6 percent (Figure ES1).
- Expenditures for the four major energy sources consumed in commercial buildings amounted to 70.8 billion dollars, averaging

Figure ES1. Net Energy Consumption in the Commercial Sector by Major Energy Sources, 1989



Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Table 11.

¹Consumption in this report is given on a "net" basis; no adjustment was made for the efficiency losses incurred by the use of primary fuels to generate the electricity consumed in commercial buildings. This concept tracks the consumption of end-use energy sources (i.e., electricity, heating oil, natural gas, etc.), but not the use of primary energy needed to generate the electricity.

15.6 thousand dollars per building and 1.12 dollars per square foot of total floorspace (averaged over all commercial buildings). Electricity accounted for 79 percent of total expenditures; fuel oil, only 3 percent.

How did energy consumption change during the 1979-1989 period?

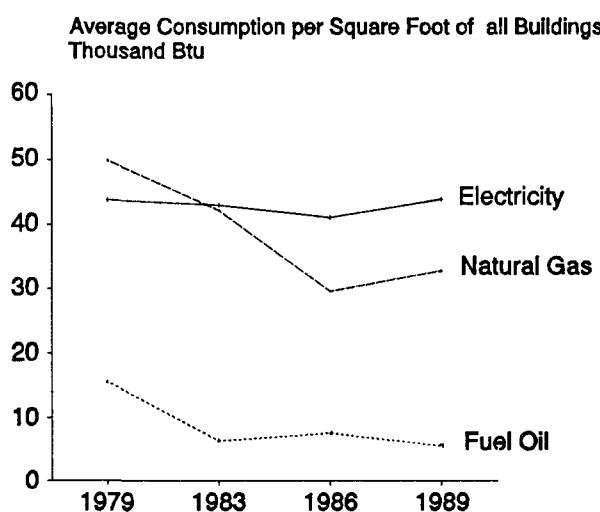
- Between 1979 and 1989, energy consumption per square foot and per square foot per hour of operation decreased by 20 percent and 23 percent, respectively.
- The decrease in energy consumption per square foot per hour of operation led to an estimated savings of 23 percent in the net energy consumed in 1989 compared to what it would have been had the 1979 consumption patterns continued.
- The consumption per square foot of fuel oil and natural gas dropped by 64 percent and 34 percent, respectively, in contrast to no change for electricity (Figure ES2).

- Energy expenditures per square foot of commercial floorspace increased by 45 percent during the decade. During the same time period, consumer price indices rose approximately 70 percent. Thus, in terms of real prices, expenditures decreased.
- However, consumption of electricity, natural gas, fuel oil, and district heat in commercial buildings increased by 16 percent in the 3-year period between 1986 and 1989. That increase represents, in part, the growth of commercial activity, as reflected by the 9 percent increase in commercial floorspace during that period.

Are newer commercial buildings more energy efficient?

- In general, the trend toward reduced energy consumption per square foot per hour of operation was apparent among the stock of buildings constructed after 1945.

Figure ES2. Trends In Consumption by Energy Sources, 1979 to 1989



Note: See Appendix B, "Nonsampling and Sampling Errors," for a discussion on comparisons between the 1979, 1983, 1986 and 1989 CBECS.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1979, 1983, 1986 and 1989 Commercial Buildings Energy Consumption Surveys, Table B17.

- Of the total commercial building stock, buildings constructed in the fifties and sixties used the most energy per square foot per hour of operation.
- Of the commercial buildings constructed since 1945, the lowest energy consumption per square foot per hour of operation was found among those built in the eighties.

To what extent did energy consumption vary according to geographic location?

- Different geographic locations display different energy consumption patterns, which reflect variations in climate, construction patterns, and energy source preferences.
- Focusing on electricity, commercial buildings in the Middle Atlantic, Pacific, and South Atlantic Census Divisions consumed the largest amounts of electricity, 47 percent of the total consumption of electricity in commercial buildings.
- For natural gas, buildings in the East North Central and the Middle Atlantic Divisions had the highest consumption of natural gas, 42 percent of the total amount of natural gas used in commercial buildings.
- For fuel oil, buildings in the Middle Atlantic and New England Divisions accounted for 66 percent of the total fuel oil consumed by commercial buildings.
- For district heat, buildings in the Middle Atlantic and the East North Central Divisions accounted for 47 percent of the total amount of district heat consumed by commercial buildings.

Other interesting major issues relating to specific sources of energy were:

- Of all natural gas consumed by commercial buildings in 1989, 12 percent was purchased directly from the producer rather than from the local utility. Commercial buildings in the Midwest consumed 60 percent of such gas.
- About 32 percent of the natural gas and 23 percent of the fuel oil consumed as a main

heating source in commercial buildings were in buildings that could switch to an alternate source within a week. Fuel oil was the predominant alternate energy source for natural gas-heated buildings reporting short-term fuel-switching capability. In buildings where fuel oil was the main heating source, natural gas was the principal alternate energy source.

- Buildings whose main space-heating fuel was electricity had little discretionary ability to switch fuels. Of all the electricity consumed in these buildings, for any purpose, only 10 percent could be switched within a week.

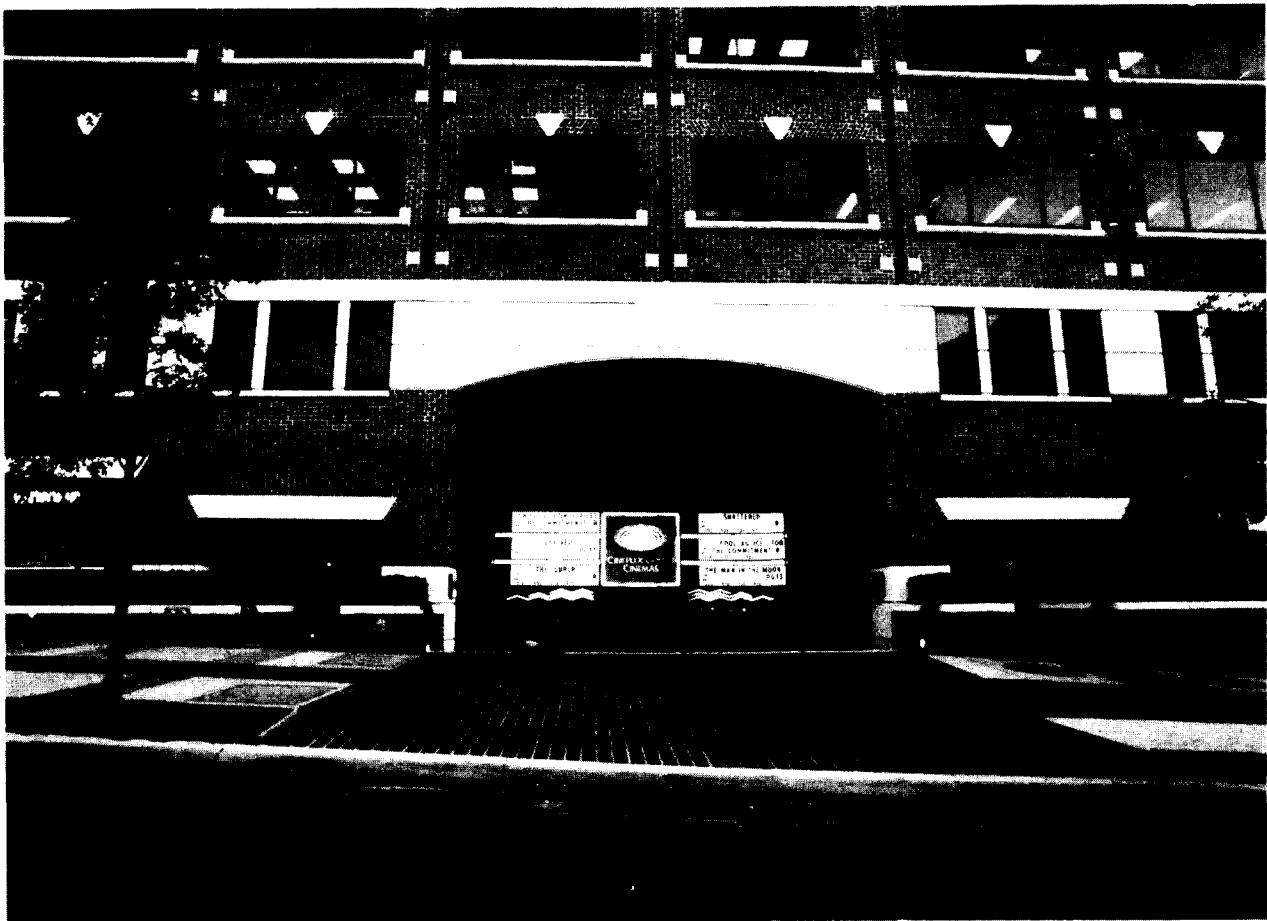
Energy Consumption by Building Activity

How does energy consumption vary by building activity?

- In 1989, buildings whose principal activity was described as office building consumed 21 percent of all energy used in commercial buildings, and they accounted for 19 percent of the total amount of floorspace.
- Buildings whose principal activity was mercantile and service consumed 18 percent of all energy used in commercial buildings in 1989, and they accounted for 20 percent of the commercial floorspace.
- Buildings whose principal activity was education consumed 12 percent of the total energy used in commercial buildings and accounted for 13 percent of commercial floorspace.
- Within a building, energy intensities of the major energy sources (electricity, natural gas, fuel oil, and district heat) for commercial buildings were related to the concentration of workers per square foot and the principal building activity.
- Buildings using fuel oil tend to be older and more energy intensive. However, either from demolition or conversion, the stock of fuel oil buildings is declining.

How energy efficient were certain types of commercial buildings according to selected indicators of energy consumption?

- Energy efficiency is measured differently by focusing on a particular aspect of activity level within a building. These aspects of activity include energy consumption per square foot, hours a building is in operation, and the concentration of workers in a building. Depending on which indicator was used, energy efficiency ranged from a high of 319 thousand Btu per square foot for laboratories to a low of 7 Btu per square foot per hour of operation for parking garages.
- In health care and food service buildings, energy consumption averaged 219 and 218 thousand Btu per square foot, respectively.
- In assembly, education, and warehouse buildings, energy consumption averaged 64, 87, and 58 thousand Btu per square foot, respectively.
- In office buildings, energy consumption averaged 104 thousand Btu per square foot.



This building is classified as an office building. Other activities that occupy floorspace in this building are assembly, and merchantile and service, which were also included in the types of buildings sampled in the 1989 CBECS.

Introduction

The *Commercial Buildings Energy Consumption and Expenditures 1989* report is the second publication based on data from the 1989 Commercial Buildings Energy Consumption Survey (CBECS). A previous report, *Commercial Buildings Characteristics 1989*, covered the characteristics that affected energy use in the 1989 building stock. This second report covers energy consumption and expenditures in that building stock. Both reports were prepared by the Energy End Use and Integrated Statistics Division, Office of Energy Markets and End Use, Energy Information Administration (EIA) of the U.S. Department of Energy. EIA is mandated by Congress as the agency within the DOE that collects, analyzes, and disseminates impartial, comprehensive data about energy--how much is produced, who uses it, and the purpose for which it is used. To comply with that Congressional mandate, EIA collects energy data from a wide variety of sources covering a range of topics.¹ The CBECS is the only source of national-level data on commercial building characteristics and related energy consumption.

Background

The data for this report are based on the Building Characteristics Survey (Form EIA-871A) and the Energy Suppliers Survey (Forms EIA-871B through F). An adjunct Facility Survey (Form EIA-871B) was also conducted in 1989 as part of the CBECS Energy Suppliers Survey.² EIA conducts this national sample survey on a triennial basis. Previous surveys were conducted in 1979,

1983, and 1986 under the title Nonresidential Buildings Energy Consumption Survey (NBECS). For consistency, all the surveys will be referred to as CBECS in this report.

EIA also conducts energy consumption surveys in the residential, residential transportation, and manufacturing sectors. See Appendix G, "Related EIA Publications in Energy Consumption," for a listing of publications from the CBECS and from other EIA consumption surveys.

Information on building characteristics is collected during a personal interview with building managers, owners, or tenants. Following the collection of the building characteristics data and after obtaining an authorization form, billing data containing energy consumption and expenditures are collected, via a mail questionnaire, from the energy suppliers to these buildings.

Based on calendar year 1989, this report provides the annual consumption and expenditure estimates in commercial buildings for electricity, natural gas, fuel oil (including kerosene), and district heat (steam or hot water from either a central plant or utility). These are the principal energy sources for which billing data were collected as part of the CBECS. The use of other energy sources in the building, such as propane, wood, coal, and solar, was also determined. However, statistics on the consumption of these energy sources in the CBECS buildings are not available since no billing data for these energy sources were collected.³

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

²Facility data are available on the 1989 CBECS Public Use Files.

³Since propane accounted for only 1 percent of the total energy consumption in commercial buildings in the previous CBECS, the 1989 CBECS did not collect billing data for propane. The 1989 CBECS is the first CBECS that did not collect this billing data. However, statistics on whether propane was used in buildings are shown in this report.

Consumption and expenditures of major energy sources for calendar year 1989 are presented in the form of net aggregate totals as well as consumption per building and dollars per Btu. A second measure of energy use is also presented in the form of energy consumption intensities. These energy intensities are a method of adjusting the amount of energy consumed for the effects of various building characteristics such as size of the building, number of workers, or number of operating hours. The adjustment facilitates comparisons of energy consumption across time, fuels, and buildings. In this report, energy consumption intensities are presented both as gross energy intensities and conditional energy intensities.⁴ (For further discussion about how to calculate and use these energy intensities, see the box on page 7. For a definition of gross and conditional energy intensities, see the Glossary.) Estimates of consumption and expenditure totals are provided at both the national level and Census region level. These estimates are provided for the following building categorizations:

- Building Structure--Includes characteristics such as number of floors, type of wall and roof materials, and building shell conservation features.
- Building Use--Includes principal activity, operating hours, number of workers, and type of ownership/occupancy.
- Building Size--Includes square feet of building floorspace.
- Building Age--Presented by year constructed.
- Geographic Location and Climate Zone--Geographic location includes the four Census regions, the nine Census divisions, and the metropolitan status. Climate zone is measured in terms of heating and cooling degree-days and is presented in both 45-year averages and 1989 degree-days.
- Energy Sources--Energy sources are the fuels going into the buildings. These include electricity, natural gas, fuel oil,

district heat and chilled water, and propane. (The 1989 CBECS did not collect billing data on propane. However, data were collected on whether propane was used in a building.) Energy sources such as wood, coal, and active solar are included in the "other" category.

- Energy End Uses--End uses in this report are space heating, water heating, air conditioning, cooking, and manufacturing. These end uses are respondent reported rather than metered end uses.
- Equipment--Includes types of equipment used for heating, cooling, lighting, and refrigeration. Also includes, for lighting, the percent lit and for selected cooling equipment, the year the system was installed. Information on refrigeration equipment was collected for the first time in the 1989 CBECS.
- Energy Management Practices--Includes whether occupants of the building (as opposed to an individual responsible for maintenance) have control of heating and cooling, whether the building has reduced energy use during off-hours, if there is a Computerized Energy Management Control System and what systems it controls, if there is regular heating ventilation and air conditioning (HVAC) maintenance, and if there is participation in utility-sponsored conservation programs.

These data are published to provide meaningful, objective, and accurate energy information for a wide audience including Congress, Federal and State agencies, industry, and the general public. The data presented in this report were collected and published by the EIA to fulfill its responsibilities as specified in the Federal Energy Administration Act of 1974 (Public Law 93-275), as amended. All data in this report are aggregated; individual building name and address information are confidential.

The EIA gratefully acknowledges the cooperation of the respondents and their energy suppliers for

⁴In previous CBECS reports, only the conditional energy intensities were presented and were referred to as energy intensities.

providing the information used to produce the estimates in this report.

Organization of this Report

A detailed discussion of the highlights presented in the Executive Summary follows this section. Tables and figures interspersed throughout the text highlight information of special interest, summarize a detailed breakdown of the data that are provided in the "Detailed Tables" section, or are based on analyses of CBECS data which can be replicated using CBECS Public Use Data files. Topics that are covered in the following text sections include:

- A description of the consumption and expenditures of the major energy sources in commercial buildings
- A comparison of changes in energy consumption over a 3- and 10-year period
- An analysis of variations in consumption by Census regions and divisions, by year the building was constructed, and by building activity.

New or expanded topic areas such as district heating and cooling, gas transported for the account of others (the ability of large natural gas users to purchase gas via direct purchases from the source rather than from the local utility), the potential for fuel switching in commercial buildings, and the energy suppliers' classification of sales accounts are also discussed in this report.

Extensive crosstabulations of building characteristics and energy consumption and expenditures appear in the "Detailed Tables" section following the main text. The organization of the detailed tables and the procedures for calculating Relative Standard Errors (RSE's) in the tables are explained at the beginning of that section. A Quick-Reference Guide by topic is provided for the 43 detailed tables.

The findings of the survey are presented for a general audience interested in buildings and their energy consumption. For more statistically-oriented readers, information on the sample design

and data collection procedures is provided in Appendix A, "How the Survey Was Conducted." Adjustments to the collected data and factors affecting data quality are discussed in Appendix B, "Nonsampling and Sampling Errors." A comparison of consumption and expenditure indices by survey year and a comparison of CBECS coverage completeness by survey year are also included in Appendix B. Differences between the coverage of this survey and the EIA supply data sources are discussed in Appendix C, "CBECS Coverage Related to EIA Supply Surveys." A detailed description of the principal building activity categories is contained in Appendix D, "Types of Buildings." Appendix E contains maps showing the Census regions and divisions and the climate zones by which the data in this report are organized. All estimates in this report are based on data collected on Forms EIA-871A through H. These forms are reproduced in Appendix F, "Survey Forms." A list of related energy consumption publications appears in Appendix G for readers interested in earlier CBECS publications or consumption reports for the other sectors. A glossary of terms is included to assist users in understanding the statistical and engineering terminology used in this publication.

Statistics Reported

Commercial Buildings

For purposes of the CBECS, a commercial building is a roofed and walled structure whose principal activity is nonresidential, nonagricultural, and nonindustrial. The CBECS population is restricted to buildings larger than 1,000 square feet (roughly twice the size of a two-car garage).

Principal Building Activity

The principal building activity is the activity that occupies the most floorspace in the building. Data were collected for 20 building types. However, in some instances, the CBECS sample was too small to permit reliable estimates for breakdowns within the 20 categories. Thus, several types of building activities have been combined in most tables and figures. Inpatient and outpatient health care facilities have been combined into a single health

care building type; refrigerated and nonrefrigerated warehouses form a single warehouse category. With a few exceptions, laboratory buildings have been included with those classified as "other," and skilled nursing buildings have been included in lodging. For the 1989 CBECS, parking garages are presented in a separate category in the detailed tables instead of being included in the "other" category as was the case in previous reports.

Energy Sources

The CBECS identifies all energy sources delivered into the building. In most tables in this report, coal, wood, and active solar are grouped with "other" under the category "Energy Sources and End Uses." District steam and district hot water are combined into "district heat." (For certain types of minor energy sources [most notably, propane, coal, and the renewable sources, wood and active solar], there are no consumption data in this report. It is not cost effective to collect billing data for these fuels since their usage is minimal in commercial buildings). In the text of this report, electricity, natural gas, fuel oil and district heat are referred to as major energy sources. In the detailed tables they are referred to as major fuels.

Main and Secondary Fuels

Main and secondary space-heating fuels are distinguished in certain tables, but are combined in other tables. The 1986 CBECS also separated primary from secondary water-heating fuel. This end-use category distinction was dropped from the

1989 CBECS because very few buildings reported a secondary water-heating fuel.

Energy Consumption and Energy Intensities

Consumption is reported on a net basis in terms of energy delivered to the site; no adjustment was made for the primary fuels consumed to produce electricity or district heating and cooling. Energy intensities are reported in terms of conditional energy intensities and gross energy intensities. In previous CBECS reports, only conditional energy intensities were reported, which were referred to simply as "energy intensities." (Refer to the box on page 7 for an explanation of how to calculate and use these intensities).

Survey Estimates

The statistics published in this report are based on a random sample selected from the population of all commercial buildings in the United States as of the fall of 1989. As a result, all the numbers are estimates rather than exact measures for the population. As described in Appendix B, "Nonsampling and Sampling Errors," the accuracy of each estimate is indicated by the RSE. No estimates were published that were based on data from fewer than 20 sample buildings or that had an RSE greater than 50 percent. All of the estimates in the detailed tables include corresponding RSE's that can be calculated using row/column RSE factors. Overall, the RSE's for the 1989 CBECS are comparable to those for the corresponding aggregates from the 1986 survey, indicating a continuing high accuracy of the survey estimates.

Commercial Buildings Energy Consumption Patterns

In 1989, U.S. commercial buildings consumed a total of 5.8 quadrillion Btu of four major energy sources: electricity, natural gas, fuel oil, and district heat (Table 1). This is the net energy consumption delivered to commercial buildings. Taking into account the fossil fuels needed to generate electricity, this amount of delivered energy represents about 11.3 quadrillion Btu of primary energy. To estimate the primary energy, the delivered electricity was multiplied by a factor of 3.0, an approximation of the Btu value of the input fuels used to generate electricity in 1989.

This chapter attempts to answer several questions about the use of energy in the commercial sector for three different time periods: 1989, between 1986 and 1989, and between 1979 and 1989. First, energy consumption patterns are examined by looking at how much and what type of energy was used in 1989 in commercial buildings, as well as determining how this energy was used and by whom. Energy consumption patterns in 1989 are discussed in terms of the factors that relate to energy consumption such as the year the building was constructed, the geographical region, and the major type of activity. Second, energy consumption data from the 1989 CBECS are compared with the 1986 CBECS to examine energy trends for the short run. Third, energy trends are examined over a longer period of time by comparing the 1989 CBECS data with the 1979 CBECS. This comparison over 10 years describes changes not only in the net total amount of energy used, but also the changes in consumption per square foot of floorspace.

Net Energy Consumption and Expenditures in 1989

- Electricity was the dominant energy source used in the commercial sector. Electricity consumption amounted to 2.8 quadrillion Btu (813 billion kWh), accounting for 48 percent of the con-

sumption of all four energy sources. The intensity of its use in buildings using electricity was moderate (45 thousand Btu per square foot).

- Natural gas accounted for an additional 36 percent of the energy consumption. Its consumption amounted to 2.1 quadrillion Btu (2.0 trillion cubic feet). The intensity of its use in buildings using natural gas was also moderate (50 thousand Btu per square foot).
- Fuel oil accounted for only 6 percent of the energy consumption, and the intensity of its use in buildings using fuel oil was relatively low (28 thousand Btu per square foot). However, its consumption still amounted to an average of approximately 166 thousand barrels per day (0.4 quadrillion Btu).
- District heat is steam and hot water delivered to a building from a central plant or utility. Consumption data related to district heat were collected from multibuilding facilities. (See the "Energy Source-Specific Issues" section for a discussion on district heat.) District heat accounted for only 10 percent of the energy consumption, since most buildings did not use it. However, in buildings that did use district heat, the intensity of its use was high (89 thousand Btu per square foot).

The expenditures for all major energy sources consumed in commercial buildings amounted to 70.8 billion dollars in 1989, averaging 15.6 thousand dollars per building and 1.12 dollars per square foot of total floorspace (averaged over all commercial buildings). Electricity accounted for 79 percent, or 55.9 billion dollars of the total expenditures in the commercial sector. Since the price per Btu of electricity is relatively high, its share in the total expenditures for energy in com-

mercial buildings in 1989 was much larger than its share in the total energy consumption.⁵ Fuel oil accounted for only 3 percent of the total expenditures or 1.8 billion dollars. District heat was typically used in large buildings; therefore, the

total expenditures per building for district heat were high relative to all other fuels. However, the expenditures per square foot for district heat were relatively low compared to electricity but still somewhat high when compared to fuel oil and natural gas.

Table 1. Net Energy Consumption and Expenditures Indices in Commercial Buildings by Energy Source, 1989

| Consumption and Expenditure Indices | Total | Energy Source | | | |
|--|--------|---------------|-------------|----------|---------------|
| | | Electricity | Natural Gas | Fuel Oil | District Heat |
| Building Characteristics | | | | | |
| Number of Buildings (thousand) | 4,528 | 4,294 | 2,420 | 581 | 98 |
| Floorspace (million square feet) | 63,184 | 61,563 | 41,143 | 12,600 | 6,578 |
| Energy Consumption | | | | | |
| Total (trillion Btu) | 5,788 | 2,773 | 2,073 | 357 | 585 |
| Share of Total Consumption | 100.0 | 47.9 | 35.8 | 6.2 | 10.1 |
| Per Building (million Btu) | 1,278 | 646 | 857 | 614 | 5,969 |
| Per Worker (million Btu) | 82 | 39.3 | 43.2 | 21.0 | 56.5 |
| Energy Intensities^a | | | | | |
| Gross (thousand Btu per square foot) | 91.6 | 43.9 | 32.8 | 5.6 | 9.3 |
| Conditional (thousand Btu per square foot) | - | 45.0 | 50.4 | 28.3 | 89.0 |
| Energy Expenditures | | | | | |
| Total (million dollars) | 70,826 | 55,943 | 9,204 | 1,822 | 3,857 |
| Per Million Btu (dollars) | 12.24 | 20.17 | 4.44 | 5.10 | 6.59 |
| Per Building (thousand dollars) | 15.6 | 13.0 | 3.8 | 3.1 | 39.3 |
| Per Square Foot (dollars) | 1.12 | 0.91 | 0.22 | 0.14 | 0.59 |

^aFor definitions of energy intensities, see the box on page 7 of this section and the Glossary.

-- Data not applicable.

Notes: • Net energy consumption is measured in terms of the amount delivered to the point of end use. No adjustment was made for the primary fuels used to produce electricity or district heat. • District heat includes steam and hot water. • All ratios are calculated for the specific energy source, except for the share of each source, which is based on all energy sources and gross energy intensity, which is based on total floorspace.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Tables 11, 14, 21, 22, 38, 39, 47, 48, 52, and 53.

⁵When considering the expenditures for various energy sources, one should be aware that, on the one hand, the primary energy needed to produce a Btu of electricity is larger than that required to produce a Btu of the other types of energy. On the other hand, the efficiency of some electricity-based equipment is quite high.

Energy Consumption Intensities

When analyzing how intensively energy is used in buildings, it is necessary to normalize consumption by the amount of floorspace in buildings. There are two ways of defining this floorspace in buildings. One definition includes the total floorspace in all buildings. A second definition includes only the floorspace in buildings that actually use a specific energy source. This second definition is conditional on the actual use of an energy source. Each definition of floorspace leads to a different measure of energy intensity and both are relevant, depending on the focus of the analysis.

The measure of intensity that includes total floorspace is the Gross Energy Intensity.

$$\text{Gross Energy Intensity} = \text{Btu}/\text{Total Square Feet}$$

where

Btu = total consumption of a specific energy source in all buildings within a specific category.

Total Square Feet = total floorspace included in all the buildings within that category.

For example: Total consumption of electricity is highest in office buildings, since this category includes many buildings, some of which are very large. However, the gross intensity of electricity in office buildings is small when compared to other building categories, such as health care, where the total floorspace is not as large, but the average amount of electricity used relative to the floorspace is very high.

The measure of intensity that includes only buildings that use an energy source is Conditional Energy Intensity.

$$\text{Conditional Energy Intensity} = \text{Btu}/\text{Energy Source-Specific Square Feet}$$

where

Btu = total consumption of a specific type of energy in all buildings within a specific category.

Energy Source-Specific Square Feet = floorspace included in buildings within that category, which actually use that particular energy source.

For example: More electricity is consumed in health care buildings than district heat. However, in health care buildings that do use district heat, the intensity of its use is very high.

In previous CBECS reports, only the conditional intensity was presented and was referred to as energy intensity. The measure of gross energy intensity is being introduced in this report to allow for comparisons of *total* net energy consumption across building types, across energy sources, and across time, while using a common basis of comparison.

Since energy consumption is also strongly related to the number of hours of operation, a third measure of intensity used in this report is the gross intensity per hour of operation.

$$\text{Intensity per Hour} = \text{Btu}/(\text{Sq.ft.} * \text{Annual Hours of Operation})$$

where

Sq.ft.*Annual Hours of Operation = total square footage of a building multiplied by total weekly hours of operation multiplied by 52 weeks per year, summed over all buildings within a specific category.

Changes in Energy Consumption Over 3- and 10-Year Periods

Data concerning net energy consumption and expenditures in commercial buildings have been collected by EIA four times since 1979. Basically the same sampling and interviewing methods and procedures have been used with incremental refinements based on EIA's ongoing evaluation of the data. Analyses of trends in energy use across a whole decade are reported for the first time in this publication. Following is a comparison of various consumption indices over a 3-year period between the last two CBECS's (1986 through 1989) and over a 10-year period (1979 through 1989).

Net energy consumption of electricity, natural gas, fuel oil and district heat in commercial buildings increased by 16 percent in the 3-year period between 1986 and 1989. This increase in energy consumption represents, in part, the growth of commercial activity during these 3 years, as reflected in the 9 percent increase in commercial floorspace. (See the EIA *Commercial Buildings Characteristics 1989* report.) Thus, a comparison of consumption per square foot of commercial floorspace for 1986 and 1989 did not reveal any statistically significant changes. Since the total hours of operation in commercial buildings increased by 7 percent between 1986 and 1989, a comparison of the energy intensity per hour indicated a decrease of 5 percent over the 3-year period.

When comparisons were made over the whole decade between 1979 and 1989, the data showed a reduction of 20 percent in the consumption per square foot of floorspace (gross energy intensity) and a reduction of 23 percent in the gross energy intensity per hour of operation (Table 2). Since the services that energy provides have increased rather than decreased over the decade, this reduction may represent continued conservation efforts and more efficient use of energy.

Because of the sharp decrease in gross energy intensity between 1979 and 1989, the increase in commercial buildings net energy consumption between those years was less than what might have

been expected. Had the gross energy intensity per operating hour continued to be the same in 1989 as it was in 1979 (30.0 instead of 23.1 Btu per square foot per hour of operation), the net energy consumption of commercial buildings in 1989 would have been 7.5 quadrillion Btu rather than 5.8 quadrillion Btu (Figure 1). Thus, changes in energy consumption patterns over the decade have led to an estimated savings of 23 percent (1.7 quadrillion Btu) in the net energy consumed in 1989.

Over the decade (1979-1989), the gross intensity of fuel oil dropped 64 percent and the gross intensity of natural gas dropped 34 percent. These changes do not represent decreases in the number of buildings that use natural gas and fuel oil, but rather in the amounts used. In contrast to fuel oil and natural gas, the gross intensity of electricity has not changed compared to 1979 (Table 2).

This reduction in the gross intensity of fuel oil and natural gas and the static gross intensity of electricity may imply that some buildings have switched part of their end uses from fuel oil and natural gas to electricity. In addition, since natural gas and fuel oil are mainly used for heating, some commercial buildings may have reduced heating temperatures or improved heating efficiency, but added electricity-intensive equipment, such as computers, air-conditioners, etc. (Such equipment may, in itself, generate some of the heat for the building.) The increase in the share of office buildings and in buildings that are located in the South and West Census Regions also contributed partially to the changes in the relative consumption of various energy sources.

The new electric equipment and appliances tend to be more efficient than the equipment and appliances that use other types of energy for similar end uses. Thus, the trend of replacing natural gas and fuel oil with electricity may decrease the amount of energy required for producing the same services in buildings. However, since the generation of each Btu of electricity requires approximately 3 Btu of other fuels, the trend of replacing natural gas and fuel oil with electricity actually represents an increase in the primary energy used in producing the same services.

Table 2. Energy Consumption and Expenditures in Commercial Buildings Over 1,000 Square Feet, 1979, 1986, and 1989

| Consumption and Expenditure Indices | 1979 ^a | 1986 | 1989 | Percent Difference 1979 to 1989 |
|--|-------------------|-------|-------|------------------------------------|
| Net Energy Consumption in Buildings Over 1,000 Square Feet (trillion Btu) | | | | |
| All Major Energy Sources | 4,965 | 4,977 | 5,788 | -- ^b |
| Electricity | 1,908 | 2,390 | 2,773 | } |
| Natural Gas | 2,174 | 1,723 | 2,073 | } |
| Fuel Oil | 681 | 442 | 357 | } |
| District Heat | 201 | 422 | 585 | } |
| Gross Energy Intensity^c (thousand Btu/square foot) | | | | |
| All Major Energy Sources | 114.01 | 85.52 | 91.61 | -19.7 |
| Electricity | 43.8 | 41.1 | 43.9 | 0.0 |
| Natural Gas | 49.9 | 29.6 | 32.8 | -34.3 |
| Fuel Oil | 15.6 | 7.6 | 5.6 | -64.1 |
| District Heat | 4.6 | 7.3 | 9.3 | -- ^d |
| Gross Energy Intensity per Hour of Operation (Btu/(sq.ft.*hr)) | | | | |
| All Major Energy Sources | 30.02 | 24.17 | 23.07 | -23.1 |
| Electricity | 11.5 | 11.6 | 11.1 | -3.5 |
| Natural Gas | 13.1 | 8.4 | 8.3 | -36.6 |
| Fuel Oil | 4.1 | 2.1 | 1.4 | -65.8 |
| District Heat | 1.2 | 2.0 | 2.3 | -- ^d |
| Expenditures per Square Foot (nominal dollars) | 0.77 | 1.03 | 1.12 | 45.0 |
| Expenditures per Million Btu (nominal dollars) | 6.77 | 12.10 | 12.24 | 80.8 |

^aDue to differences in population definitions between the 1979 survey and the subsequent 1986 and 1989 surveys, the 1979 total consumption and intensities presented here have been recalculated, so as to better match the 1986 and 1989 surveys. Thus, they only include buildings with floorspace greater than 1,000 square feet. In addition, the 1989 survey did not include LPG, so the 1979 and 1986 data presented here include only the consumption of the four major energy sources. (Therefore, these numbers will not match with numbers published in previous reports.) For further discussion about comparability over survey years, see Appendix B, "Nonsampling and Sampling Errors."

^bDue to differences in sampling coverage, comparisons of 1979 data with 1986 and 1989 data in this table are relevant only for energy intensities, not for total consumption.

^cGross energy intensity for a particular energy source is the ratio of the net consumption of that energy source to the floorspace in all buildings. The gross intensity measure is used for comparisons across time, rather than the net consumption of that specific energy source, since it takes into account the growth in floorspace over time. (See the Detailed Tables for the ratio of consumption of particular energy sources over the limited floorspace of buildings that use that particular type of energy.)

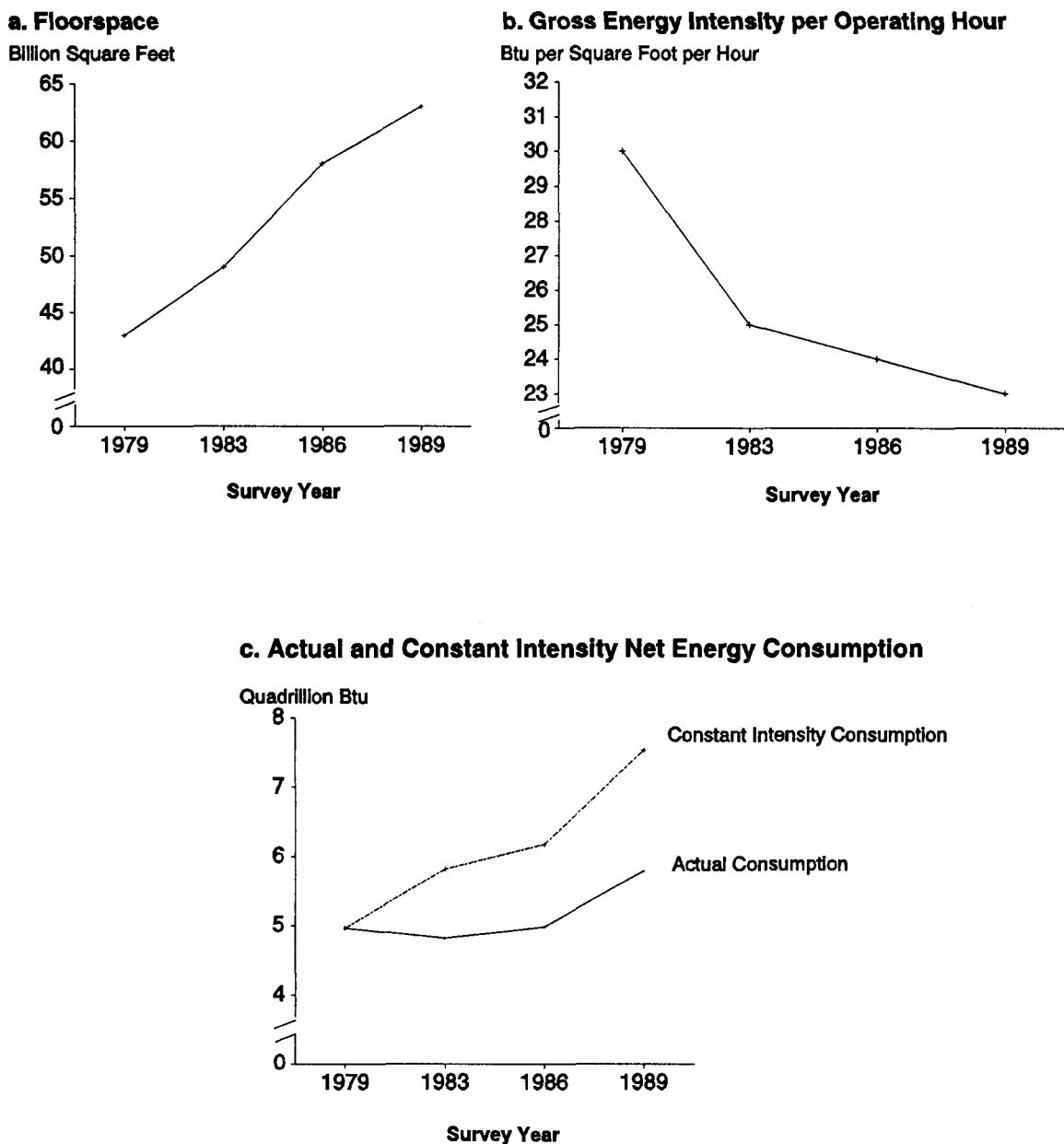
^dThese changes represent, in part, the improvement in coverage of district heat in the CBECS over the years, rather than actual changes in consumption. (A discussion of district heat and its measurement is included in Appendix B, "Nonsampling and Sampling Errors.")

-- Data Not Applicable.

Notes: See the "Glossary" for the definition of terms used in this table. • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1979, 1986, and 1989 Commercial Buildings Energy Consumption Surveys, Tables 11, 14, and B17.

Figure 1. Floorspace and Net Energy Consumption Trends In Commercial Buildings



Notes: Constant Intensity Consumption is the consumption that would have existed had the gross energy intensity per hour of operation of 1979 persisted in following years. See Appendix B, "Nonsampling and Sampling Errors," for a discussion on comparisons between the 1979, 1983, 1986 and 1989 CBECS.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the Commercial Buildings Energy Consumption Surveys, Tables 11 and B17.

The energy expenditures per square foot of commercial floorspace have increased by 45 percent between the 1979 and 1989 CBECS. During the same period, consumer price indices rose approximately 70 percent and the implicit price deflators for gross national product amounted to 60 percent.⁶ In terms of real prices, expenditures per square foot of commercial floorspace have decreased.

The changes in energy consumption patterns are also reflected in the differences between old and new buildings, as will be discussed in the following cross-sectional analysis by building construction year. Additional aspects of the changes in energy consumption patterns across the decade are discussed in the following sections focusing on year of construction, geographical regions and building activities.

Energy Consumption by Construction Year

Beginning in 1973, energy efficiency has been a national concern for almost two decades. Therefore, a natural question is, "to what extent have commercial buildings become more energy-efficient." While certain types of equipment may be replaced in existing buildings, construction materials and basic heating/cooling systems are more difficult to replace. Thus, the increased awareness of the need for energy conservation and the changes in building codes at the national and local levels may be more dramatically reflected in new buildings constructed in the last decade. The cross-sectional analysis of energy consumption in buildings of different construction years, presented below, indicates that energy efficiency in commercial buildings has indeed improved continually since the fifties.

Within the existing building stock, the lowest gross energy intensity per hour (consumption per square foot per hour of operation) was found in buildings constructed in 1945 or before. However, within the stock of buildings constructed after 1945, there

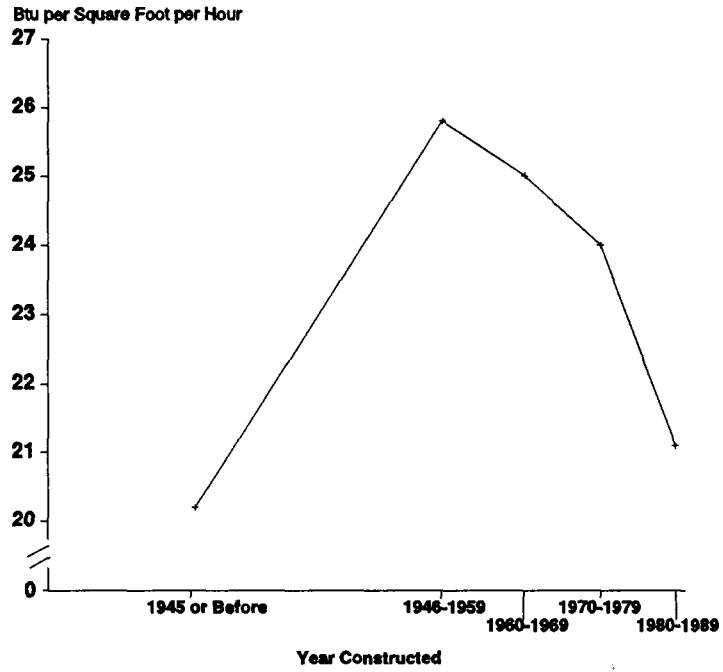
is a trend toward reduced gross energy intensity per hour in newer buildings (Figure 2 and Table 3). The highest gross energy intensity per hour was found in buildings constructed in the fifties and sixties. The lowest gross energy intensity per hour (almost as low as the pre-1946 buildings) was found in buildings constructed in the eighties. A partial explanation may be that a higher proportion of construction in the eighties was located in the South Census Region where energy intensities are low due to the warmer weather. For example, 42 percent of the floorspace in buildings constructed in the eighties was in the South compared to 33 percent of the floorspace in buildings constructed in the sixties (Table 16).

A comparison of newer and older building regarding their use of various energy sources, also revealed that newer buildings tended to depend more heavily on electricity and less on other energy sources (Table 3). This difference in the composition of the types of energy used may reflect a general increase in the use of electricity-related services and equipment, such as computers. In addition, it may also reflect the fact that a higher percent of newer buildings are located in warmer geographical areas, where the use of fossil fuels for heating is less prevalent, and the fact that a higher percent of newer buildings are office buildings, where a wide range of electricity-consuming equipment and appliances is employed. In newer buildings the gross energy intensity of electricity is higher than in older buildings, while the gross energy intensities of natural gas and fuel oil are lower (Figure 3).

If buildings constructed between 1960 and 1989 had the same gross energy intensity per hour of operation as did buildings constructed in the fifties (25.8 Btu per square foot per hour), then the total energy used in commercial buildings in 1989 would have been 6.2 quadrillion Btu, rather than 5.8 quadrillion Btu (assuming that all other characteristics related to energy consumption remained the same). Thus, an estimated conservation of 6 percent in the energy used in commercial buildings may be attributed to changes that occurred in energy-consumption patterns in newer buildings in the last two decades.

⁶*Economic Report of the President 1991*, Council of Economic Advisers (Washington, D.C.: U.S. Government Printing Office, February 1991), Tables B-3 and B-58.

Figure 2. Gross Energy Intensity per Hour of Operation by Year Constructed



Notes: "Gross energy intensity" is the ratio of the consumption of a specific energy source to the total floorspace of all buildings, regardless of the use or nonuse of any specific energy source in each building.

The horizontal position of each year category corresponds to the median construction year of all buildings in the category.

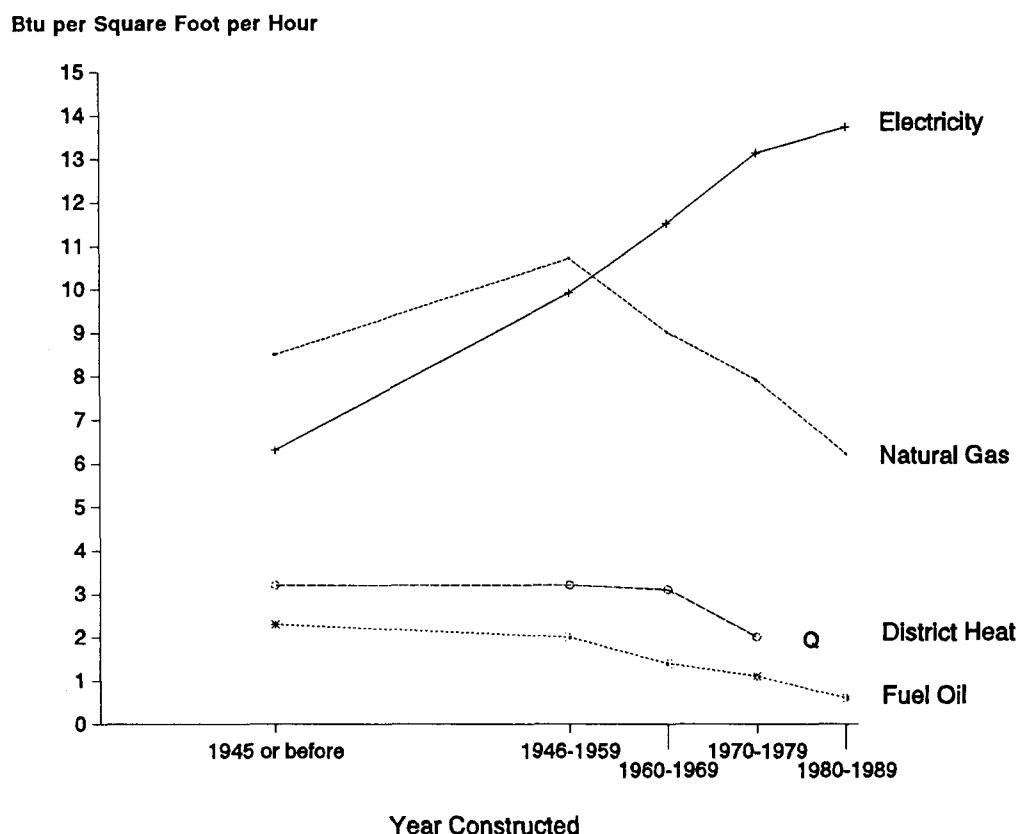
Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the Buildings Energy Consumption Survey, Tables 11 and B18.

Table 3. Net Energy Consumption and Expenditures in Commercial Buildings by Year Constructed

| Year Constructed | Total Consumption of Major Energy Sources (trillion Btu) | Total Floorspace (million sq.ft.) | Gross Energy Intensity (thousand Btu/sq.ft.) | Gross Energy Intensity per Operating Hour (Btu/(sq.ft*hr)) | The Share of Electricity in Total Energy Consumption (percent) |
|------------------|--|-----------------------------------|--|--|--|
| 1945 or Before | 1.00 | 13,997 | 71.6 | 20.2 | 31 |
| 1946 - 1959 | 0.99 | 10,511 | 94.0 | 25.8 | 38 |
| 1960 - 1969 | 1.27 | 12,167 | 104.8 | 25.0 | 46 |
| 1970 - 1979 | 1.34 | 13,329 | 100.7 | 24.0 | 54 |
| 1980 - 1989 | 1.18 | 13,179 | 89.6 | 21.1 | 65 |

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Tables 11 and B18.

Figure 3. Gross Energy Intensity per Hour of Operation for Major Energy Sources by Year Constructed



Q--Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: •The horizontal position of each year category corresponds to the median construction year of all buildings in the category. •"Gross energy intensity" is the ratio of the consumption of a specific energy source to the total floorspace of all buildings, regardless of the use or nonuse of any specific energy source in each building.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Tables 11 and B18.

The reduction in gross energy intensity by building age, which was apparent when comparisons were done for buildings constructed across the last four decades, was not apparent when comparisons were done for buildings constructed within the last decade. In the 1989 CBECS data, there is some indication that buildings constructed between 1987 and 1989 consumed more energy per square foot in 1989 than buildings constructed between 1984 and 1986. It is not readily discernible whether this

reflects a decline of energy-related concerns, a difference in energy prices between 1984 and 1986 and 1987 and 1989, an increase in the stock of energy-consuming equipment in the newer buildings, a change in the trends of building construction patterns, or some combination of these factors. The differences in gross energy intensities within this decade were not found to be statistically significant, and the time span was not sufficiently long to draw conclusions. (These issues will be addressed in future studies.)

In order to evaluate whether differences in net energy consumption by decade of building construction reflect differences in the prevalence of energy conservation features, the conservation features that exist in buildings of different ages were also summarized (Table 4).

In general, energy conservation measures were found to be more prevalent in newer buildings than in older buildings. The more pronounced differences existed in wall and roof insulation, which are generally installed at the time of construction. In lighting features, which can easily be changed, there were almost no differences between new and old buildings.⁷ It may be inferred that new design patterns and construction codes, as well as an increased awareness of energy-related issues, have contributed to the more efficient energy consumption in commercial buildings in the last two decades. The extent to which these changes have exploited most of the realistic potential for conservation in the existing building stock cannot be determined from the CBECS data. This type of analysis would require actual audits of all the equipment in the commercial buildings, an evaluation of the conditions of such equipment, and the cost effectiveness of its replacement. Most of the energy conservation features that were listed in Table 4 have been incorporated in more than 70

percent of the floorspace in newer buildings, except for Computerized Energy Management and Control Systems.

Geographical Variation in Energy Use

Energy consumption patterns vary by geographic location, reflecting differences in climate, construction patterns, and energy source preferences. The following is an analysis of net energy consumption in nine Census divisions, the smallest geographical units for which the CBECS can publish data. Figure 4 presents the total net consumption of each major energy source in each Census division, illustrating differences in the consumption of various types of energy within and across divisions. (See the U.S. Census Regions and Divisions Map in Appendix E.)

The largest amounts of electricity were consumed in the Middle Atlantic, Pacific, and South Atlantic Divisions (470, 425, and 416 trillion Btu, respectively, accounting for 47 percent of the total consumption of electricity). The largest consumption of natural gas was found in the East North Central and the Middle Atlantic Divisions (561 and 314 trillion Btu, respectively, accounting

Table 4. Energy Conservation Features in Commercial Buildings by Year Constructed

| Year Constructed | Percent of Floorspace in Buildings Having Each of These Characteristics | | | | | |
|------------------|---|-----------------|-------------------------------------|---|--|---------------------------------------|
| | Roof or Ceiling Insulation | Wall Insulation | Other Shell Insulation ^a | At Least 50 Percent High-Efficiency Lighting ^b | Computerized Energy Management & Control Systems | Regular HVAC ^c Maintenance |
| 1945 or Before | 51.8 | 23.7 | 68.0 | 80.1 | 12.1 | 54.9 |
| 1946 - 1959 | 70.2 | 37.5 | 80.9 | 86.0 | 19.9 | 65.2 |
| 1960 - 1969 | 69.8 | 44.9 | 84.1 | 88.9 | 24.2 | 72.3 |
| 1970 - 1979 | 82.0 | 55.6 | 86.9 | 90.2 | 26.3 | 75.0 |
| 1980 - 1989 | 83.6 | 72.5 | 87.7 | 89.5 | 31.1 | 73.4 |

^aIncludes storm or multiple glazing, tinted reflective or shading glass, exterior or interior shadings or awnings, weather stripping or caulking.

^bIncludes high-intensity discharge or fluorescent lighting (see Glossary for definition).

^cHeating, ventilation, and air conditioning (see Glossary for definition).

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Table 104 of the *Commercial Buildings Characteristics 1989* Report.

⁷A more detailed presentation of the conservation features that exist in buildings of different construction years may be found in the EIA's *Commercial Buildings Characteristics 1989* report, Tables 97 through 110. An analysis of the penetration of energy-conserving lighting equipment in commercial buildings may be found in the EIA report: *Lighting in Commercial Buildings*, DOE/EIA-0555(92)/1.

Figure 4. Net Energy Consumption In U.S. Census Divisions

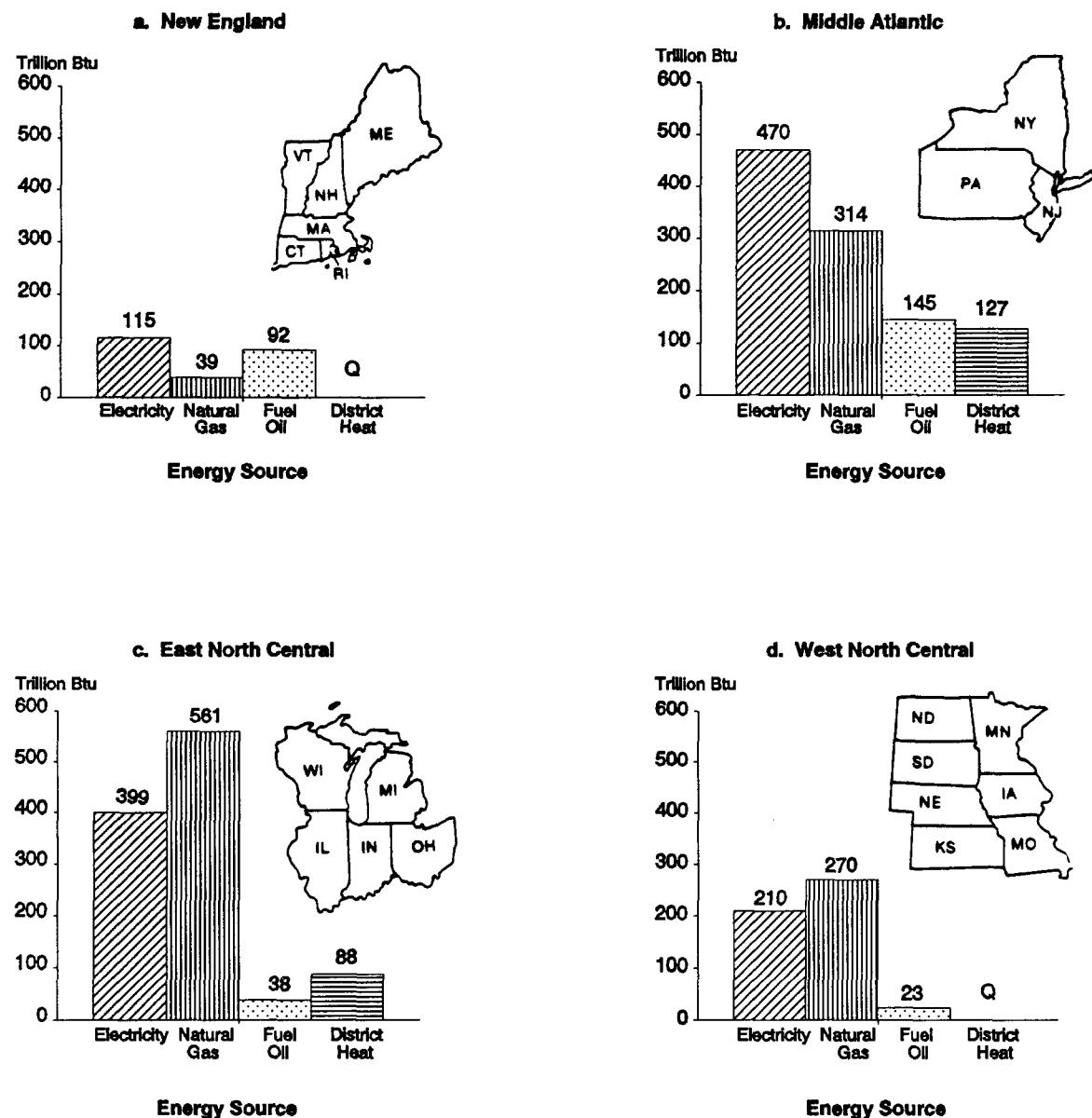
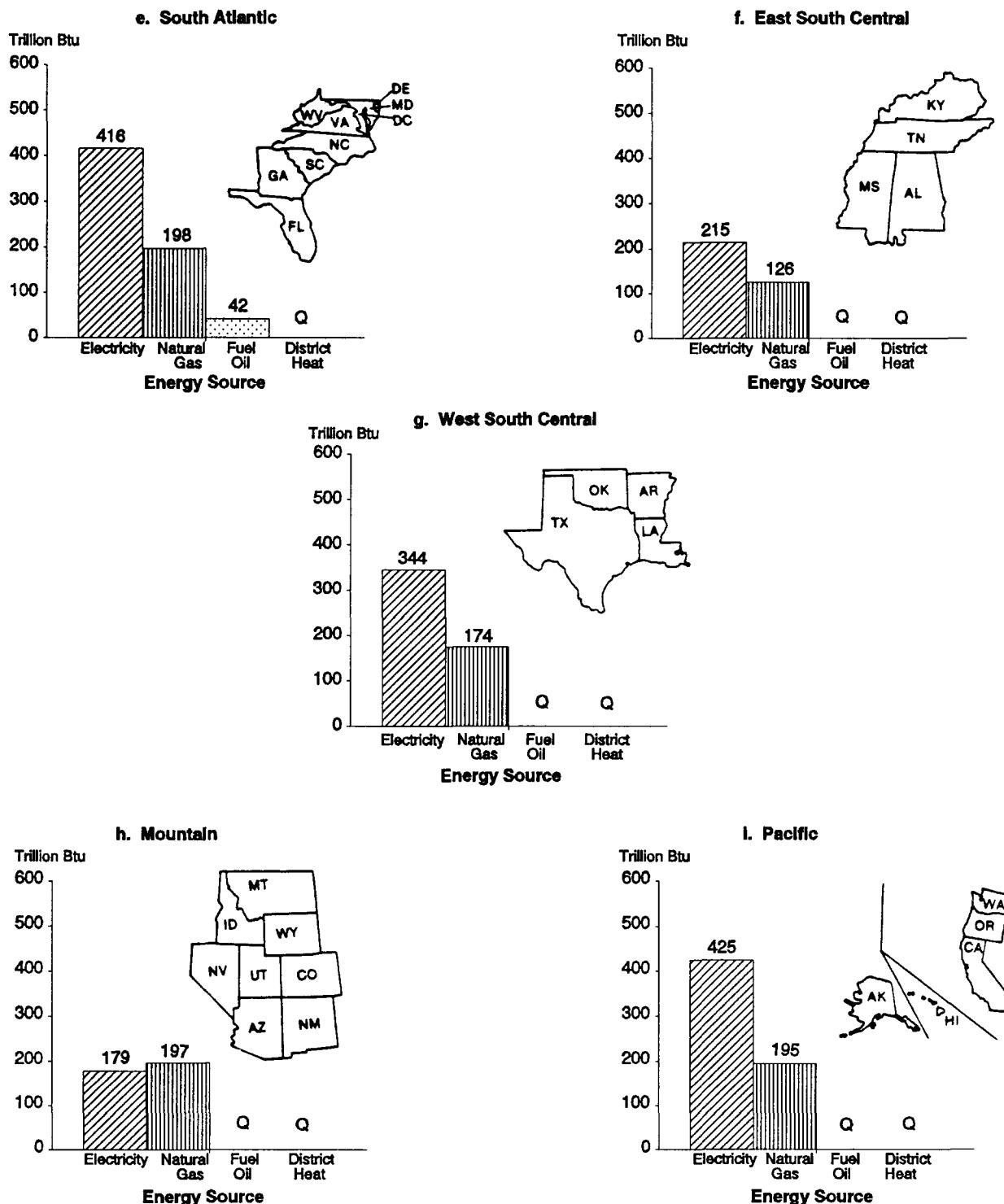


Figure 4. Net Energy Consumption In U.S. Census Divisions (Continued)



Notes: "Gross energy intensity" is the ratio of the consumption of a specific energy source to the total floorspace of all buildings, regardless of the use or nonuse of any specific energy source in each building. See Appendix B, "Nonsampling and Sampling Errors," for a discussion on comparisons between the 1979, 1983, 1986 and 1989 CBECS.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Table 11.

for 42 percent of the total). Most of the fuel oil was consumed in the Middle Atlantic and New England Divisions (145 and 92 trillion Btu, respectively, accounting for 66 percent of the total). A significant amount of the district heat was consumed in the Middle Atlantic and the East North Central Divisions (127 and 88 trillion Btu, respectively, accounting for 47 percent of the total consumption of district heat).

Since Census divisions vary in size, a comparison of energy consumption patterns is more clearly shown by examining the gross energy intensities. As expected, the highest gross energy intensity was found among the coldest Census divisions (Table 5). These were also the divisions in which fuels that are typically used for heating were consumed more intensely. In the East North Central, West North Central, and Mountain Divisions, the gross

energy intensity of natural gas exceeded even that of electricity. In the Middle Atlantic Division, the gross energy intensity of fuel oil and district heat were also relatively high. A relatively high gross intensity of fuel oil was also found in the New England Division, which includes many older buildings. The gross energy intensity of all fuels was lowest in the South Atlantic Division, which mainly includes areas with moderate and warm climates.

Although there was less of a regional variation in the gross intensity of electricity than in other energy sources, there was a regional difference in the total consumption of electricity. In the moderate and warm Census divisions, electricity consumption accounted for approximately 60 percent of the total energy consumed in the divisions.

Table 5. Gross Energy Intensity In Commercial Buildings by U.S. Census Divisions

| Census Regions and Divisions | Total Floorspace (million sq.ft.) | Gross Energy Intensity of All Major Energy Sources (thousand Btu/sq.ft.) | Gross Energy Intensity by Major Energy Source ^a (thousand Btu/sq.ft.) | | | |
|------------------------------|-----------------------------------|--|--|-------------|----------|---------------|
| | | | Electricity | Natural Gas | Fuel Oil | District Heat |
| Northeast | | | | | | |
| New England | 3,173 | 94.0 | 36.3 | 12.4 | 28.9 | Q |
| Middle Atlantic | 10,395 | 101.6 | 45.2 | 30.2 | 13.9 | 12.3 |
| Midwest | | | | | | |
| East North Central .. | 10,681 | 101.7 | 37.4 | 52.5 | 3.5 | 8.2 |
| West North Central .. | 5,275 | 108.7 | 39.7 | 51.2 | 4.3 | Q |
| South | | | | | | |
| South Atlantic | 10,090 | 67.6 | 41.2 | 19.6 | 4.2 | Q |
| East South Central .. | 14,296 | 86.8 | 50.1 | 29.3 | Q | Q |
| West South Central .. | 7,653 | 77.6 | 44.9 | 22.8 | Q | Q |
| West | | | | | | |
| Mountain | 4,388 | 102.5 | 40.7 | 44.8 | Q | Q |
| Pacific | 7,232 | 93.4 | 58.8 | 26.9 | Q | Q |

^aGross Energy Intensity for a specific energy source is the ratio of the consumption of that energy source to the total floorspace in all buildings. The gross intensity measure allows for comparisons across divisions as well as across energy sources.

Q - Data withheld because the Relative Standard Error was greater than 50 percent, or data were reported for fewer than 20 buildings.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Table 11.

Energy Consumption by Building Activity

Net energy consumption and gross energy intensity are related to the main activity performed in a building. Different activities require different equipment, building structures, work schedules, and the concentration of workers in the buildings, all of which are related to energy consumption. (A detailed description of the different building activity types is provided in Appendix D, "Types of Buildings.")

In 1989, office buildings consumed 21 percent (1,230 billion Btu) of the total amount of energy

used in commercial buildings, and they accounted for 19 percent of the total amount of floorspace. An additional 1,048 trillion Btu (18 percent) were consumed in mercantile and service buildings, which included 20 percent of the commercial floorspace (Table 6). The most intensive energy consumption per square foot was found in health care and food service buildings and in laboratories. (In the detailed tables, laboratories are included in the category of "other" buildings, since they represent a relatively small group of buildings and tend to be associated with industrial sites.)

Table 6. Net Energy Consumption In Commercial Buildings by Principal Building Activity

| Principal Building Activity | Total Net Energy Consumption (trillion Btu) | Total Floorspace (million sq.ft) | Gross Energy Intensity (thousand Btu/sq.ft) | Gross Intensity per Hour of Operation (Btu/(sq.ft*hr)) | Consumption per Worker (million Btu) |
|-------------------------------|---|----------------------------------|---|--|--------------------------------------|
| All Buildings | 5,788 | 63,183 | 91.6 | 23.1 | 81.9 |
| Assembly | 441 | 6,909 | 63.8 | 19.8 | 109.7 |
| Education | 704 | 8,076 | 87.2 | 25.9 | 97.8 |
| Food Sales | 139 | 792 | 175.6 | 31.5 | 164.7 |
| Food Service | 255 | 1,167 | 218.4 | 41.7 | 131.2 |
| Health Care | 449 | 2,054 | 218.5 | 29.4 | 106.3 |
| Laboratory ^a | 293 | 919 | 319.2 | 79.0 | 198.7 |
| Lodging | 425 | 3,476 | 122.3 | 14.3 | 137.6 |
| Mercantile and Service | 1,048 | 12,365 | 84.8 | 22.4 | 84.4 |
| Office | 1,230 | 11,802 | 104.2 | 29.5 | 44.3 |
| Parking Garage | 42 | 983 | 42.6 | 7.1 | 126.1 |
| Public Order and Safety | 78 | 616 | 127.0 | 19.1 | 91.0 |
| Warehouse | 535 | 9,253 | 57.8 | 16.9 | 122.4 |
| Other | 50 | 610 | 82.7 | 16.3 | 79.4 |
| Vacant ^b | 98 | 4,161 | 23.5 | 11.0 | 66.5 |

^aIn the Detailed Tables section, laboratory is included in the category of "other" buildings.

^bBuildings in which more than 50 percent of the floorspace was vacant.

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Tables 11, 13, and B18.

Energy Efficiency Across Building Types

One area of interest when looking at energy consumption by building type (defined by principal building activity) is the relative energy efficiency across different building types. This energy efficiency can be measured differently by focusing on a particular aspect of activity level within the building. These aspects of activity include: energy consumption per square foot (gross energy intensity), hours a building is in operation (gross energy intensity per hour of operation), and the concentration of workers in the building (energy consumption per worker). All three factors: floorspace, hours of operation, and concentration of workers are indicators of the building activity level that are related to energy consumption.

Depending on which activity indicator is used, different building types will stand out compared to others. Therefore, each of these indicators may present a different picture regarding the energy efficiency of a certain type of building in relation to other types of buildings. When one of the activity indicators is particularly high in a specific building type, the corresponding energy indicator (consumption per unit of that factor) will tend to be low, even if other indicators (consumption per unit of other factors) are at an average or above-average level (Table 6).

A comparison of the three different indicators of consumption by principal building activity: gross energy intensity, intensity per hour of operation, and consumption per worker shows that:

- In **health care buildings** the consumption per square foot is high, relative to the whole building population. However, in health care buildings both the hours of operation and the concentration of workers are relatively large, contributing substantially to the energy consumption in these buildings. Therefore, in terms of intensity per hour of operation
- and in terms of consumption per worker, the rate of energy use in health care buildings is similar to most other buildings. A similar situation exists in **food service buildings**.
- **Assembly, education, and warehouse buildings** have lower than average operating hours and lower than average concentration of workers. Thus, while they are low compared to other buildings in terms of gross energy intensity, they consume more energy than other buildings in terms of intensity per hour of operation and consumption per worker.
- **Lodging, food sales, and public order and safety buildings** are characterized by long operating hours, which would be expected to contribute to high energy consumption. Thus, in terms of the intensity per hour of operation, these buildings have lower rates of energy consumption than in terms of either the intensity or the consumption per worker.
- **Parking garages** are characterized by a relatively low concentration of workers in conjunction with relatively large floorspaces and long operating hours. Therefore, relative to other building types, these buildings have very low energy intensity and very low consumption per operating hour, while consumption per worker is relatively high.
- **Office buildings** are characterized by a large concentration of workers. Therefore, their consumption per worker is much lower relative to other buildings than the gross energy intensity and the intensity per hour.
- **Mercantile and service buildings** are not characterized by especially large floorspace or high concentration of workers or long hours of operation. Therefore, their consumption relative to other buildings is similar for all three indicators.

Energy Source Mix by Building Type

The activity performed in a building affects not only the energy consumption in the building, but also the sources of energy and the intensity of the consumption of different sources.

Figures 5 through 7 present the consumption patterns of the four major energy sources for all buildings and for each building type, respectively. The data indicate that, in most building types, electricity and natural gas were consumed in similar amounts; however, in education buildings the consumption of natural gas was larger than that of electricity, while in office buildings the consumption of electricity was much larger than that of natural gas. Fuel oil was consumed in small amounts in most building types, while district heat was found mainly in health care, assembly, and office buildings (Figures 6 and 7).

Comparison of gross energy intensities across the decade shows that there was little change in gross electricity intensity for commercial buildings as a whole. There were substantial declines for both natural gas and fuel oil. The gross energy intensity of natural gas decreased in most building types, particularly in assembly, mercantile and service, office, and warehouse buildings (Figure 8). The gross energy intensity of fuel oil decreased in most building types.⁸

Factors Related to Specific Energy Source Consumption

Previous sections of this report have compared aggregate intensity among building characteristic categories, such as categories of the year constructed. To examine whether the relationships

suggested by the aggregate intensity comparisons hold at the individual building level, a statistical procedure known as multiple regression was used to relate intensity to six explanatory variables: the concentration of workers per square foot, weekly operating hours, building age, heating degree-days, cooling degree-days, and the principal building activity.⁹

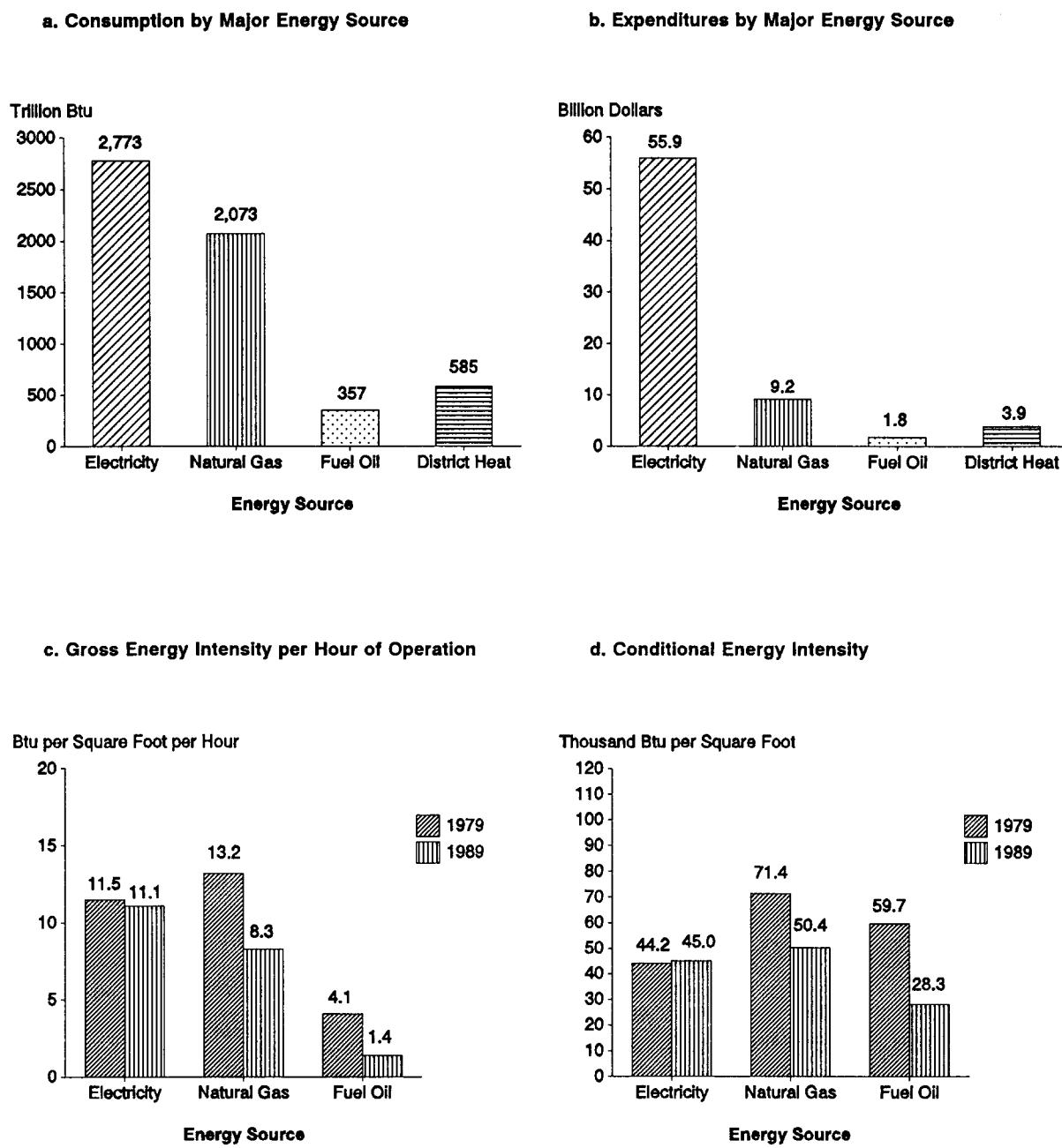
Overall, major energy source intensity was significantly related to all items except building age and cooling degree-days. All four specific energy source intensities were related to the concentration of workers per square foot and the principal building activity; differences among energy sources appeared with regard to the other items. Electricity intensity was related to cooling, rather than heating degree-days, as befits its dominant role in air conditioning. Electricity intensity was also related to the age of the building, probably as a result of the growing electrification of buildings over time. Similar to electricity, fuel oil intensity was related to building age, mirroring the overall decline in fuel oil (Figure 3). As would be expected given their minor use as cooling energy sources, neither natural gas nor fuel oil intensities were significantly related to cooling degree-days. Neither fuel oil nor natural gas intensities were related to weekly operating hours.

The relationship between intensity and principal building activity remains even when the other factors were considered. This finding indicates that differences in the intensity patterns by principal building activity (Figures 5 and 8) are not simply due to differences in the distribution of buildings across activity categories by age, location, and worker concentration. Rather, there are other differences among activity categories, such as differences in the types of equipment used to perform the activities, which have important bearing on the intensity of energy use.

⁸Since the 1979 CBECS only collected purchased steam, district heat was omitted for comparison between 1979 and 1989. Thus, 1979 and 1989 data are not directly comparable.

⁹See Appendix B, "Nonsampling and Sampling Errors," for further methodological details.

Figure 5. Consumption Patterns in Commercial Buildings



Notes: • "Gross energy intensity" is the ratio of the consumption of a specific energy source to the total floorspace of all buildings, regardless of the use or nonuse of any specific energy source in each building. • "Conditional energy intensity" is the ratio of the consumption of a specific energy source to the total floorspace of buildings using that energy source. • See Appendix B, "Nonsampling and Sampling Errors," for a discussion on comparisons between the 1979, 1983, 1986, and 1989 CBECS.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1979 and 1989 Commercial Buildings Energy Consumption Surveys, Tables 11, 12, and B17.

Figure 6. Consumption of Major Energy Sources by Building Activity

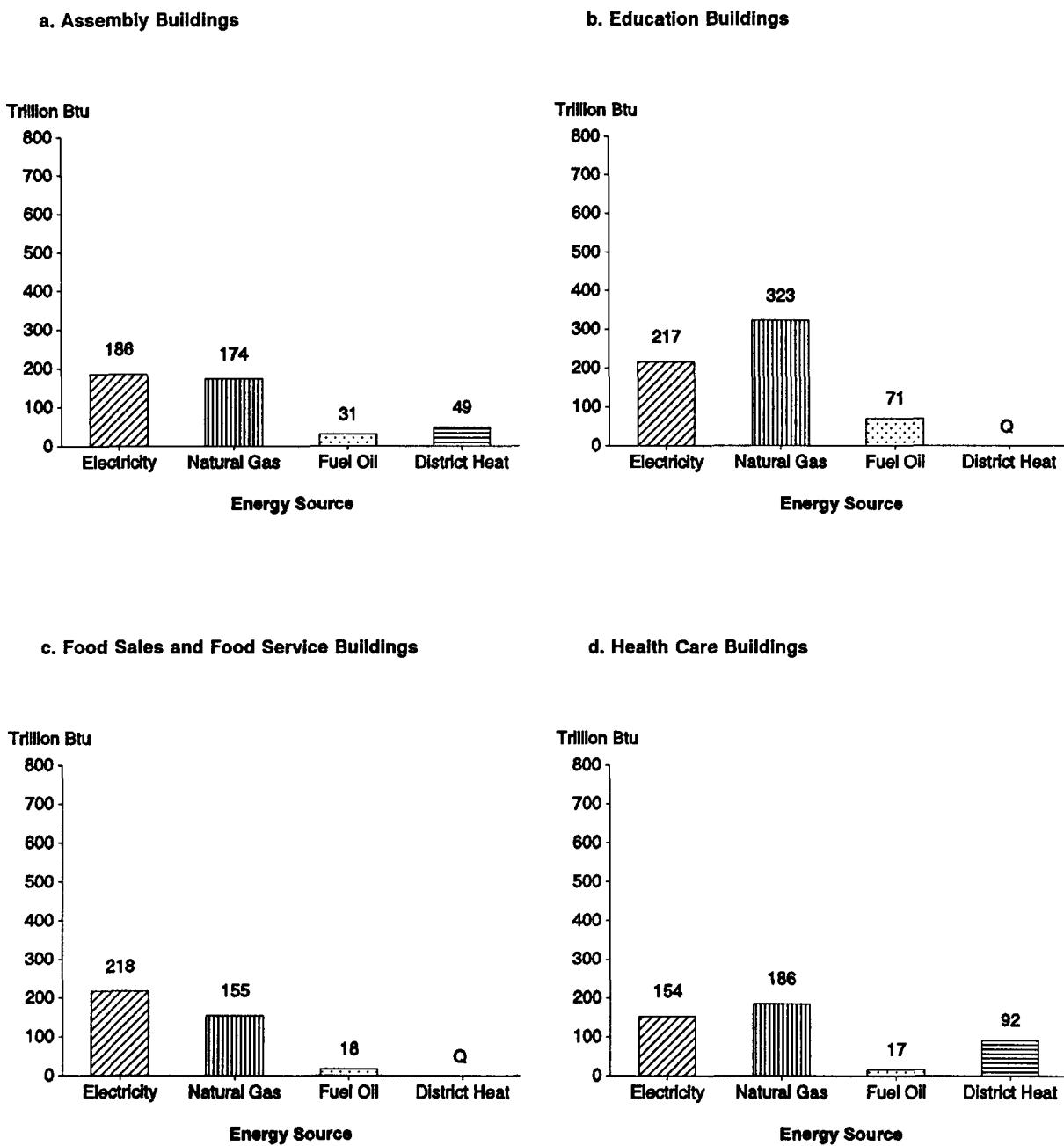
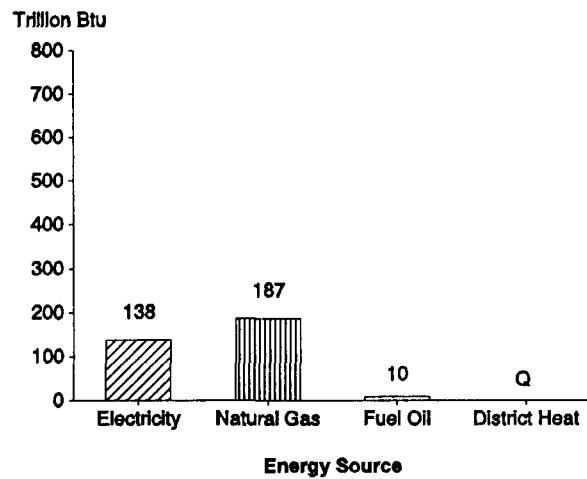
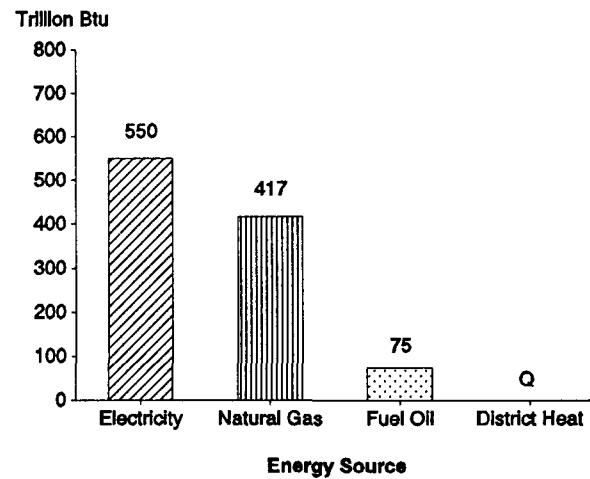


Figure 6. Consumption of Major Energy Sources by Building Activity (Continued)

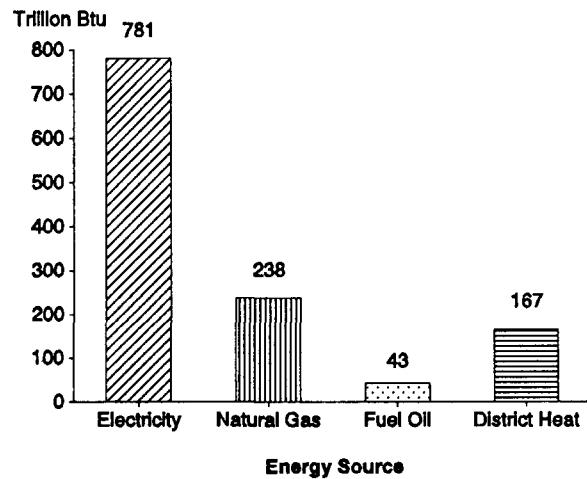
e. Lodging Buildings



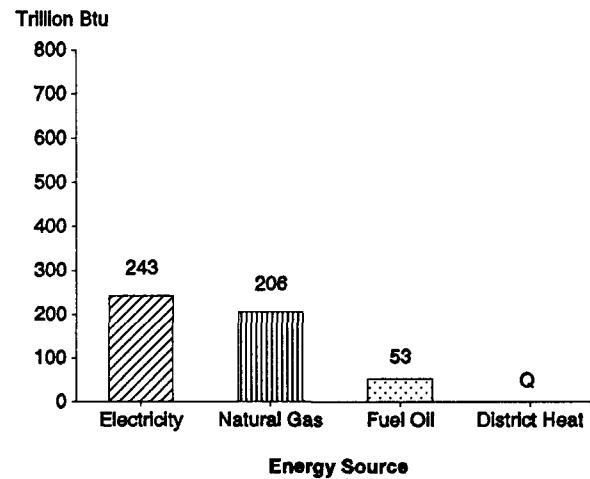
f. Mercantile and Service Buildings



g. Office Buildings



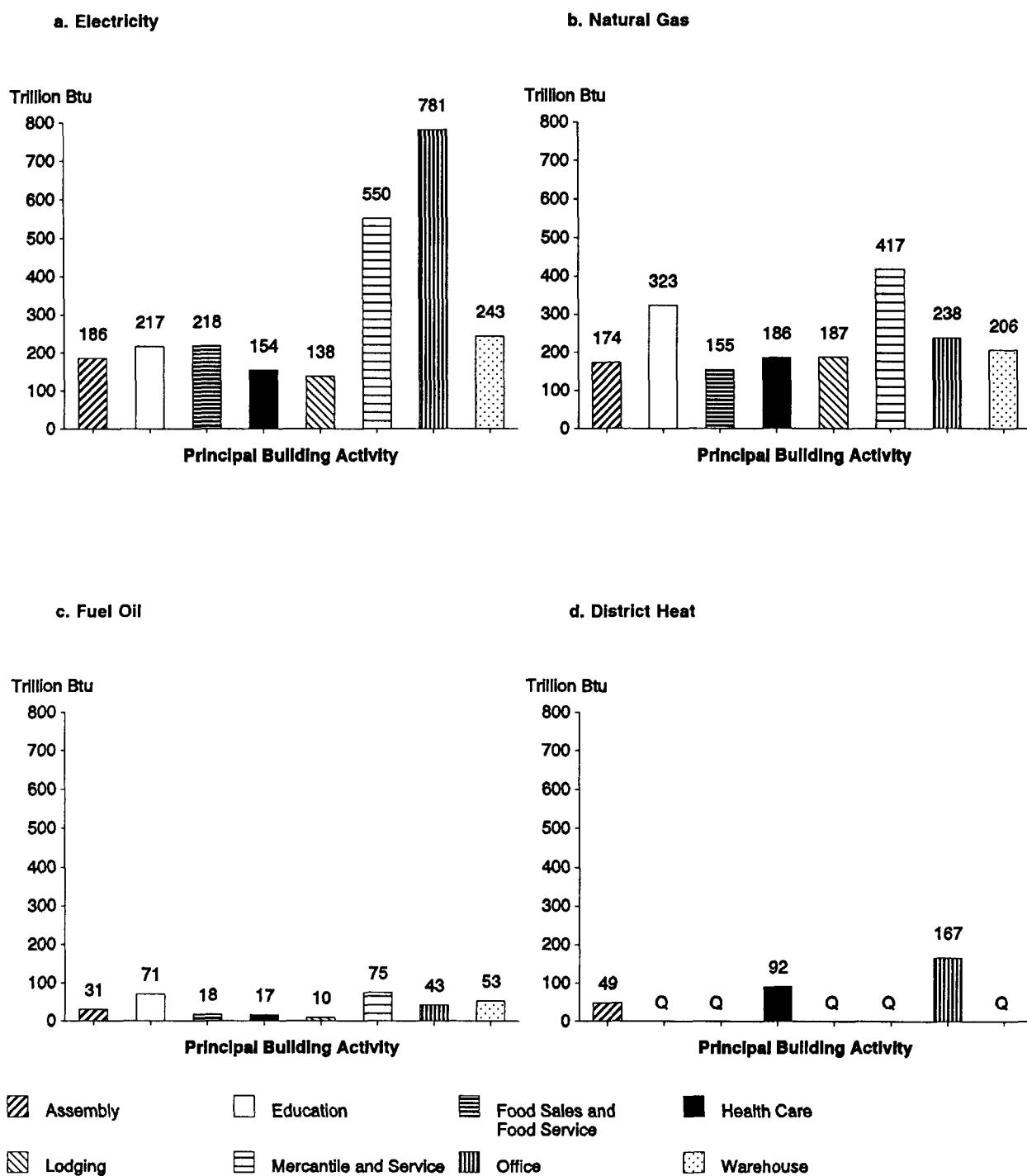
h. Warehouses



Q—Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Table 11.

Figure 7. Consumption in Buildings with Selected Activities by Major Energy Source

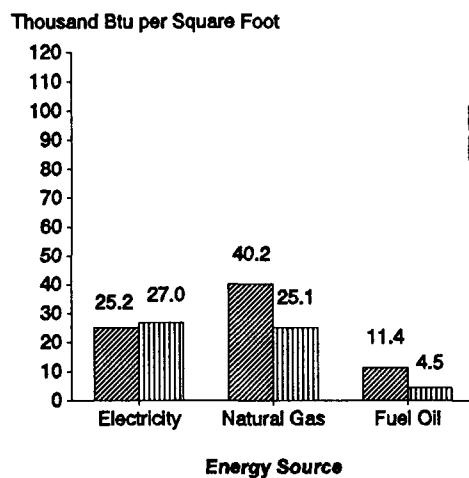


Q--Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

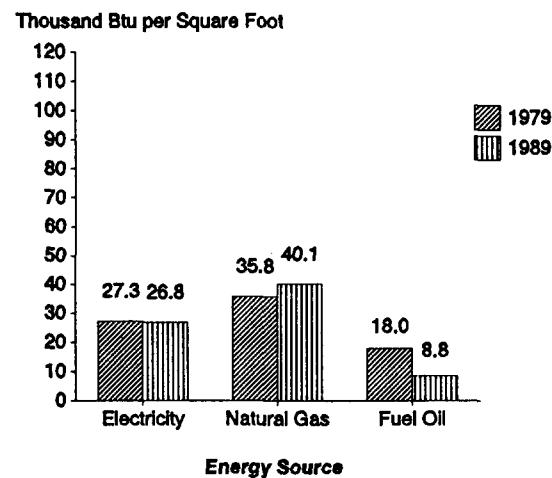
Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Table 11.

Figure 8. Gross Energy Intensity by Building Activity

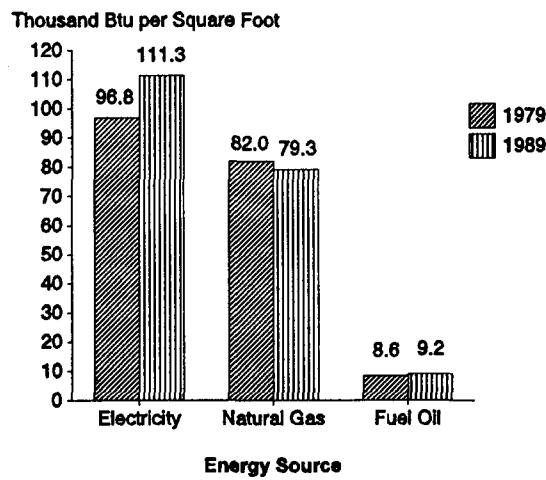
a. Assembly Buildings



b. Education Buildings



c. Food Sales and Food Service Buildings



d. Health Care Buildings

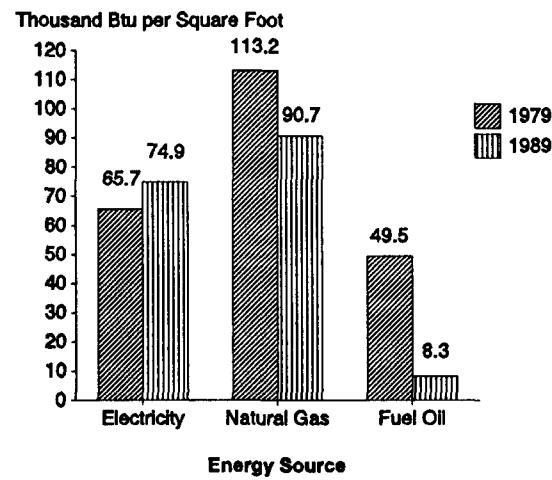
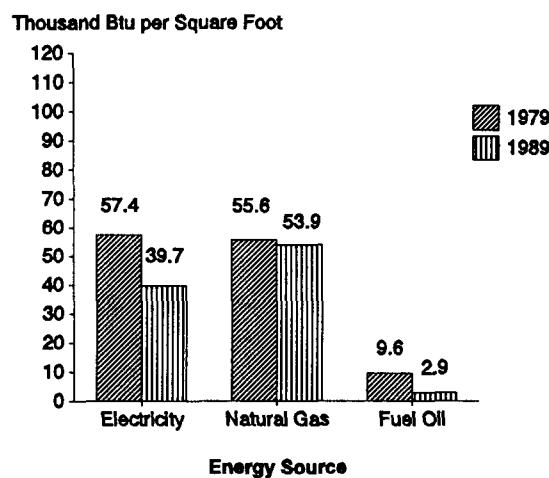
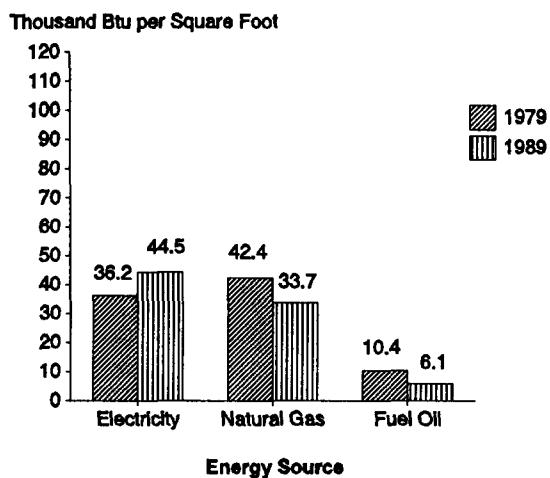


Figure 8. Gross Energy Intensity by Building Activity (Continued)

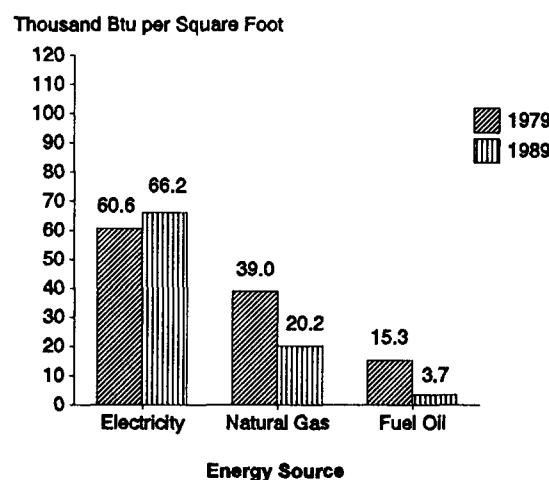
e. Lodging Buildings



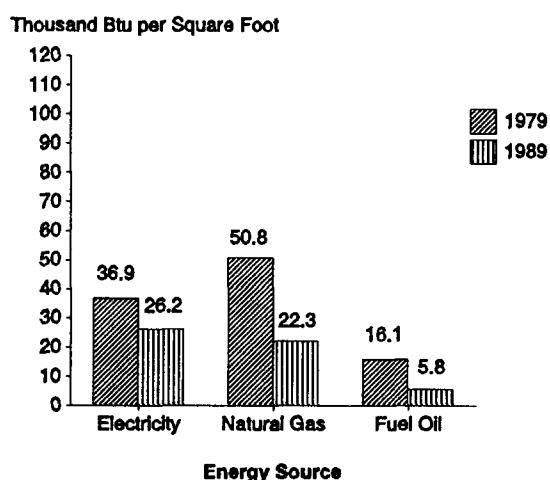
f. Mercantile and Service Buildings



g. Office Buildings



h. Warehouses



Notes: • "Gross energy intensity" is the ratio of the consumption of a specific energy source to the total floorspace of all buildings, regardless of the use or nonuse of any specific energy source in each building. • Since the 1979 CBECS collected data on purchased steam only, district heat was omitted for comparison between 1979 and 1989. • See Appendix B, "Nonsampling and Sampling Errors," for a discussion on comparisons between the 1979, 1983, 1986, and 1989 CBECS.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1979 and 1989 Commercial Buildings Energy Consumption Surveys, Table B17.

Energy Source-Specific Issues

District Heating and Cooling

A special effort was made in the 1989 CBECS to collect consumption data about district heating and cooling energy. The category of district heating and cooling includes district steam, district hot water, and district chilled water, which are piped into a building from a central source located outside the building and serving more than one building.

In 1989, roughly 10 percent of commercial floorspace was in buildings served by district steam or hot water (*EIA Commercial Buildings Characteristics 1989* report), and about 5 percent of air-conditioned commercial floorspace was cooled by district chilled water.

The most intensive consumption (conditional intensity) of district heat in 1989 was found in health care buildings and laboratories (135 and 114 thousand Btu per square foot, respectively), and 87 percent of the total consumption of district heat was consumed by buildings that used it as their main space-heating source. In the very cold climate zone, the conditional intensity of district heat reached a high of 206 thousand Btu per square foot.

The central source for district steam, district hot water, and district chilled water may be a utility or a central plant that serves the entire multibuilding facility of which the sampled CBECS building is a part. Typical examples of multibuilding facilities are university campuses and hospital complexes. Also included are industrial sites, office parks, motels, schools, or shopping centers, consisting of more than one building at the same site. About 40 percent of all commercial floorspace was found in multibuilding facilities with 13 percent of commercial floorspace on facilities that had central plants. In inpatient health care buildings, 72 percent of the floorspace was on multibuilding facilities, 56 percent of the floorspace on facilities having a central plant.

When the district heating or cooling is purchased from a utility or similar vendor, the amounts delivered are usually metered and billed similar to electricity or natural gas. Thus, consumption information is relatively easy to obtain for purchased district heating and cooling. However, roughly three-quarters of the commercial floorspace served by district heating or cooling is served by a central plant on the same multibuilding facility. Often in such cases, there is no metering of individual buildings' steam, hot water, or chilled water use. There may be metering records for an entire district or system that serves several buildings, or a record only of total central plant output, or no record even of the overall output. In the latter case, the total facility input fuel consumption may be the only data available. In the 1989 CBECS, if the building that includes the central plant was defined as a commercial building, information about its input fuel consumption was collected. However, in some cases the central plant was defined as an industrial building. In these cases, neither its input nor its output, which flows into other commercial buildings was collected. For these reasons, it has been difficult for the previous CBECS to provide accurate estimates of total district heating and cooling consumption by commercial buildings.

In order to collect more accurate data on the district heat that flows into commercial buildings, an adjunct survey of multibuilding facilities with central plants was undertaken in 1989. This survey collected data at the entire facility level, but included information on specific buildings within the facility. Data were received from 261 multibuilding facilities, of which 237 did actually have a central plant. See Appendix A of this report for more information on the Facility Survey.

The Facility Survey found the largest share (36 percent) of floorspace in facilities to be on college or university campuses. The commercial buildings on these campuses included education, assembly, lodging and office buildings. Twenty percent of the floorspace was in hospitals, and 15 percent on industrial facilities.

Offices and warehouses were the two most prominent types of commercial buildings in multibuilding facilities. Consumption data from the adjunct Facility Study are not yet available and will be published in a separate analytic report.

Gas Transported for the Account of Others

A new development in energy markets in the last decade is the ability of large natural gas users to purchase their gas via direct purchases from the source, rather than from the local utility. The local utility would then deliver the gas to the building via pipelines. Gas purchased directly is

referred to as gas transported for the account of others, transportation gas, direct purchase gas, or spot market gas. In this report, for simplicity, it is referred to as transported gas. Gas purchased directly from the source may be advantageous for buildings that consume large amounts of natural gas since the price paid for the gas through a separate transaction with a gas producer or intermediary may be lower than that paid when gas is bought directly from the local gas utility.

Overall, 12 percent of all natural gas consumed by commercial buildings in 1989 was transported gas (Table 7). Transported gas was consumed in 24,000 buildings with a total floorspace of 2,265 million square feet. As a group, these customers received

Table 7. Transported Gas Consumption as a Percent of Natural Gas Consumption In Commercial Buildings

| Building Characteristics | Number of Buildings (thousand) | Floorspace (million sq.ft.) | Total Natural Gas Consumed (billion cu.ft.) | Transported Gas Consumed (billion cu.ft.) | Percent Transported Gas Consumed |
|---|--------------------------------|-----------------------------|---|---|----------------------------------|
| All Buildings Using Natural Gas | 2,420 | 41,143 | 2,015 | 242 | 12 |
| Census Region | | | | | |
| Midwest | 734 | 12,815 | 808 | 145 | 18 |
| Remainder | 1,686 | 28,329 | 1,207 | Q | 8 |
| Principal Building Activity | | | | | |
| Education | 199 | 6,640 | 314 | Q | 21 |
| Health Care | 40 | 1,602 | 181 | 49 | 27 |
| Other | 2,181 | 32,902 | 1,519 | 126 | 8 |
| Natural Gas Account Classification ^a | | | | | |
| Commercial | 2,203 | 35,489 | 1,592 | 110 | 7 |
| Industrial | 30 | 1,975 | 203 | Q | 37 |
| Other | 187 | 3,680 | 219 | Q | 26 |
| Multibuilding Facility | | | | | |
| Yes | 665 | 15,016 | 880 | 160 | 18 |
| No | 1,755 | 26,127 | 1,135 | 82 | 7 |

^aThese numbers refer to the classification made by the supplier. CBECS' classification of commercial buildings does not always match the suppliers' classification, as explained in Appendix C.

Q - Data withheld because the Relative Standard Error was greater than 50 percent, or data were reported for fewer than 20 buildings.

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Tables 38 and CBECS Public Use Data.

89 percent of their gas via direct purchases, with the remaining 11 percent bought from their local utility companies.

Approximately 18 percent of the natural gas purchased in the Midwest Census Region was classified as transported gas. The Midwest consumed 60 percent of the 242 billion cubic feet of transported gas reported for all commercial buildings in the 1989 survey. Education and health care buildings received substantial proportions of their natural gas as transported gas, 21 and 27 percent, respectively. Only 7 percent of all gas provided to buildings that were defined by the energy suppliers as "commercial" customers was transported gas. In contrast, in commercial buildings defined by the suppliers as "industrial" customers, 37 percent of consumed natural gas was purchased under this arrangement (Table 7). For further discussion of technical issues related to transportation gas, see Appendix B, "Nonsampling and Sampling Errors."¹⁰

Fuel Switching

Fuel switching, as used in this report, is the ability to change to a different main heating fuel within a period of 1 week without substantially reducing the area heated or the temperature maintained in the heated area. For the first time, the 1989 CBECS data allow analysis of this short-term capability to switch to another energy source. Prior to the 1989 CBECS, data were collected that addressed only the long-term potential for fuel switching.

In 1989, two types of information relating to fuel switching were requested. As in previous CBECS, data were collected regarding the use of other energy sources in the building for each building with a specific main heating source. These other energy sources were used for secondary space heating, water heating, cooling, or for end uses other than main heating. For the first time, CBECS respondents were asked (a) whether the building could switch to a different main heating source within a week's time, without substantially reducing the area heated or the temperature

maintained in the heated area, and (b) to which energy source the building could switch.

Only the maximum amounts of energy sources that were potentially relevant for fuel switching could be estimated, since the CBECS did not collect metered data on the amount of energy consumed for each end use. Thus, any estimates are based on the total consumption of the particular energy source used as the main heating source, rather than on the consumption used solely for main space heating.

Long-Term Potential for Fuel Switching. Many buildings that used a particular energy source for heating were also supplied with other energy sources and therefore had a long-term potential for converting their heating systems to an alternate energy source. Virtually all buildings using natural gas or fuel oil as their main heating source were also supplied with electricity (less than 1 percent of the buildings was not supplied with electricity). Therefore, in the long term and at some costs, electricity could replace natural gas or fuel oil.

In buildings using electricity as the main heating source, approximately 38 percent of the consumption of electricity was in buildings also supplied with natural gas. In buildings using fuel oil as their main source of heating, about 34 percent of the fuel oil consumption was in buildings that were also supplied with natural gas.

About 12 percent of the electricity consumption for buildings using electricity as the main heating source and about 21 percent of the natural gas consumption for buildings using natural gas as the main heating source took place in buildings that were also supplied with fuel oil (Table 8).

Short-Term Capability to Switch Fuel. Only a small percentage of the buildings reported the short-term capability to switch their heating to an alternate type of energy. Of the 234 billion kWh consumed in buildings where electricity was the main heating source, only 10 percent (24 billion kWh) was in buildings that could switch to another heating source within a week's time.

¹⁰For statistics of transportation gas by state, see *Natural Gas Annual 1990*, EIA-0131(90)/1 (Volume 1, Table 18), Energy Information Administration.

Table 8. Long-Term Potential for Fuel Switching

| | Electricity | | Natural Gas | | Fuel Oil | |
|--|---|---|--|---|---|---|
| | Consumption ¹ (billion kWh) | Percent Using Other Energy Source | Consumption ¹ (billion cu.ft.) | Percent Using Other Energy Source | Consumption ¹ (million gallons) | Percent Using Other Energy Source |
| Main Heating Energy Source | 234 | 100 | 1,728 | 100 | 2,056 | 100 |
| Other Energy Sources Used in Building | | | | | | |
| Electricity | - | - | 1,725 | 100 | 2,044 | 99 |
| Natural Gas | 90 | 38 | - | - | 703 | 34 |
| Fuel Oil | 27 | 12 | 361 | 21 | - | - |

¹Includes consumption of fuel for all end uses, not just main heating source.

-- Data Not Applicable.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Tables 29, 45, and 51.

The ability to switch to an alternate main heating fuel was greater for buildings with either natural gas or fuel oil as the main heating fuel. About 32 percent (554 billion cubic feet) of the natural gas and 23 percent (466 million gallons) of the fuel oil consumed as the main heating sources were in buildings that could switch to an alternate main heating fuel within a week (Table 9).

Fuel oil was the predominant alternate energy source for natural gas-heated buildings reporting short-term fuel-switching capability. Of the 554 billion cubic feet of natural gas consumption in buildings that could switch their main heating fuel, 391 billion cubic feet (71 percent) were consumed in buildings that reported a short-term capability to switch to fuel oil. In contrast, although electricity was used in almost all buildings that had natural gas as a main heating source, it was an alternate source of main heating in only a small fraction of these buildings.

In buildings where fuel oil was the main heating source, natural gas was the predominant alternate source (Table 9). Of the 466 million gallons of fuel oil consumed in buildings with an alternate

main heating source, 310 million gallons (67 percent) were consumed in buildings where natural gas was the alternate energy source. For additional discussion of fuel-switching capability, see Appendix B, "Nonsampling and Sampling Errors."

Energy Suppliers Account Classification

The CBECS' definition of a commercial building is not always synonymous with an energy supplier's account classification of that building. For the CBECS, a building is classified as commercial if over 50 percent of its floorspace is used for commercial activities (for a more complete definition of a CBECS building, see the "Glossary"). For the purpose of classification of customer accounts, an energy supplier could classify that same building as either commercial, industrial, residential, or a combination of commercial/residential or commercial/industrial depending upon the rate structure and guidelines of the utility and state public service commission.¹¹

¹¹A more detailed discussion of account classification as it relates to the CBECS can be found in Appendix C, "CBECS Coverage Related to EIA Supply Surveys."

Table 9. Short-Term Capability to Switch Fuels Within a Week's Time

| | Electricity Consumption | | | Natural Gas Consumption | | | Fuel Oil Consumption | | |
|--------------------------------------|-------------------------|---------|--------------------------|-------------------------|---------|--------------------------|----------------------|---------|--------------------------|
| | Billion kWh | Percent | Percent Alternate Source | Billion cu.ft. | Percent | Percent Alternate Source | Million Gallons | Percent | Percent Alternate Source |
| Main Heating Source | 234 | 100 | -- | 1,728 | 100 | -- | 2,056 | 100 | -- |
| Ability to Switch | | | | | | | | | |
| Main Heating Source | | | | | | | | | |
| No Alternate | 210 | 90 | 100 | 1,174 | 68 | 100 | 1,590 | 77 | 100 |
| Have Alternate | 24 | 10 | -- | 554 | 32 | -- | 466 | 23 | -- |
| Alternate Main Heating Source | | | | | | | | | |
| Used in Building | | | | | | | | | |
| Electricity | -- | -- | -- | 71 | -- | 13 | Q | -- | Q |
| Natural Gas | 15 | -- | 63 | -- | -- | -- | 310 | -- | 67 |
| Fuel Oil | 5 | -- | 21 | 391 | -- | 71 | -- | -- | -- |

Q - Data withheld because the Relative Standard Error was greater than 50 percent, or data were reported for fewer than 20 buildings.

-- Data Not Applicable.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Buildings Energy Consumption Survey, Tables 29, 45, and 51.

The potential discrepancy between a CBECS building and the supplier's classification of a building is further compounded by the fact that different energy suppliers can classify the same building differently. For example, the supplier of electricity could classify the building as commercial, while the supplier of natural gas could classify the same building as industrial.

To investigate this issue, the 1989 CBECS asked the energy suppliers to provide the account classification for each building when they provided the energy consumption billing data for that building. (For a discussion of the Energy Suppliers Survey, see Appendix A, "How the Survey Was Conducted.")

Analysis of the classification of energy accounts by the energy suppliers indicate that of the total 61,563 million square feet in buildings using electricity, approximately 77 percent was in buildings classified by electricity suppliers as

commercial. An additional 4 percent was classified as either schools, government buildings, or institutional buildings. The remaining 18 percent of the floorspace was classified as noncommercial or a mix of commercial/noncommercial accounts. Included in this noncommercial classification was approximately 16 percent of floorspace that was classified as industrial or a combination of industrial/commercial.

The classification of natural gas accounts differs from the account classification of electricity in that only about 6 percent of the floorspace in buildings using natural gas was classified as industrial or mixed industrial/commercial sales accounts. About 86 percent of the floorspace was classified as commercial by the natural gas suppliers. Additional analysis of energy consumption in the CBECS buildings by the energy suppliers' account classification of that building, indicates that the degree of difference in account classification varies by energy source (Table 10).

**Table 10. Consumption by Energy Source and Energy Supplier's Account Classification
(Trillion Btu)**

| Account Classification | Electricity | Natural Gas | Fuel Oil |
|--|-------------|-------------|----------|
| All Buildings, All Accounts | 2,773 | 2,073 | 357 |
| Commercial Sales | 2,077 | 1,704 | 263 |
| Mixed Commercial/ Noncommercial Sales | 279 | 120 | 69 |
| Not Classified as Commercial Sales | 415 | 251 | 26 |
| Residential | 16 | 42 | 6 |
| Industrial | 399 | 209 | 20 |

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Table C1.



This church is located in the West Census Region and is classified as an assembly building in the 1989 CBECS.

Detailed Tables

The following 43 tables present detailed energy consumption and expenditure data from the 1989 CBECS for buildings in the commercial sector. A "Quick-Reference Guide" to the statistics in the different tables is provided to point the reader to the relevant tables concerning specific topics. Directions for calculating an approximate relative standard error for each estimate in the tables are also presented. For comparability with previous CBECS, the four major energy sources are referred to as major fuels in the following Detailed Tables.

Table Organization

Overall Organization

Tables are sequenced by a summary of all major fuels for total consumption, total expenditures, and intensities, and then by specific fuels: electricity, natural gas, fuel oil, and district heat. In general, the floorspace total shown in the detailed tables include all the floorspace in buildings where the indicated feature is present. That is, particular buildings' floorspace is either entirely included or excluded from a particular table cell.

Row Stubs

There is a standard set of row categories (stubs), which appears in all the summary tables. Depending on the specific table topic, the standard stub may be augmented with selected variables pertinent to that topic. The standard stub items always appear in the same order, with any additional stub items interspersed adjacent to the related standard stub items.

There are two types of row stubs, those that divide commercial buildings into exclusive, nonoverlapping categories and those that indicate nonexclusive, overlapping subsets. For example, "Climate Zone" is a set of exclusive categories; a

given building belongs in only one of these. "Energy Sources," on the other hand, is a set of nonexclusive categories; a given building may be represented in more than one line under this stub, since the building may use more than one energy source. The phrase "Solely or in Combination" indicates that the categories under this row header are overlapping. Both exclusive and overlapping categories may be nonexhaustive; that is, there may be some buildings that do not fall into any of the listed categories.

Summary and Gross Intensities Tables

Tables 11 and 12 are summary tables of total energy consumption and expenditures by major fuels. Total consumption and expenditures for all major fuels, as well as consumption and expenditures per building, per square foot and per worker are provided in Tables 13 and 14. Table 15 presents expenditure intensities for the sum of major fuels by main heating fuel. Tables 16 through 20 present energy intensities by consumption totals and total floorspace by two-factor classifications. The first factor is Census region (Tables 16-17), building size (Table 18), principal building activities (Table 19) and the year the building was constructed (Table 20). Energy intensity statistics for these tables are gross energy intensities. That is, they are the ratio of total consumption to total building floorspace including buildings and floorspace where the fuel is not used.¹² For a discussion of Gross Intensities, see the box on page 7 of this report. For more information on complete definition see the "Glossary."

Specific Fuel Tables

Tables 21 through 53 are the specific fuel tables. These tables are subdivided into tables showing total consumption and expenditures for a specific

¹²In previous CBECS reports, only conditional energy intensities were presented. These intensities were referred to in the report as energy intensities.

fuel, tables showing consumption for buildings that use the specific fuel, and tables showing consumption for buildings that are heated with the specific fuels. For electricity, consumption statistics are presented for buildings that cool (Table 28) and heat (Table 29) with electricity. Tables 30 through 36 contain peak electricity demand information.

With the exception of fuel oil and district heat, the consumption tables are also presented by Census region, building size, principal activity, and year the building was constructed.

Energy intensity statistics for these fuel-specific tables are conditional energy intensities. That is, they are the ratio of consumption of a particular fuel to the total floorspace of a building using that fuel. For a discussion of Conditional Energy Intensities, see the box on page 7 of this report.

Row and Column Factors

The tables in this report present estimates for commercial buildings and their related consumption and expenditures in the United States. Since the estimates are based on the sample surveyed, they are subject to sampling error. To help the reader compute an approximate Relative Standard Error (RSE) for each of the estimates in the tables, row and column factors are displayed on the top line and in the far right

column of each table, except for Tables 35 through 37 and Table 46.

To calculate the RSE for a specific estimate, multiply the row factor by the column factor. The use of the row and column RSE factors is illustrated in Figure 9, a sample table from a previous report. The row of the table labeled "Mercantile and Service" and the column labeled "Total Floorspace (million square feet)" give an estimate of 12.805 billion square feet for the total commercial floorspace contained in Mercantile and Service buildings. The RSE row factor is: $R_{\text{Mercantile and Service}} = 5.17$. The RSE column factor is: $C_{\text{Total Floorspace}} = 1.096$. The approximate RSE for the estimate is, therefore, computed as:

$$\text{RSE}_{\text{Mercantile and Service, Total Floorspace}} = 5.17 \times 1.096 = 5.67 \text{ percent.}$$

The standard error derived from the row and column factors can be used to construct confidence intervals, as in Figure 9, and to perform hypothesis tests by standard statistical methods. However, because the generalized variance procedure gives only approximate RSE's, such confidence intervals and statistical tests must also be regarded as only approximate. For the example above, the RSE determined directly by the jackknife method is actually 6.7, not 5.7. For more details about the derivation of the row and column RSE factors, see Appendix B, "Nonsampling and Sampling Errors."



This is a university library located off campus and is classified as an assembly building in the 1989 CBECS.

Figure 9. Use of RSE Row and Column Factors

Table 1. Principal Building Activity

| Building Characteristics | Number of Buildings (thousand) | Number of Buildings (percent) | Total Floorspace (million square feet) | Total Floorspace (percent) | RSE Row Factor |
|------------------------------------|--------------------------------|-------------------------------|--|----------------------------|----------------|
| RSE Column Factor: | 0.975 | 0.879 | 1.096 | 1.064 | |
| All Buildings..... | 4,154 | 100.0 | 58,229 | 100.0 | 3.13 |
| Principal Building Activity | | | | | |
| Assembly..... | 575 | 13.8 | 7,339 | 12.6 | 6.22 |
| Education..... | 241 | 5.8 | 7,321 | 12.6 | 6.62 |
| Food Sales..... | 102 | 2.5 | 712 | 1.2 | 13.65 |
| Food Service..... | 201 | 4.8 | 1,281 | 2.2 | 8.48 |
| Health Care (inpatient)..... | 14 | .3 | 1,757 | 3.0 | 20.29 |
| Health Care (outpatient)..... | 38 | .9 | 350 | .6 | 19.96 |
| Laboratory..... | 17 | .4 | 283 | .5 | 28.19 |
| Lodging..... | 123 | 3.0 | 2,179 | 3.7 | 10.11 |
| Mercantile and Service..... | 1,287 | 31.0 | 12,805 | 22.0 | 5.17 |
| Office..... | 614 | 14.8 | 9,546 | 16.4 | 5.76 |
| Public Order and Safety..... | 55 | 1.3 | 680 | 1.2 | 14.96 |
| Skilled Nursing..... | 13 | .3 | 605 | 1.0 | 23.46 |
| Warehouse (nonrefrigerated).... | 524 | 12.6 | 8,522 | 14.6 | 6.74 |
| Warehouse (refrigerated)..... | 25 | .6 | 474 | .8 | 24.12 |
| Other..... | 86 | 2.1 | 1,442 | 2.5 | 15.37 |
| Vacant | 238 | 5.7 | 2,931 | 5.0 | 8.94 |

Total Floorspace in buildings where the Principal Building Activity is

Mercantile and Service = 12,805 Million Square Feet.

R(Mercantile and Service) = 5.17

C(Total Floorspace) = 1,096

Approximate RSE (Mercantile and Service, Total Floorspace)

$$= (5.17) \cdot (1.096) = 5.67 \text{ percent}$$

Approximate Standard Error(Mercantile and Service, Total Floorspace)

$$= (.0587) \cdot (12,805) = 726 \text{ Million Square Feet}$$

Approximate 2 Standard Errors (95 percent) Confidence Interval

$$=(1.96) \cdot (726) = 1,423 \text{ Million Square Feet}$$

Therefore, with 95 percent confidence, the total floorspace in mercantile and service buildings in 1989 was between 11,382 million and 14,228 million square feet ($12,805 + 1,423$).

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1986 Nonresidential Buildings Energy Consumption Survey.

Quick-Reference Guide

The Quick-Reference Guide lists, by broad class, the topic areas covered by the detailed tables and

the table numbers for the different types of tables. To help the reader quickly locate a particular table, the broad topic class is marked along the outside edge of each table page.

Quick-Reference Guide

| Data Item/Category | Table Numbers | | | | |
|---|---------------|-------------|-------------|----------|---------------|
| | Major Fuels | Electricity | Natural Gas | Fuel Oil | District Heat |
| Total Consumption | 11 | 11, 21 | 11, 38 | 11, 47 | 11, 52 |
| Total Expenditures | 12 | 12, 22 | 12, 39 | 12, 48 | 12, 53 |
| Consumption per Building, Square Foot, Worker | 13 | 21 | 38 | 47 | 52 |
| Expenditures per Building, Square Foot, Energy Unit | 14 | 22 | 39 | 48 | 53 |
| Expenditure Intensities by Main Heating Fuel | 15 | | | | |
| Consumption and Intensity by: | | | | | |
| Census Region | 16 | 23 | 40 | 49 | |
| Building Size | 18 | 25 | 42 | | |
| Selected Building Activities | 19 | 26 | 43 | | |
| Year Constructed | 20 | 27 | 44 | | |
| Building Level Intensities (percentile) | | 37 | 46 | | |
| Expenditures per Energy Unit and Intensity by Census Region | 17 | 24 | 41 | 50 | |
| Consumption and Intensity by End Use | | | | | |
| Cooling | 28 | | | | |
| Heating | 29 | | 45 | 51 | |
| Electricity Peak Demand by | | | | | |
| Demand Metering | | 30 | | | |
| Season of Peak Demand | | 31-32 | | | |
| Peak Demand Category | | 33-34 | | | |
| Peak Demand Intensity (percentile) | | 35 | | | |
| Load Factoring (percentile) | | 36 | | | |

Table 11. Commercial Buildings Energy Consumption by Major Fuel

| Building Characteristics | All Buildings | | Total Energy Consumption (trillion Btu) | | | | | RSE Row Factor |
|--|-------------------------|--|---|-------------|-------------|----------|---------------|----------------|
| | Total Number (thousand) | Total Floorspace (million square feet) | Total of Major Fuels | Electricity | Natural Gas | Fuel Oil | District Heat | |
| RSE Column Factor: | 0.597 | 0.569 | 0.860 | 0.844 | 1.057 | 1.802 | 2.370 | |
| All Buildings | 4,528 | 63,184 | 5,788 | 2,773 | 2,073 | 357 | 585 | 8.91 |
| Building Floorspace (Square Feet) | | | | | | | | |
| 1,001 to 5,000 | 2,529 | 6,790 | 692 | 326 | 302 | 59 | Q | 7.94 |
| 5,001 to 10,000 | 890 | 6,532 | 567 | 246 | 265 | 41 | Q | 12.39 |
| 10,001 to 25,000 | 644 | 10,393 | 791 | 381 | 278 | 69 | 63 | 11.06 |
| 25,001 to 50,000 | 247 | 8,801 | 756 | 331 | 309 | 47 | Q | 11.42 |
| 50,001 to 100,000 | 127 | 9,130 | 855 | 433 | 249 | 54 | 119 | 16.39 |
| 100,001 to 200,000 | 61 | 8,277 | 777 | 387 | 238 | 46 | 106 | 16.88 |
| 200,001 to 500,000 | 23 | 7,022 | 698 | 366 | 228 | 28 | 76 | 23.49 |
| Over 500,000 | 7 | 6,239 | 652 | 303 | 203 | 12 | 133 | 24.92 |
| Year Constructed | | | | | | | | |
| 1899 or Before | 172 | 1,654 | 128 | 25 | 53 | 17 | Q | 23.38 |
| 1900 to 1919 | 242 | 4,245 | 239 | 75 | 123 | 26 | 15 | 20.22 |
| 1920 to 1945 | 680 | 8,098 | 636 | 211 | 244 | 69 | Q | 14.60 |
| 1946 to 1959 | 868 | 10,511 | 988 | 379 | 411 | 77 | Q | 14.41 |
| 1960 to 1969 | 821 | 12,167 | 1,275 | 589 | 458 | 73 | 156 | 13.89 |
| 1970 to 1979 | 884 | 13,329 | 1,342 | 730 | 441 | 61 | 110 | 11.59 |
| 1980 to 1983 | 317 | 4,274 | 432 | 295 | 117 | 10 | Q | 15.73 |
| 1984 to 1986 | 329 | 5,670 | 464 | 303 | 141 | Q | Q | 14.86 |
| 1987 to 1989 | 215 | 3,235 | 284 | 167 | 85 | Q | Q | 21.95 |
| BUILDING USE | | | | | | | | |
| Principal Building Activity | | | | | | | | |
| Assembly | 617 | 6,909 | 441 | 186 | 174 | 31 | 49 | 14.04 |
| Education | 282 | 8,076 | 704 | 217 | 323 | 71 | Q | 15.01 |
| Food Sales | 102 | 792 | 139 | 105 | 27 | Q | Q | 27.90 |
| Food Service | 241 | 1,167 | 255 | 113 | 128 | Q | Q | 14.50 |
| Health Care | 80 | 2,054 | 449 | 154 | 186 | 17 | 92 | 23.76 |
| Lodging | 140 | 3,476 | 425 | 138 | 187 | 10 | Q | 15.95 |
| Mercantile and Service | 1,278 | 12,365 | 1,048 | 550 | 417 | 75 | Q | 10.81 |
| Office | 679 | 11,802 | 1,230 | 781 | 238 | 43 | 167 | 9.94 |
| Parking Garage | 45 | 983 | 42 | 18 | Q | Q | Q | 32.20 |
| Public Order and Safety | 50 | 616 | 78 | 29 | 25 | Q | Q | 37.22 |
| Warehouse | 618 | 9,253 | 536 | 243 | 206 | 53 | Q | 19.64 |
| Other | 62 | 1,529 | 344 | 201 | 102 | Q | Q | 40.29 |
| Vacant | 333 | 4,161 | 98 | 39 | 49 | Q | Q | 28.35 |
| Weekly Operating Hours | | | | | | | | |
| 39 or Fewer | 876 | 6,073 | 203 | 71 | 100 | 26 | Q | 11.92 |
| 40 to 48 | 1,117 | 13,905 | 998 | 440 | 388 | 65 | 105 | 10.30 |
| 49 to 60 | 987 | 13,473 | 925 | 478 | 326 | 54 | 66 | 9.89 |
| 61 to 84 | 625 | 10,777 | 991 | 522 | 342 | 68 | 60 | 11.28 |
| 85 to 167 | 515 | 9,387 | 998 | 485 | 360 | 80 | Q | 16.66 |
| 168 (Open Continuously) | 408 | 9,569 | 1,673 | 779 | 557 | 65 | 272 | 13.58 |
| Workers | | | | | | | | |
| 4 or Fewer | 2,491 | 15,146 | 697 | 294 | 300 | 83 | Q | 7.76 |
| 5 to 9 | 906 | 7,938 | 534 | 258 | 218 | 35 | Q | 9.99 |
| 10 to 19 | 507 | 6,445 | 540 | 238 | 248 | 38 | 16 | 12.00 |
| 20 to 49 | 381 | 9,665 | 939 | 401 | 332 | 72 | Q | 10.13 |
| 50 to 99 | 132 | 7,389 | 701 | 348 | 253 | 34 | Q | 13.98 |
| 100 to 249 | 79 | 6,771 | 992 | 478 | 358 | 57 | 99 | 17.44 |
| 250 or More | 32 | 9,829 | 1,386 | 758 | 364 | 39 | 225 | 20.27 |

See footnotes at end of table.

Table 11. Commercial Buildings Energy Consumption by Major Fuel (Continued)

| Building Characteristics | All Buildings | | Total Energy Consumption (trillion Btu) | | | | | Source |
|--------------------------------------|-------------------------|--|---|-------------|-------------|----------|---------------|--------|
| | Total Number (thousand) | Total Floorspace (million square feet) | Total of Major Fuels | Electricity | Natural Gas | Fuel Oil | District Heat | |
| | 1987 | 1988 | 1989 | 1989 | 1989 | 1989 | 1989 | 1989 |
| Ownership and Occupancy | | | | | | | | |
| Nongovernment Owned | 3,950 | 48,842 | 4,239 | 2,113 | 1,601 | 242 | 284 | 7,401 |
| Owner Occupied | 2,814 | 35,954 | 3,331 | 1,575 | 1,292 | 200 | 263 | 10,226 |
| Single Establishment | 2,445 | 27,081 | 2,668 | 1,182 | 1,083 | 176 | 228 | 10,226 |
| Multiple Establishment | 369 | 8,873 | 663 | 393 | 210 | 24 | 35 | 10,226 |
| Nonowner Occupied | 1,136 | 12,888 | 908 | 537 | 309 | 42 | Q | 12,888 |
| Single Establishment | 672 | 6,248 | 471 | 265 | 176 | Q | Q | 12,888 |
| Multiple Establishment | 259 | 5,239 | 394 | 265 | 102 | 19 | Q | 12,888 |
| Vacant | 206 | 1,401 | Q | 8 | Q | Q | Q | 12,888 |
| Government Owned | 577 | 14,342 | 1,549 | 660 | 472 | 115 | 301 | 14,342 |
| Federal | 40 | 1,917 | Q | 132 | Q | Q | Q | 14,342 |
| State | 137 | 3,902 | 585 | 240 | 112 | 31 | 201 | 14,342 |
| Local | 400 | 8,522 | 692 | 288 | 290 | 79 | Q | 14,342 |
| Multibuilding Facility | | | | | | | | |
| Not on Multibuilding Facility | 3,030 | 37,237 | 2,887 | 1,428 | 1,168 | 234 | 58 | 6,459 |
| Part of Multibuilding Facility | 1,497 | 25,947 | 2,901 | 1,345 | 905 | 123 | 527 | 11,006 |
| On Facility with Central Plant | 203 | 8,346 | 1,593 | 635 | 423 | 60 | 476 | 20,661 |
| LOCATION | | | | | | | | |
| Census Region | | | | | | | | |
| Northeast | 783 | 13,569 | 1,354 | 586 | 353 | 237 | 179 | 11,120 |
| Midwest | 1,046 | 15,955 | 1,659 | 609 | 831 | 61 | 159 | 12,226 |
| South | 1,847 | 22,039 | 1,648 | 975 | 498 | 50 | 126 | 12,226 |
| West | 851 | 11,620 | 1,126 | 604 | 391 | Q | 121 | 14,342 |
| Census Division | | | | | | | | |
| Northeast* | | | | | | | | |
| New England | 184 | 3,173 | 298 | 115 | 39 | 92 | Q | 1,677 |
| Middle Atlantic | 599 | 10,395 | 1,056 | 470 | 314 | 145 | 127 | 1,677 |
| Midwest | | | | | | | | |
| East North Central | 686 | 10,681 | 1,086 | 399 | 561 | 38 | 88 | 1,677 |
| West North Central | 360 | 5,275 | 573 | 210 | 270 | 23 | Q | 1,677 |
| South | | | | | | | | |
| South Atlantic | 737 | 10,090 | 682 | 416 | 198 | 42 | Q | 1,677 |
| East South Central | 397 | 4,296 | 373 | 215 | 126 | Q | Q | 1,677 |
| West South Central | 712 | 7,653 | 594 | 344 | 174 | Q | Q | 1,677 |
| West | | | | | | | | |
| Mountain | 322 | 4,388 | 450 | 179 | 197 | Q | Q | 1,677 |
| Pacific | 529 | 7,232 | 676 | 425 | 195 | Q | Q | 1,677 |
| Metropolitan Status | | | | | | | | |
| Metropolitan | 3,073 | 50,809 | 4,780 | 2,366 | 1,608 | 274 | 532 | 37,131 |
| Nonmetropolitan | 1,454 | 12,375 | 1,008 | 407 | 465 | 83 | Q | 10,000 |
| Climate Zone: 45-Year Average | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | |
| Over 7,000 HDD | 357 | 5,062 | 617 | 211 | 252 | 65 | Q | 17,441 |
| 5,500-7,000 HDD | 1,120 | 17,957 | 1,855 | 668 | 850 | 137 | 199 | 17,441 |
| 4,000-5,499 HDD | 965 | 15,385 | 1,393 | 706 | 407 | 127 | 152 | 17,441 |
| Under 4,000 HDD | 1,024 | 12,903 | 1,115 | 663 | 350 | Q | 83 | 17,441 |
| 2,000 CDD or More and -- | | | | | | | | |
| Under 4,000 HDD | 1,063 | 11,876 | 809 | 525 | 213 | Q | Q | 17,441 |

See footnotes at end of table.

Table 11. Commercial Buildings Energy Consumption by Major Fuel (Continued)

| Building Characteristics | All Buildings | | Total Energy Consumption (trillion Btu) | | | | | RSE Flow Factor |
|---|-------------------------|--|---|-------------|-------------|----------|---------------|-----------------|
| | Total Number (thousand) | Total Floorspace (million square feet) | Total of Major Fuels | Electricity | Natural Gas | Fuel Oil | District Heat | |
| RSE Column Factor | 0.597 | 0.500 | 0.000 | 0.000 | 1.057 | 1.002 | 2.370 | |
| ENERGY SOURCES AND END USES * | | | | | | | | |
| Energy Sources | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 4,294 | 61,563 | 5,782 | 2,773 | 2,068 | 355 | 585 | 6.96 |
| Natural Gas | 2,420 | 41,143 | 4,336 | 1,824 | 2,073 | 149 | 290 | 9.28 |
| Fuel Oil | 581 | 12,600 | 1,589 | 662 | 427 | 357 | 143 | 16.32 |
| District Heat | 98 | 6,578 | 1,207 | 444 | Q | Q | 585 | 24.39 |
| District Chilled Water | 24 | 1,927 | 344 | 162 | Q | Q | 147 | 42.83 |
| Propane | 348 | 4,695 | 453 | 200 | 145 | 66 | Q | 27.35 |
| Other | 130 | 1,542 | 87 | 45 | 29 | Q | Q | 26.46 |
| Energy End Uses | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Heated Buildings | 3,876 | 57,868 | 5,667 | 2,676 | 2,051 | 356 | 584 | 7.12 |
| Air-Conditioned Buildings | 3,184 | 51,770 | 5,101 | 2,555 | 1,780 | 260 | 506 | 7.49 |
| Buildings with Water Heating | 3,183 | 53,584 | 5,462 | 2,602 | 1,960 | 321 | 580 | 7.37 |
| Buildings with Cooking | 864 | 23,668 | 2,755 | 1,331 | 975 | 150 | 298 | 10.70 |
| Buildings with Manufacturing | 205 | 5,601 | 709 | 291 | 286 | Q | Q | 24.06 |
| Space-Heating Energy Source | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 1,283 | 18,702 | 1,499 | 1,039 | 338 | 38 | Q | 10.71 |
| Natural Gas | 2,158 | 33,017 | 3,418 | 1,385 | 1,856 | 76 | Q | 9.31 |
| Fuel Oil | 555 | 10,526 | 1,305 | 502 | 371 | 344 | Q | 14.58 |
| District Heat | 94 | 6,130 | 1,008 | 363 | Q | Q | 520 | 20.35 |
| Propane | 238 | 1,767 | 118 | 74 | Q | Q | Q | 37.21 |
| Other | 110 | 994 | 46 | 23 | 14 | Q | Q | 36.79 |
| Main Space-Heating Energy Source | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 957 | 13,448 | 978 | 800 | 170 | 4 | Q | 11.94 |
| Natural Gas | 2,079 | 31,110 | 3,192 | 1,287 | 1,778 | 44 | Q | 10.22 |
| Fuel Oil | 473 | 5,599 | 498 | 182 | 25 | 287 | Q | 17.11 |
| District Heat | 93 | 6,026 | 988 | 355 | Q | Q | 511 | 20.59 |
| Propane | 208 | 1,230 | Q | Q | Q | Q | NC | 29.78 |
| Other | 70 | 766 | 26 | 14 | Q | Q | Q | 49.38 |
| Air-Conditioning Energy Source | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 3,072 | 47,911 | 4,580 | 2,373 | 1,611 | 237 | 360 | 7.69 |
| Natural Gas | 97 | 1,976 | 225 | 88 | 128 | Q | Q | 22.67 |
| District Chilled Water | 24 | 1,938 | 360 | 169 | 37 | 10 | 145 | 29.19 |
| Other | 13 | 1,076 | Q | 54 | Q | Q | Q | 62.10 |
| Water-Heating Energy Source | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 1,554 | 21,493 | 1,761 | 1,135 | 416 | 109 | 101 | 10.60 |
| Natural Gas | 1,391 | 25,923 | 2,706 | 1,111 | 1,451 | 93 | 50 | 9.66 |
| Fuel Oil | 126 | 2,284 | 233 | 66 | 31 | 124 | Q | 24.83 |
| District Heat | 49 | 4,751 | 898 | 308 | Q | Q | 447 | 25.66 |
| Propane | 88 | 1,023 | Q | 57 | NC | Q | NC | 47.51 |
| Other | 15 | 403 | 25 | 19 | Q | Q | NC | 50.73 |
| Cooking Energy Source (Solely or in Combination) | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 387 | 10,850 | 1,157 | 593 | 330 | 69 | 165 | 13.64 |
| Natural Gas | 462 | 14,766 | 1,707 | 758 | 744 | 62 | 144 | 11.03 |
| Propane | 93 | 923 | 77 | 52 | Q | 24 | NC | 32.65 |
| Other | 7 | 1,150 | 308 | Q | Q | Q | 104 | 37.09 |

See footnotes at end of table.

Table 11. Commercial Buildings Energy Consumption by Major Fuel (Continued)

| Building Characteristics | All Buildings | | Total Energy Consumption (trillion Btu) | | | | | | RSE Row Factor |
|---|-------------------------|--|---|-------------|-------------|----------|---------------|-------|----------------|
| | Total Number (thousand) | Total Floorspace (million square feet) | Total of Major Fuels | Electricity | Natural Gas | Fuel Oil | District Heat | | |
| RSE Column Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 2.370 | |
| Manufacturing Energy Source (Solely or in Combination) | | | | | | | | | |
| Electricity | 163 | 4,406 | 495 | 219 | 196 | Q | Q | 28.87 | |
| Natural Gas | 23 | 838 | 172 | 45 | 116 | Q | Q | 34.40 | |
| Other | 28 | 1,002 | 175 | 62 | Q | Q | Q | 48.09 | |
| HEATING AND COOLING | | | | | | | | | |
| Percent Heated | | | | | | | | | |
| Not Heated | 662 | 5,419 | 126 | 98 | 23 | Q | Q | 18.35 | |
| 1 to 50 | 630 | 9,314 | 371 | 210 | 128 | 27 | Q | 14.61 | |
| 51 to 99 | 496 | 8,673 | 892 | 496 | 274 | 62 | 59 | 15.42 | |
| 100 | 2,739 | 39,777 | 4,399 | 1,969 | 1,648 | 264 | 519 | 7.58 | |
| Percent Cooled | | | | | | | | | |
| Not Cooled | 1,344 | 11,413 | 687 | 218 | 293 | 97 | Q | 12.85 | |
| 1 to 50 | 1,037 | 17,821 | 1,336 | 461 | 616 | 146 | 113 | 12.45 | |
| 51 to 99 | 597 | 13,139 | 1,409 | 783 | 424 | 65 | 137 | 10.85 | |
| 100 | 1,550 | 20,811 | 2,356 | 1,311 | 740 | 50 | 256 | 10.54 | |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

** No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 12. Commercial Buildings Energy Expenditures by Major Fuel

| Building Characteristics | All Buildings | | Total Energy Expenditures (million dollars) | | | | | RSE Row Factor |
|--|-------------------------|--|---|-------------|-------------|----------|---------------|----------------|
| | Total Number (thousand) | Total Floorspace (million square feet) | Total of Major Fuels | Electricity | Natural Gas | Fuel Oil | District Heat | |
| | 0.558 | 0.599 | 0.823 | 0.836 | 0.990 | 1.780 | 2.507 | |
| All Buildings | 4,528 | 63,184 | 70,826 | 55,943 | 9,204 | 1,822 | 3,858 | 6.62 |
| Building Floorspace (Square Feet) | | | | | | | | |
| 1,001 to 5,000 | 2,529 | 6,790 | 9,601 | 7,592 | 1,620 | 351 | Q | 7.00 |
| 5,001 to 10,000 | 890 | 6,532 | 7,870 | 6,232 | 1,304 | 232 | Q | 15.25 |
| 10,001 to 25,000 | 644 | 10,393 | 9,869 | 7,809 | 1,348 | 378 | 335 | 10.75 |
| 25,001 to 50,000 | 247 | 8,801 | 8,950 | 6,919 | 1,318 | 233 | 479 | 12.24 |
| 50,001 to 100,000 | 127 | 9,130 | 10,124 | 8,042 | 1,094 | 251 | 738 | 15.46 |
| 100,001 to 200,000 | 61 | 8,277 | 9,265 | 7,410 | 1,016 | 198 | 641 | 15.88 |
| 200,001 to 500,000 | 23 | 7,022 | 7,853 | 6,326 | 836 | 126 | 565 | 22.38 |
| Over 500,000 | 7 | 6,239 | 7,293 | 5,613 | 668 | 54 | 959 | 22.50 |
| Year Constructed | | | | | | | | |
| 1899 or Before | 172 | 1,654 | 1,214 | 603 | 270 | 96 | Q | 24.39 |
| 1900 to 1919 | 242 | 4,245 | 2,448 | 1,676 | 527 | 138 | 107 | 18.82 |
| 1920 to 1945 | 680 | 8,098 | 7,033 | 4,772 | 1,135 | 377 | Q | 14.03 |
| 1946 to 1959 | 868 | 10,511 | 10,334 | 7,333 | 1,809 | 404 | 788 | 13.47 |
| 1960 to 1969 | 821 | 12,167 | 14,894 | 11,667 | 1,975 | 349 | 903 | 12.25 |
| 1970 to 1979 | 884 | 13,329 | 17,807 | 14,815 | 1,939 | 288 | 766 | 11.27 |
| 1980 to 1983 | 317 | 4,274 | 6,194 | 5,570 | 502 | 50 | Q | 15.22 |
| 1984 to 1986 | 329 | 5,670 | 7,184 | 6,363 | 665 | 26 | Q | 16.74 |
| 1987 to 1989 | 215 | 3,235 | 3,718 | 3,143 | 382 | Q | Q | 18.79 |
| BUILDING USE | | | | | | | | |
| Principal Building Activity | | | | | | | | |
| Assembly | 617 | 6,909 | 5,986 | 4,648 | 809 | 180 | 349 | 16.66 |
| Education | 282 | 8,076 | 6,589 | 4,391 | 1,309 | 331 | Q | 12.04 |
| Food Sales | 102 | 792 | 2,163 | 1,992 | 137 | Q | Q | 27.21 |
| Food Service | 241 | 1,167 | 3,282 | 2,520 | 675 | Q | Q | 14.70 |
| Health Care | 80 | 2,054 | 4,052 | 2,670 | 712 | 72 | Q | 22.80 |
| Lodging | 140 | 3,476 | 4,014 | 2,593 | 818 | 52 | Q | 16.02 |
| Mercantile and Service | 1,278 | 12,365 | 13,527 | 11,116 | 1,931 | 430 | Q | 9.48 |
| Office | 679 | 11,802 | 18,323 | 15,757 | 1,128 | 232 | 1,207 | 10.47 |
| Parking Garage | 45 | 983 | 485 | 357 | Q | Q | Q | 30.22 |
| Public Order and Safety | 50 | 616 | 875 | 582 | 120 | Q | Q | 36.04 |
| Warehouse | 618 | 9,253 | 6,085 | 4,836 | 853 | 234 | Q | 17.48 |
| Other | 62 | 1,529 | 4,224 | 3,558 | 420 | Q | Q | 40.42 |
| Vacant | 333 | 4,161 | 1,218 | 924 | 237 | Q | Q | 24.64 |
| Weekly Operating Hours | | | | | | | | |
| 39 or Fewer | 876 | 6,073 | 2,430 | 1,718 | 508 | 144 | Q | 12.34 |
| 40 to 48 | 1,117 | 13,905 | 12,619 | 9,871 | 1,771 | 331 | 647 | 12.02 |
| 49 to 60 | 987 | 13,473 | 12,561 | 10,146 | 1,563 | 296 | 557 | 9.42 |
| 61 to 84 | 625 | 10,777 | 13,233 | 10,899 | 1,587 | 364 | 383 | 10.71 |
| 85 to 167 | 515 | 9,387 | 11,833 | 9,480 | 1,537 | 391 | Q | 14.26 |
| 168 (Open Continuously) | 408 | 9,569 | 18,149 | 13,829 | 2,238 | 296 | 1,786 | 13.01 |
| Workers | | | | | | | | |
| 4 or Fewer | 2,491 | 15,146 | 9,013 | 6,835 | 1,564 | 475 | Q | 7.56 |
| 5 to 9 | 906 | 7,938 | 6,902 | 5,464 | 1,087 | 201 | Q | 9.22 |
| 10 to 19 | 507 | 6,445 | 6,483 | 4,993 | 1,177 | 203 | 109 | 11.64 |
| 20 to 49 | 381 | 9,665 | 11,724 | 8,968 | 1,538 | 365 | Q | 12.16 |
| 50 to 99 | 132 | 7,389 | 8,651 | 7,018 | 1,070 | 164 | Q | 13.87 |
| 100 to 249 | 79 | 6,771 | 11,155 | 8,910 | 1,417 | 241 | 587 | 15.76 |
| 250 or More | 32 | 9,829 | 16,898 | 13,754 | 1,350 | 173 | 1,622 | 10.19 |

See footnotes at end of table.

MAJOR FUELS

Table 12. Commercial Buildings Energy Expenditures by Major Fuel (Continued)

| Building Characteristics | All Buildings | | Total Energy Expenditures (million dollars) | | | | | RSE Row Factor |
|--------------------------------------|-------------------------|--|---|-------------|-------------|----------|---------------|----------------|
| | Total Number (thousand) | Total Floorspace (million square feet) | Total of Major Fuels | Electricity | Natural Gas | Fuel Oil | District Heat | |
| | 0.599 | 0.569 | 0.523 | 0.526 | 0.990 | 1.760 | 2.507 | |
| Ownership and Occupancy | | | | | | | | |
| Nongovernment Owned | 3,950 | 48,842 | 53,488 | 43,117 | 7,213 | 1,282 | 1,876 | 7.01 |
| Owner Occupied | 2,814 | 35,954 | 40,069 | 31,565 | 5,680 | 1,069 | 1,755 | 6.03 |
| Single Establishment | 2,445 | 27,081 | 30,511 | 23,444 | 4,713 | 932 | 1,423 | 9.47 |
| Multiple Establishment | 369 | 8,873 | 9,558 | 8,122 | 968 | 137 | 332 | 10.86 |
| Nonowner Occupied | 1,136 | 12,888 | 13,419 | 11,552 | 1,533 | 213 | Q | 10.69 |
| Single Establishment | 672 | 6,248 | 6,574 | 5,594 | 850 | 91 | Q | 14.90 |
| Multiple Establishment | 259 | 5,239 | 6,481 | 5,765 | 535 | 103 | Q | 15.46 |
| Vacant | 206 | 1,401 | 363 | 193 | Q | Q | Q | 26.56 |
| Government Owned | 577 | 14,342 | 17,338 | 12,826 | 1,991 | 540 | 1,982 | 13.79 |
| Federal | 40 | 1,917 | 2,854 | 2,172 | Q | Q | Q | 44.87 |
| State | 137 | 3,902 | 6,056 | 4,112 | 504 | 145 | 1,295 | 23.84 |
| Local | 400 | 8,522 | 8,429 | 6,542 | 1,271 | 370 | Q | 16.66 |
| Multibuilding Facility | | | | | | | | |
| Not on Multibuilding Facility | 3,030 | 37,237 | 36,983 | 29,810 | 5,426 | 1,231 | 515 | 6.52 |
| Part of Multibuilding Facility | 1,497 | 25,947 | 33,843 | 26,133 | 3,777 | 591 | 3,343 | 10.76 |
| On Facility with Central Plant | 203 | 8,346 | 16,124 | 11,397 | 1,554 | 262 | 2,911 | 21.42 |
| LOCATION | | | | | | | | |
| Census Region | | | | | | | | |
| Northeast | 783 | 13,569 | 17,505 | 13,188 | 1,807 | 1,225 | 1,286 | 12.00 |
| Midwest | 1,046 | 15,955 | 16,468 | 11,697 | 3,381 | 310 | 1,081 | 11.62 |
| South | 1,847 | 22,039 | 21,759 | 18,409 | 2,293 | 241 | 816 | 12.93 |
| West | 851 | 11,620 | 15,093 | 12,649 | 1,724 | Q | Q | 11.80 |
| Census Division | | | | | | | | |
| Northeast | | | | | | | | |
| New England | 184 | 3,173 | 3,654 | 2,662 | 226 | 473 | Q | 16.86 |
| Middle Atlantic | 599 | 10,395 | 13,852 | 10,527 | 1,580 | 752 | 993 | 15.12 |
| Midwest | | | | | | | | |
| East North Central | 686 | 10,681 | 11,089 | 7,964 | 2,386 | 194 | 546 | 19.80 |
| West North Central | 360 | 5,275 | 5,379 | 3,733 | 995 | 116 | Q | 21.96 |
| South | | | | | | | | |
| South Atlantic | 737 | 10,090 | 10,067 | 8,817 | 894 | 203 | Q | 20.63 |
| East South Central | 397 | 4,296 | 4,345 | 3,558 | 553 | Q | Q | 27.75 |
| West South Central | 712 | 7,653 | 7,347 | 6,034 | 846 | Q | Q | 16.61 |
| West | | | | | | | | |
| Mountain | 322 | 4,388 | 4,436 | 3,344 | 683 | Q | Q | 27.32 |
| Pacific | 529 | 7,232 | 10,657 | 9,305 | 1,040 | Q | 275 | 14.73 |
| Metropolitan Status | | | | | | | | |
| Metropolitan | 3,073 | 50,809 | 60,604 | 48,494 | 7,185 | 1,414 | 3,512 | 7.96 |
| Nonmetropolitan | 1,454 | 12,375 | 10,222 | 7,449 | 2,019 | 408 | Q | 14.49 |
| Climate Zone: 45-Year Average | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | |
| Over 7,000 HDD | 357 | 5,062 | 5,496 | 3,669 | 971 | 339 | Q | 17.17 |
| 5,500-7,000 HDD | 1,120 | 17,957 | 19,214 | 13,671 | 3,627 | 687 | 1,229 | 13.96 |
| 4,000-5,499 HDD | 965 | 15,385 | 17,726 | 14,043 | 1,830 | 676 | 1,177 | 15.62 |
| Under 4,000 HDD | 1,024 | 12,903 | 15,570 | 13,271 | 1,677 | Q | 540 | 17.56 |
| 2,000 CDD or More and -- | | | | | | | | |
| Under 4,000 HDD | 1,063 | 11,876 | 12,820 | 11,289 | 1,099 | Q | Q | 18.91 |

See footnotes at end of table.

Table 12. Commercial Buildings Energy Expenditures by Major Fuel (Continued)

| Building Characteristics | All Buildings | | Total Energy Expenditures (million dollars) | | | | | RSE Factor |
|---|-------------------------|--|--|-------------|-------------|----------|---------------|---------------|
| | Total Number (thousand) | Total Floorspace (million square feet) | Total of Major Fuels | Electricity | Natural Gas | Fuel Oil | District Heat | |
| RSE Column Factor | 0.556 | 0.559 | 0.553 | 0.556 | 0.559 | 1.759 | 2.557 | RSE Factor |
| ENERGY SOURCES AND END USES * | | | | | | | | |
| Energy Sources | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 4,294 | 61,563 | 70,801 | 55,943 | 9,187 | 1,814 | 3,858 | 0.55 |
| Natural Gas | 2,420 | 41,143 | 48,225 | 36,376 | 9,204 | 717 | 1,928 | 0.41 |
| Fuel Oil | 581 | 12,600 | 17,356 | 12,980 | 1,694 | 1,822 | 860 | 15.20 |
| District Heat | 98 | 6,578 | 12,689 | 8,192 | Q | Q | 3,858 | 22.00 |
| District Chilled Water | 24 | 1,927 | 3,914 | 2,791 | Q | Q | 972 | 35.84 |
| Propane | 348 | 4,695 | 5,069 | 4,051 | 481 | 323 | Q | 23.00 |
| Other | 130 | 1,542 | 1,033 | 814 | 126 | Q | Q | 0.10 |
| Energy End Uses | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Heated Buildings | 3,876 | 57,868 | 67,740 | 52,965 | 9,113 | 1,815 | 3,849 | 0.51 |
| Air-Conditioned Buildings | 3,184 | 51,770 | 64,029 | 51,497 | 7,852 | 1,321 | 3,360 | 7.30 |
| Buildings with Water Heating | 3,183 | 53,584 | 66,193 | 52,097 | 8,648 | 1,624 | 3,825 | 7.04 |
| Buildings with Cooking | 864 | 23,668 | 32,078 | 25,083 | 4,164 | 720 | 2,111 | 9.89 |
| Buildings with Manufacturing | 205 | 5,601 | 7,217 | 5,464 | 1,049 | 206 | Q | 22.12 |
| Space-Heating Energy Source | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 1,283 | 18,702 | 22,228 | 20,037 | 1,552 | 196 | Q | 10.37 |
| Natural Gas | 2,158 | 33,017 | 37,145 | 27,925 | 8,281 | 351 | Q | 0.51 |
| Fuel Oil | 555 | 10,526 | 13,490 | 9,781 | 1,454 | 1,758 | Q | 12.67 |
| District Heat | 94 | 6,130 | 10,763 | 6,892 | 379 | Q | 3,433 | 22.91 |
| Propane | 238 | 1,767 | 1,605 | 1,421 | 87 | Q | Q | 0.17 |
| Other | 110 | 994 | 515 | 379 | 65 | Q | Q | 0.00 |
| Main Space-Heating Energy Source | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 957 | 13,448 | 16,020 | 15,183 | 778 | 25 | Q | 11.83 |
| Natural Gas | 2,079 | 31,110 | 34,603 | 25,959 | 7,947 | 207 | Q | 0.00 |
| Fuel Oil | 473 | 5,599 | 5,838 | 4,176 | 150 | 1,483 | Q | 16.44 |
| District Heat | 93 | 6,026 | 10,553 | 6,720 | 371 | Q | 3,409 | 21.01 |
| Propane | 208 | 1,230 | 981 | 918 | Q | Q | NC | 0.00 |
| Other | 70 | 766 | 294 | 217 | Q | Q | Q | 40.00 |
| Air-Conditioning Energy Source | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 3,072 | 47,911 | 58,728 | 47,887 | 7,207 | 1,230 | 2,406 | 7.77 |
| Natural Gas | 97 | 1,976 | 2,431 | 1,811 | 549 | Q | Q | 25.71 |
| District Chilled Water | 24 | 1,938 | 4,067 | 2,922 | 141 | 44 | 961 | 21.72 |
| Other | 13 | 1,076 | 1,678 | 1,112 | Q | Q | 414 | 42.86 |
| Water-Heating Energy Source | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 1,554 | 21,493 | 25,694 | 22,779 | 1,785 | 554 | 576 | 11.12 |
| Natural Gas | 1,391 | 25,923 | 29,855 | 22,505 | 6,569 | 455 | 327 | 0.50 |
| Fuel Oil | 126 | 2,284 | 2,645 | 1,773 | 143 | 631 | Q | 24.40 |
| District Heat | 49 | 4,751 | 9,123 | 5,593 | Q | Q | 3,048 | 21.01 |
| Propane | 88 | 1,023 | 1,264 | 1,129 | NC | Q | NC | 0.00 |
| Other | 15 | 403 | 392 | 360 | Q | Q | NC | 0.00 |
| Cooking Energy Source (Solely or in Combination) | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 387 | 10,850 | 13,684 | 10,762 | 1,376 | 328 | 1,217 | 12.00 |
| Natural Gas | 462 | 14,766 | 19,212 | 14,717 | 3,244 | 303 | 949 | 10.71 |
| Propane | 93 | 923 | 1,381 | 1,246 | Q | 125 | NC | 0.00 |
| Other | 7 | 1,150 | 3,082 | Q | Q | Q | Q | 0.00 |

See footnotes at end of table.

Table 12. Commercial Buildings Energy Expenditures by Major Fuel (Continued)

| Building Characteristics | All Buildings | | Total Energy Expenditures (million dollars) | | | | | RSE Row Factor |
|---|-------------------------|--|---|-------------|-------------|----------|---------------|----------------|
| | Total Number (thousand) | Total Floorspace (million square feet) | Total of Major Fuels | Electricity | Natural Gas | Fuel Oil | District Heat | |
| RSE Column Factor: | 0.558 | 0.589 | 0.823 | 0.836 | 0.890 | 1.780 | 2.507 | |
| Manufacturing Energy Source (Solely or In Combination) | | | | | | | | |
| Electricity | 163 | 4,406 | 5,347 | 4,174 | 728 | 106 | Q | 25.65 |
| Natural Gas | 23 | 838 | 1,321 | 849 | 395 | Q | Q | 32.57 |
| Other | 28 | 1,002 | 1,661 | 1,183 | Q | Q | Q | 41.38 |
| HEATING AND COOLING | | | | | | | | |
| Percent Heated | | | | | | | | |
| Not Heated | 662 | 5,419 | 3,132 | 3,004 | 99 | Q | Q | 25.50 |
| 1 to 50 | 630 | 9,314 | 5,425 | 4,551 | 685 | 151 | Q | 13.88 |
| 51 to 99 | 496 | 8,673 | 11,497 | 9,476 | 1,263 | 291 | 467 | 13.79 |
| 100 | 2,739 | 39,777 | 50,772 | 38,912 | 7,157 | 1,362 | 3,342 | 7.27 |
| Percent Cooled | | | | | | | | |
| Not Cooled | 1,344 | 11,413 | 6,797 | 4,446 | 1,352 | 501 | Q | 11.16 |
| 1 to 50 | 1,037 | 17,821 | 14,183 | 10,013 | 2,721 | 726 | 722 | 10.92 |
| 51 to 99 | 597 | 13,139 | 17,906 | 14,698 | 1,862 | 326 | 1,020 | 10.18 |
| 100 | 1,550 | 20,811 | 31,940 | 26,785 | 3,269 | 269 | 1,617 | 10.97 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

** No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 13. Commercial Buildings Consumption for Sum of Major Fuels

| Building Characteristics | All Buildings | | | Sum of Major Fuel Consumption | | | | RSE Row Factor |
|--|-------------------------|----------------------------------|--|-------------------------------|----------------------------|--------------------------------|--------------------------|----------------|
| | Total Number (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | per Building (million Btu) | per Square Foot (thousand Btu) | per Worker (million Btu) | |
| RSE Column Factor | 0.789 | 0.849 | 0.789 | 1.290 | 1.303 | 1.014 | 1.138 | |
| All Buildings | 4,528 | 63,184 | 14.0 | 5,788 | 1,278 | 91.6 | 81.9 | 4.65 |
| Building Floorspace (Square Feet) | | | | | | | | |
| 1,001 to 5,000 | 2,529 | 6,790 | 2.7 | 692 | 274 | 101.9 | 68.6 | 4.08 |
| 5,001 to 10,000 | 890 | 6,532 | 7.3 | 567 | 637 | 86.8 | 79.2 | 5.44 |
| 10,001 to 25,000 | 644 | 10,393 | 16.1 | 791 | 1,229 | 76.1 | 78.5 | 4.98 |
| 25,001 to 50,000 | 247 | 8,801 | 35.7 | 756 | 3,065 | 85.9 | 86.1 | 6.04 |
| 50,001 to 100,000 | 127 | 9,130 | 71.7 | 855 | 6,717 | 93.7 | 93.9 | 7.98 |
| 100,001 to 200,000 | 61 | 8,277 | 136.6 | 777 | 12,826 | 93.9 | 104.0 | 7.97 |
| 200,001 to 500,000 | 23 | 7,022 | 301.5 | 698 | 29,966 | 99.4 | 84.1 | 13.43 |
| Over 500,000 | 7 | 6,239 | 866.8 | 652 | 90,596 | 104.5 | 67.3 | 16.17 |
| Year Constructed | | | | | | | | |
| 1899 or Before | 172 | 1,654 | 9.6 | 128 | 743 | 77.2 | 106.9 | 15.23 |
| 1900 to 1919 | 242 | 4,245 | 17.5 | 239 | 989 | 56.4 | 90.2 | 18.86 |
| 1920 to 1945 | 680 | 8,098 | 11.9 | 636 | 935 | 78.5 | 82.7 | 12.47 |
| 1946 to 1959 | 868 | 10,511 | 12.1 | 988 | 1,139 | 94.0 | 84.9 | 9.71 |
| 1960 to 1969 | 821 | 12,167 | 14.8 | 1,275 | 1,553 | 104.8 | 94.5 | 7.96 |
| 1970 to 1979 | 884 | 13,329 | 15.1 | 1,342 | 1,519 | 100.7 | 85.4 | 7.22 |
| 1980 to 1983 | 317 | 4,274 | 13.5 | 432 | 1,365 | 101.2 | 82.9 | 9.93 |
| 1984 to 1986 | 329 | 5,670 | 17.2 | 464 | 1,409 | 81.9 | 55.1 | 10.71 |
| 1987 to 1989 | 215 | 3,235 | 15.1 | 284 | 1,321 | 87.7 | 61.0 | 15.08 |
| BUILDING USE | | | | | | | | |
| Principal Building Activity | | | | | | | | |
| Assembly | 617 | 6,909 | 11.2 | 441 | 714 | 63.8 | 109.7 | 10.48 |
| Education | 282 | 8,076 | 28.6 | 704 | 2,497 | 87.2 | 97.8 | 11.11 |
| Food Sales | 102 | 792 | 7.7 | 139 | 1,359 | 175.6 | 164.7 | 17.36 |
| Food Service | 241 | 1,167 | 4.8 | 255 | 1,058 | 218.4 | 131.2 | 9.90 |
| Health Care | 80 | 2,054 | 25.7 | 449 | 5,625 | 218.7 | 106.3 | 17.06 |
| Lodging | 140 | 3,476 | 24.8 | 425 | 3,041 | 122.4 | 137.6 | 13.18 |
| Mercantile and Service | 1,278 | 12,365 | 9.7 | 1,048 | 820 | 84.8 | 84.4 | 7.13 |
| Office | 679 | 11,802 | 17.4 | 1,230 | 1,811 | 104.2 | 44.3 | 6.72 |
| Parking Garage | 45 | 983 | 22.0 | 42 | 938 | 42.6 | 126.1 | 23.26 |
| Public Order and Safety | 50 | 616 | 12.3 | 78 | 1,565 | 127.0 | 91.0 | 29.27 |
| Warehouse | 618 | 9,253 | 15.0 | 536 | 866 | 57.9 | 122.4 | 12.34 |
| Other | 62 | 1,529 | 24.7 | 344 | 5,542 | 224.8 | 162.8 | 27.04 |
| Vacant | 333 | 4,161 | 12.5 | 98 | 293 | 23.5 | 66.5 | 22.92 |
| Weekly Operating Hours | | | | | | | | |
| 39 or Fewer | 876 | 6,073 | 6.9 | 203 | 232 | 33.5 | 59.5 | 8.29 |
| 40 to 48 | 1,117 | 13,905 | 12.4 | 998 | 893 | 71.8 | 65.9 | 6.21 |
| 49 to 60 | 987 | 13,473 | 13.7 | 925 | 937 | 68.6 | 57.1 | 6.20 |
| 61 to 84 | 625 | 10,777 | 17.2 | 991 | 1,585 | 92.0 | 70.1 | 7.21 |
| 85 to 167 | 515 | 9,387 | 18.2 | 998 | 1,940 | 106.3 | 112.7 | 11.52 |
| 168 (Open Continuously) | 408 | 9,569 | 23.5 | 1,673 | 4,099 | 174.8 | 129.4 | 9.09 |
| Workers | | | | | | | | |
| 4 or Fewer | 2,491 | 15,146 | 6.1 | 697 | 280 | 46.0 | 146.7 | 5.32 |
| 5 to 9 | 906 | 7,938 | 8.8 | 534 | 590 | 67.3 | 83.7 | 7.01 |
| 10 to 19 | 507 | 6,445 | 12.7 | 540 | 1,064 | 83.8 | 83.2 | 6.60 |
| 20 to 49 | 381 | 9,665 | 25.4 | 939 | 2,466 | 97.2 | 87.7 | 6.48 |
| 50 to 99 | 132 | 7,389 | 56.1 | 701 | 5,320 | 94.8 | 85.2 | 6.39 |
| 100 to 249 | 79 | 6,771 | 85.9 | 992 | 12,586 | 146.5 | 87.6 | 10.36 |
| 250 or More | 32 | 9,829 | 308.0 | 1,386 | 43,424 | 141.0 | 60.8 | 12.55 |

See footnote at end of table.

MAJOR FUELS
Table 13. Commercial Buildings Consumption for Sum of Major Fuels (Continued)

| Building Characteristics | All Buildings | | | Sum of Major Fuel Consumption | | | | RSE Row Factor |
|---|-------------------------|----------------------------------|--|-------------------------------|----------------------------|--------------------------------|--------------------------|----------------------|
| | Total Number (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | per Building (million Btu) | per Square Foot (thousand Btu) | per Worker (million Btu) | |
| RSE Column Factor | 0.799 | 0.849 | 0.760 | 1.220 | 1.303 | 1.014 | 1.136 | |
| Ownership and Occupancy | | | | | | | | |
| Nongovernment Owned | 3,950 | 48,842 | 12.4 | 4,239 | 1,073 | 86.8 | 77.7 | 4.79 |
| Owner Occupied | 2,814 | 35,954 | 12.8 | 3,331 | 1,184 | 92.6 | 82.7 | 5.85 |
| Single Establishment | 2,445 | 27,081 | 11.1 | 2,668 | 1,091 | 98.5 | 101.9 | 6.66 |
| Multiple Establishment | 369 | 8,873 | 24.0 | 663 | 1,795 | 74.7 | 47.1 | 8.68 |
| Nonowner Occupied | 1,136 | 12,888 | 11.3 | 908 | 799 | 70.5 | 63.4 | 7.10 |
| Single Establishment | 672 | 6,248 | 9.3 | 471 | 701 | 75.4 | 73.1 | 10.23 |
| Multiple Establishment | 259 | 5,239 | 20.2 | 394 | 1,522 | 75.2 | 53.2 | 9.89 |
| Vacant | 206 | 1,401 | 6.8 | Q | Q | Q | 89.3 | 18.55 |
| Government Owned | 577 | 14,342 | 24.8 | 1,549 | 2,683 | 108.0 | 96.3 | 9.20 |
| Federal | 40 | 1,917 | 47.6 | Q | 6,763 | 142.1 | 84.9 | 32.58 |
| State | 137 | 3,902 | 28.4 | 585 | 4,260 | 149.8 | 119.4 | 16.98 |
| Local | 400 | 8,522 | 21.3 | 692 | 1,730 | 81.2 | 86.7 | 9.14 |
| Multibuilding Facility | | | | | | | | |
| Not on Multibuilding Facility | 3,030 | 37,237 | 12.3 | 2,887 | 953 | 77.5 | 70.9 | 4.33 |
| Part of Multibuilding Facility | 1,497 | 25,947 | 17.3 | 2,901 | 1,937 | 111.8 | 96.8 | 7.18 |
| On Facility with Central Plant | 203 | 8,346 | 41.0 | 1,593 | 7,831 | 190.9 | 135.8 | 13.80 |
| Percent Vacant at Least Three Months | | | | | | | | |
| 0 | 3,581 | 43,080 | 12.0 | 4,320 | 1,206 | 100.3 | 90.3 | 4.87 |
| 1 to 50 | 376 | 12,436 | 33.1 | 1,086 | 2,892 | 87.3 | 57.7 | 9.28 |
| 51 to 99 | 102 | 3,519 | 34.5 | 218 | 2,141 | 62.1 | 120.3 | 27.29 |
| 100 | 469 | 4,149 | 8.8 | 164 | 349 | 39.5 | 75.0 | 12.05 |
| Months in Use Out of Past 12 Months | | | | | | | | |
| 0 to 8 | 471 | 4,551 | 9.7 | 174 | 369 | 38.2 | 77.1 | 11.28 |
| 9 to 11 | 272 | 3,780 | 13.9 | 272 | 1,001 | 72.0 | 84.9 | 11.24 |
| 12 | 3,784 | 54,852 | 14.5 | 5,342 | 1,412 | 97.4 | 81.9 | 4.91 |
| LOCATION | | | | | | | | |
| Census Region | | | | | | | | |
| Northeast | 783 | 13,569 | 17.3 | 1,354 | 1,729 | 99.8 | 85.2 | 10.33 |
| Midwest | 1,046 | 15,955 | 15.3 | 1,659 | 1,587 | 104.0 | 106.7 | 9.10 |
| South | 1,847 | 22,039 | 11.9 | 1,648 | 892 | 74.8 | 70.7 | 7.57 |
| West | 851 | 11,620 | 13.7 | 1,126 | 1,322 | 96.9 | 70.8 | 10.12 |
| Census Division | | | | | | | | |
| Northeast | | | | | | | | |
| New England | 184 | 3,173 | 17.2 | 298 | 1,617 | 94.0 | 93.4 | 17.11 |
| Middle Atlantic | 599 | 10,395 | 17.4 | 1,056 | 1,764 | 101.6 | 83.2 | 12.33 |
| Midwest | | | | | | | | |
| East North Central | 686 | 10,681 | 15.6 | 1,086 | 1,584 | 101.7 | 109.4 | 10.84 |
| West North Central | 360 | 5,275 | 14.6 | 573 | 1,591 | 108.7 | 101.8 | 10.91 |
| South | | | | | | | | |
| South Atlantic | 737 | 10,090 | 13.7 | 682 | 925 | 67.6 | 65.3 | 13.39 |
| East South Central | 397 | 4,296 | 10.8 | 373 | 938 | 86.8 | 69.3 | 16.75 |
| West South Central | 712 | 7,653 | 10.7 | 594 | 833 | 77.6 | 79.4 | 9.52 |
| West | | | | | | | | |
| Mountain | 322 | 4,388 | 13.6 | 450 | 1,398 | 102.5 | 99.7 | 19.66 |
| Pacific | 529 | 7,232 | 13.7 | 676 | 1,277 | 93.4 | 59.3 | 11.16 |
| Metropolitan Status | | | | | | | | |
| Metropolitan | 3,073 | 50,809 | 16.5 | 4,780 | 1,555 | 94.1 | 79.6 | 6.12 |
| Nonmetropolitan | 1,454 | 12,375 | 8.5 | 1,008 | 693 | 81.5 | 94.8 | 10.80 |

See footnote at end of table.

Table 13. Commercial Buildings Consumption for Sum of Major Fuels (Continued)

| Building Characteristics | All Buildings | | | Sum of Major Fuel Consumption | | | | Source Code Year Page |
|--|-------------------------|----------------------------------|--|-------------------------------|----------------------------|--------------------------------|--------------------------|--------------------------------|
| | Total Number (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | per Building (million Btu) | per Square Foot (thousand Btu) | per Worker (million Btu) | |
| Climate Zone: 45-Year Average | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | |
| Over 7,000 HDD | 357 | 5,062 | 14.2 | 617 | 1,727 | 121.8 | 110.9 | DOE 1989 10-19 |
| 5,500-7,000 HDD | 1,120 | 17,957 | 16.0 | 1,855 | 1,656 | 103.3 | 107.0 | DOE 1989 10-19 |
| 4,000-5,499 HDD | 965 | 15,385 | 15.9 | 1,393 | 1,444 | 90.5 | 74.2 | DOE 1989 10-19 |
| Under 4,000 HDD | 1,024 | 12,903 | 12.6 | 1,115 | 1,089 | 86.4 | 63.7 | DOE 1989 10-19 |
| 2,000 CDD or More and -- | | | | | | | | |
| Under 4,000 HDD | 1,063 | 11,876 | 11.2 | 809 | 761 | 68.1 | 70.3 | DOE 1989 10-19 |
| 1989 Degree-Days | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | |
| Over 7,000 HDD | 529 | 7,656 | 14.5 | 875 | 1,654 | 114.3 | 106.4 | DOE 1989 10-19 |
| 5,500-7,000 HDD | 1,285 | 21,992 | 17.1 | 2,206 | 1,717 | 100.3 | 102.2 | DOE 1989 10-19 |
| 4,000-5,499 HDD | 739 | 10,425 | 14.1 | 917 | 1,240 | 87.9 | 66.0 | DOE 1989 10-19 |
| Under 4,000 HDD | 975 | 12,043 | 12.3 | 1,020 | 1,046 | 84.7 | 63.5 | DOE 1989 10-19 |
| 2,000 CDD or More and -- | | | | | | | | |
| Under 4,000 HDD | 999 | 11,068 | 11.1 | 770 | 771 | 69.6 | 70.7 | DOE 1989 10-19 |
| STRUCTURE | | | | | | | | |
| Floors | | | | | | | | |
| 1 | 2,886 | 23,755 | 8.2 | 1,806 | 626 | 76.0 | 82.9 | DOE 1989 10-19 |
| 2 | 1,057 | 16,112 | 15.2 | 1,532 | 1,450 | 95.1 | 89.6 | DOE 1989 10-19 |
| 3 | 408 | 8,604 | 21.1 | 765 | 1,875 | 88.9 | 82.5 | DOE 1989 10-19 |
| 4 to 6 | 152 | 8,314 | 54.8 | 893 | 5,887 | 107.5 | 91.7 | DOE 1989 10-19 |
| 7 or More | 25 | 6,398 | 257.0 | 791 | 31,786 | 123.7 | 62.1 | DOE 1989 10-19 |
| Wall Materials | | | | | | | | |
| Masonry | 2,849 | 42,074 | 14.8 | 3,919 | 1,376 | 93.2 | 86.9 | DOE 1989 10-19 |
| Siding or Shingles | 802 | 4,788 | 6.0 | 325 | 406 | 68.0 | 70.9 | DOE 1989 10-19 |
| Metal Panels | 557 | 5,689 | 10.2 | 457 | 821 | 80.4 | 92.6 | DOE 1989 10-19 |
| Concrete Panels | 240 | 7,221 | 30.1 | 706 | 2,939 | 97.7 | 79.4 | DOE 1989 10-19 |
| Window Glass | 33 | 1,924 | 57.5 | 224 | 6,688 | 116.4 | 49.9 | DOE 1989 10-19 |
| Other | 46 | 1,487 | 32.1 | 156 | 3,371 | 105.1 | 59.3 | DOE 1989 10-19 |
| Roof Materials | | | | | | | | |
| Built-Up | 1,614 | 31,057 | 19.2 | 3,019 | 1,871 | 97.2 | 78.0 | DOE 1989 10-19 |
| Shingles (Not Wood) | 1,392 | 10,917 | 7.8 | 794 | 570 | 72.8 | 76.6 | DOE 1989 10-19 |
| Metal Surfacing | 901 | 8,197 | 9.1 | 597 | 662 | 72.8 | 93.9 | DOE 1989 10-19 |
| Synthetic or Rubber | 211 | 6,911 | 32.8 | 850 | 4,029 | 123.0 | 96.5 | DOE 1989 10-19 |
| Slate or Tile | 193 | 2,582 | 13.4 | 206 | 1,066 | 79.8 | 100.3 | DOE 1989 10-19 |
| Concrete | 72 | 1,932 | 26.8 | 111 | 1,538 | 57.4 | 41.5 | DOE 1989 10-19 |
| Wooden Materials | 106 | 727 | 6.8 | 63 | 596 | 87.2 | 95.6 | DOE 1989 10-19 |
| Other | 38 | 860 | 22.7 | Q | Q | 172.1 | 141.8 | DOE 1989 10-19 |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | |
| Roof or Ceiling Insulation | 3,056 | 45,091 | 14.8 | 4,486 | 1,468 | 99.5 | 80.6 | DOE 1989 10-19 |
| Wall Insulation | 2,026 | 29,692 | 14.7 | 3,056 | 1,508 | 102.9 | 78.4 | DOE 1989 10-19 |
| Storm or Multiple Glazing | 1,440 | 24,068 | 16.7 | 2,557 | 1,776 | 106.2 | 81.0 | DOE 1989 10-19 |
| Tinted, Reflective, or Shading Glass | 944 | 22,040 | 23.3 | 2,385 | 2,526 | 108.2 | 72.1 | DOE 1989 10-19 |
| Exterior or Interior Shadings or Awnings | 1,473 | 26,173 | 17.8 | 2,720 | 1,846 | 103.9 | 75.8 | DOE 1989 10-19 |
| Weather Stripping or Caulking | 2,774 | 44,694 | 16.1 | 4,549 | 1,640 | 101.8 | 80.7 | DOE 1989 10-19 |
| None of the Above | 750 | 7,767 | 10.4 | 335 | 447 | 43.2 | 94.8 | DOE 1989 10-19 |

See footnote at end of table.

Table 13. Commercial Buildings Consumption for Sum of Major Fuels (Continued)

| Building Characteristics | All Buildings | | | Sum of Major Fuel Consumption | | | | RSE Row Factor |
|--|-------------------------|----------------------------------|--|-------------------------------|----------------------------|--------------------------------|--------------------------|----------------|
| | Total Number (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | per Building (million Btu) | per Square Foot (thousand Btu) | per Worker (million Btu) | |
| RSE Column Factor: | 0.799 | 0.949 | 0.760 | 1.200 | 1.309 | 1.014 | 1.196 | |
| ENERGY SOURCES AND END USES^a | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | |
| Electricity | 4,294 | 61,563 | 14.3 | 5,782 | 1,346 | 93.9 | 81.9 | 4.52 |
| Natural Gas | 2,420 | 41,143 | 17.0 | 4,336 | 1,792 | 105.4 | 90.4 | 5.73 |
| Fuel Oil | 581 | 12,600 | 21.7 | 1,589 | 2,735 | 126.1 | 93.7 | 13.29 |
| District Heat | 98 | 6,578 | 67.0 | 1,207 | 12,302 | 183.5 | 116.6 | 20.35 |
| District Chilled Water | 24 | 1,927 | 79.9 | 344 | 14,286 | 178.7 | 117.6 | 27.70 |
| Propane | 348 | 4,695 | 13.5 | 453 | 1,300 | 96.4 | 95.4 | 18.88 |
| Other | 130 | 1,542 | 11.9 | 87 | 671 | 56.6 | 66.4 | 19.46 |
| Energy End Uses (Solely or in Combination) | | | | | | | | |
| Heated Buildings | 3,876 | 57,868 | 14.9 | 5,667 | 1,462 | 97.9 | 82.5 | 4.79 |
| Air-Conditioned Buildings | 3,184 | 51,770 | 16.3 | 5,101 | 1,602 | 98.5 | 79.0 | 4.85 |
| Buildings with Water Heating | 3,183 | 53,584 | 16.8 | 5,462 | 1,716 | 101.9 | 83.9 | 4.95 |
| Buildings with Cooking | 864 | 23,668 | 27.4 | 2,755 | 3,189 | 116.4 | 91.7 | 7.21 |
| Buildings with Manufacturing | 205 | 5,601 | 27.4 | 709 | 3,462 | 126.5 | 112.6 | 16.10 |
| Energy End-Use Combinations | | | | | | | | |
| Heated Buildings | | | | | | | | |
| With Air Conditioning | 660 | 20,786 | 31.5 | 2,457 | 3,725 | 118.2 | 90.2 | 7.66 |
| With Water Heating and Cooking | 1,908 | 25,904 | 13.6 | 2,363 | 1,239 | 91.2 | 72.9 | 6.08 |
| Without Water Heating or Cooking | 484 | 3,641 | 7.5 | 177 | 365 | 48.5 | 54.0 | 10.22 |
| Without Air Conditioning | | | | | | | | |
| With Water Heating and Cooking | 138 | 2,079 | 15.0 | 236 | 1,709 | 113.7 | 158.5 | 23.00 |
| With Water Heating, Without Cooking | 373 | 3,700 | 9.9 | 321 | 861 | 86.8 | 114.0 | 13.58 |
| Without Water Heating or Cooking | 294 | 1,538 | 5.2 | 92 | 314 | 59.9 | 105.2 | 15.54 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 496 | 3,858 | 7.8 | 23 | 47 | 6.1 | 49.2 | 12.52 |
| All Other Combinations | 176 | 1,678 | 9.6 | 118 | 674 | 70.5 | 57.8 | 19.90 |
| Space-Heating Energy Source (Solely or in Combination) | | | | | | | | |
| Electricity | 1,283 | 18,702 | 14.6 | 1,499 | 1,168 | 80.1 | 66.1 | 6.30 |
| Natural Gas | 2,158 | 33,017 | 15.3 | 3,418 | 1,584 | 103.5 | 93.1 | 5.77 |
| Fuel Oil | 555 | 10,526 | 18.9 | 1,305 | 2,349 | 124.0 | 104.7 | 11.96 |
| District Heat | 94 | 6,130 | 65.0 | 1,008 | 10,677 | 164.4 | 103.9 | 16.19 |
| Propane | 238 | 1,767 | 7.4 | 118 | 494 | 66.6 | 64.7 | 24.33 |
| Other | 110 | 994 | 9.0 | 46 | 421 | 46.7 | 62.9 | 25.37 |
| Main Space-Heating Energy Source | | | | | | | | |
| Electricity | 957 | 13,448 | 14.1 | 978 | 1,022 | 72.7 | 54.8 | 6.27 |
| Natural Gas | 2,079 | 31,110 | 15.0 | 3,192 | 1,535 | 102.6 | 93.3 | 5.90 |
| Fuel Oil | 473 | 5,599 | 11.8 | 498 | 1,052 | 88.9 | 87.1 | 12.16 |
| District Heat | 93 | 6,026 | 64.5 | 988 | 10,577 | 163.9 | 104.1 | 16.32 |
| Propane | 208 | 1,230 | 5.9 | Q | Q | 49.9 | 46.1 | 23.96 |
| Other | 70 | 766 | 11.0 | 26 | Q | 33.7 | Q | 32.23 |

See footnote at end of table.

Table 13. Commercial Buildings Consumption for Sum of Major Fuels (Continued)

| Building Characteristics | All Buildings | | | Sum of Major Fuel Consumption | | | | RSE Row Factor |
|--|-------------------------|----------------------------------|--|-------------------------------|----------------------------|--------------------------------|--------------------------|----------------|
| | Total Number (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | per Building (million Btu) | per Square Foot (thousand Btu) | per Worker (million Btu) | |
| RSE Column Factor: | 0.779 | 0.816 | 0.870 | 1.290 | 1.335 | 0.959 | 1.065 | |
| Air-Conditioning Energy Source (Solely or in Combination) | | | | | | | | |
| Electricity | 3,072 | 47,911 | 15.6 | 4,580 | 1,491 | 95.6 | 77.3 | 4.83 |
| Natural Gas | 97 | 1,976 | 20.5 | 225 | 2,332 | 113.9 | 103.2 | 13.84 |
| District Chilled Water | 24 | 1,938 | 81.6 | 360 | 15,164 | 185.9 | 117.6 | 23.70 |
| Other | 13 | 1,076 | 80.3 | Q | Q | 161.2 | 84.5 | 34.80 |
| Water-Heating Energy Source (Solely or in Combination) | | | | | | | | |
| Electricity | 1,554 | 21,493 | 13.8 | 1,761 | 1,134 | 82.0 | 63.8 | 6.16 |
| Natural Gas | 1,391 | 25,923 | 18.6 | 2,706 | 1,945 | 104.4 | 94.7 | 5.45 |
| Fuel Oil | 126 | 2,284 | 18.1 | 233 | 1,848 | 102.2 | 87.1 | 17.26 |
| District Heat | 49 | 4,751 | 97.8 | 898 | 18,499 | 189.1 | 124.2 | 19.03 |
| Propane | 88 | 1,023 | 11.6 | Q | Q | 80.9 | 71.2 | 29.84 |
| Other | 15 | 403 | 27.3 | 25 | 1,727 | 63.2 | 43.6 | 33.42 |
| Cooking Energy Source (Solely or in Combination) | | | | | | | | |
| Electricity | 387 | 10,850 | 28.0 | 1,157 | 2,990 | 106.7 | 84.6 | 10.17 |
| Natural Gas | 462 | 14,766 | 32.0 | 1,707 | 3,695 | 115.6 | 89.3 | 7.64 |
| Propane | 93 | 923 | 9.9 | 77 | 830 | 83.8 | 59.3 | 21.00 |
| Other | 7 | 1,150 | 166.9 | 308 | 44,747 | 268.2 | 134.2 | 20.76 |
| Manufacturing Energy Source (Solely or in Combination) | | | | | | | | |
| Electricity | 163 | 4,406 | 27.1 | 495 | 3,043 | 112.4 | 103.2 | 19.77 |
| Natural Gas | 23 | 838 | 36.1 | 172 | 7,411 | 205.2 | 172.5 | 23.59 |
| Other | 28 | 1,002 | 35.7 | 175 | 6,239 | 174.5 | 142.0 | 28.59 |
| HEATING AND COOLING | | | | | | | | |
| Percent Heated | | | | | | | | |
| Not Heated | 662 | 5,419 | 8.2 | 126 | 190 | 23.3 | 63.3 | 12.63 |
| 1 to 50 | 630 | 9,314 | 14.8 | 371 | 589 | 39.8 | 76.6 | 9.59 |
| 51 to 99 | 496 | 8,673 | 17.5 | 892 | 1,796 | 102.8 | 74.8 | 9.53 |
| 100 | 2,739 | 39,777 | 14.5 | 4,399 | 1,606 | 110.6 | 84.8 | 5.16 |
| Percent Cooled | | | | | | | | |
| Not Cooled | 1,344 | 11,413 | 8.5 | 687 | 511 | 60.2 | 113.5 | 10.56 |
| 1 to 50 | 1,037 | 17,821 | 17.2 | 1,336 | 1,288 | 75.0 | 108.4 | 7.85 |
| 51 to 99 | 597 | 13,139 | 22.0 | 1,409 | 2,361 | 107.2 | 73.6 | 6.83 |
| 100 | 1,550 | 20,811 | 13.4 | 2,356 | 1,520 | 113.2 | 71.1 | 6.95 |
| Heating Equipment (Solely or in Combination) | | | | | | | | |
| Furnaces | 1,619 | 15,592 | 9.6 | 1,387 | 857 | 89.0 | 83.7 | 7.06 |
| Boilers | 704 | 19,907 | 28.3 | 2,249 | 3,196 | 113.0 | 91.4 | 6.26 |
| Individual Space Heaters | 1,389 | 22,542 | 16.2 | 2,032 | 1,463 | 90.1 | 88.0 | 7.88 |
| Packaged Heating Units | 859 | 15,598 | 18.2 | 1,549 | 1,804 | 99.3 | 80.1 | 7.84 |
| Heat Pumps | 453 | 8,357 | 18.5 | 730 | 1,612 | 87.4 | 62.4 | 10.20 |
| Air Ducts | 1,990 | 37,297 | 18.7 | 3,982 | 2,002 | 106.8 | 80.8 | 5.92 |
| Heating or Reheating Coils | 243 | 15,693 | 64.6 | 2,098 | 8,633 | 133.7 | 82.5 | 9.11 |
| Fan-Coil Units | 185 | 11,839 | 63.8 | 1,578 | 8,507 | 133.3 | 95.7 | 10.70 |
| Steam or Hot Water Radiators or Baseboards | 498 | 15,822 | 31.7 | 1,973 | 3,957 | 124.7 | 102.7 | 10.00 |
| Other | 57 | 1,476 | 25.7 | 258 | 4,488 | 174.6 | 121.8 | 26.18 |

See footnotes at end of table.

MAJOR FUELS

Table 13. Commercial Buildings Consumption for Sum of Major Fuels (Continued)

| Building Characteristics | All Buildings | | | Sum of Major Fuel Consumption | | | | RSE Rate Percent |
|--|-------------------------|----------------------------------|--|-------------------------------|----------------------------|--------------------------------|--------------------------|------------------------|
| | Total Number (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | per Building (million Btu) | per Square Foot (thousand Btu) | per Worker (million Btu) | |
| 1982 Central Pumps | 0.779 | 0.916 | 0.670 | 1.266 | 1.655 | 1.386 | 1.665 | 10.51 |
| Cooling Equipment (Solely or in Combination) | | | | | | | | |
| Central Chillers | 201 | 14,048 | 69.9 | 1,775 | 8,840 | 126.4 | 75.1 | 10.51 |
| Individual Air Conditioners | 1,074 | 19,239 | 17.9 | 1,839 | 1,712 | 95.6 | 94.9 | 7.18 |
| Packaged Cooling Units | 1,980 | 34,753 | 17.6 | 3,468 | 1,751 | 99.8 | 77.6 | 6.81 |
| Heat Pumps | 437 | 7,827 | 17.9 | 773 | 1,769 | 98.7 | 70.8 | 12.10 |
| Air Ducts | 1,712 | 34,225 | 20.0 | 3,669 | 2,143 | 107.2 | 80.2 | 6.60 |
| Fan-Coil Units | 110 | 10,787 | 98.1 | 1,527 | 13,892 | 141.5 | 79.1 | 11.43 |
| Other | 100 | 1,468 | 14.6 | Q | Q | 118.9 | 107.9 | 33.20 |
| Year Main Central Chiller Installed | | | | | | | | |
| 1959 or Before | 26 | 1,477 | 56.0 | 175 | 6,640 | 118.5 | 66.3 | 17.60 |
| 1960 to 1969 | 52 | 3,718 | 72.1 | 525 | 10,191 | 141.3 | 100.0 | 21.77 |
| 1970 to 1979 | 50 | 3,541 | 71.4 | 413 | 8,331 | 116.6 | 72.2 | 12.98 |
| 1980 to 1986 | 47 | 3,515 | 74.4 | 462 | 9,775 | 131.5 | 65.9 | 18.77 |
| 1987 to 1989 | 26 | 1,798 | 68.9 | 200 | 7,667 | 111.3 | 66.4 | 20.64 |
| Year Packaged Cooling System Installed | | | | | | | | |
| 1959 or Before | 76 | 1,736 | 23.0 | 172 | 2,281 | 99.3 | 71.9 | 14.18 |
| 1960 to 1969 | 262 | 4,849 | 18.5 | 608 | 2,326 | 125.5 | 89.2 | 14.49 |
| 1970 to 1979 | 603 | 10,469 | 17.3 | 1,042 | 1,726 | 99.5 | 81.8 | 7.00 |
| 1980 to 1986 | 659 | 11,340 | 17.2 | 1,002 | 1,521 | 88.4 | 69.2 | 6.51 |
| 1987 to 1989 | 380 | 6,358 | 16.7 | 643 | 1,691 | 101.2 | 78.2 | 10.18 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | |
| Present in Building | 265 | 16,684 | 63.0 | 2,274 | 8,584 | 136.3 | 79.8 | 5.11 |
| Not Present | 4,263 | 46,499 | 10.9 | 3,514 | 824 | 75.6 | 83.3 | 4.57 |
| LIGHTING AND REFRIGERATION | | | | | | | | |
| Percent Lit When Open | | | | | | | | |
| Not Lit | 306 | 2,359 | 7.7 | 22 | 70 | 9.1 | 279.2 | 17.78 |
| 1 to 50 | 1,002 | 10,870 | 10.9 | 533 | 532 | 49.1 | 95.7 | 9.84 |
| 51 to 99 | 951 | 16,950 | 17.8 | 1,625 | 1,708 | 95.9 | 80.7 | 7.38 |
| 100 | 2,269 | 33,004 | 14.5 | 3,608 | 1,591 | 109.3 | 80.4 | 6.30 |
| Percent Lit When Closed | | | | | | | | |
| Not Lit | 2,693 | 28,054 | 10.4 | 2,146 | 797 | 76.5 | 85.4 | 5.89 |
| 1 to 50 | 1,706 | 31,825 | 18.7 | 3,147 | 1,845 | 98.9 | 75.9 | 6.22 |
| 51 to 99 | 68 | 2,308 | 34.2 | 408 | 6,036 | 176.5 | 114.6 | 10.70 |
| 100 | 62 | 997 | 16.1 | 87 | 1,407 | 87.3 | 165.9 | 23.89 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | |
| Incandescent Lamps | 2,404 | 38,790 | 16.1 | 3,786 | 1,575 | 97.6 | 80.7 | 6.05 |
| Fluorescent Lamps | 3,920 | 58,892 | 15.0 | 5,683 | 1,450 | 96.5 | 81.5 | 4.99 |
| High-Intensity Discharge Lamps | 456 | 18,188 | 39.9 | 1,980 | 4,342 | 108.9 | 91.5 | 9.07 |
| Other Lamps | 24 | 513 | 21.5 | 51 | 2,121 | 98.5 | 62.9 | 21.91 |
| High-Efficiency Ballasts | 1,074 | 24,226 | 22.6 | 2,730 | 2,541 | 112.7 | 85.1 | 7.00 |

See footnotes at end of table.

Table 13. Commercial Buildings Consumption for Sum of Major Fuels (Continued)

| Building Characteristics | All Buildings | | | Sum of Major Fuel Consumption | | | | RSE Row Factor |
|---|-------------------------|----------------------------------|--|-------------------------------|----------------------------|--------------------------------|--------------------------|----------------|
| | Total Number (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | per Building (million Btu) | per Square Foot (thousand Btu) | per Worker (million Btu) | |
| RSE Column Factor: | 0.179 | 0.816 | 0.970 | 1.290 | 1.335 | 0.895 | 1.065 | |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | |
| Commercial | | | | | | | | |
| Refrigeration Units | 918 | 24,663 | 26.9 | 2,974 | 3,241 | 120.6 | 93.6 | 6.92 |
| Freezers | 713 | 21,675 | 30.4 | 2,802 | 3,931 | 129.3 | 95.4 | 6.83 |
| Residential | | | | | | | | |
| Refrigerators | 2,485 | 44,264 | 17.8 | 4,411 | 1,775 | 99.6 | 79.0 | 5.50 |
| Freezers | 619 | 12,421 | 20.1 | 1,479 | 2,387 | 119.0 | 94.4 | 9.76 |
| Ice-Making Machines | 775 | 23,443 | 30.3 | 2,988 | 3,857 | 127.5 | 89.5 | 6.92 |
| Refrigerated Vending Machines | 1,517 | 38,865 | 25.6 | 4,347 | 2,865 | 111.9 | 84.5 | 5.50 |
| Water Coolers | 1,750 | 42,864 | 24.5 | 4,454 | 2,545 | 103.9 | 81.9 | 5.50 |
| Other | 56 | 1,408 | 25.1 | 346 | 6,162 | 245.4 | 138.7 | 24.33 |
| ENERGY MANAGEMENT | | | | | | | | |
| Occupant Control | | | | | | | | |
| Any Control of Heating | 2,399 | 27,044 | 11.3 | 2,331 | 972 | 86.2 | 74.4 | 5.95 |
| With Thermostats | 2,100 | 24,773 | 11.8 | 2,158 | 1,028 | 87.1 | 75.1 | 6.46 |
| Any Control of Cooling | 1,977 | 26,314 | 13.3 | 2,320 | 1,173 | 88.2 | 74.8 | 8.04 |
| With Thermostats | 1,756 | 24,043 | 13.7 | 2,115 | 1,204 | 87.9 | 73.8 | 6.69 |
| Reduced Use During Off-Hours | | | | | | | | |
| Heating Only | 790 | 7,147 | 9.0 | 649 | 822 | 90.8 | 106.8 | 11.22 |
| Cooling Only | 283 | 4,112 | 14.5 | 429 | 1,514 | 104.3 | 102.4 | 15.06 |
| Heating and Cooling | 2,397 | 38,689 | 16.1 | 3,347 | 1,397 | 86.5 | 71.3 | 5.50 |
| Computerized Energy Management and Control System | | | | | | | | |
| Present in Building | 264 | 14,345 | 54.3 | 1,714 | 6,494 | 119.5 | 80.7 | 9.51 |
| Controls Heating and Cooling | 251 | 13,793 | 54.9 | 1,668 | 6,634 | 120.9 | 80.3 | 9.84 |
| Controls Lighting | 51 | 3,855 | 75.5 | 431 | 8,448 | 111.9 | 67.1 | 10.10 |
| Controls Other | 32 | 2,316 | 73.5 | 336 | 10,668 | 145.1 | 95.8 | 23.56 |
| Other Energy Management | | | | | | | | |
| Regular HVAC Maintenance | 2,102 | 43,014 | 20.5 | 4,773 | 2,271 | 111.0 | 84.0 | 5.66 |
| Participated in Utility Conservation Program | 324 | 10,826 | 33.4 | 1,206 | 3,721 | 111.4 | 75.2 | 8.96 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

^a Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

MAJOR FUELS

Table 14. Commercial Buildings Expenditures for Sum of Major Fuels

| Building Characteristics | All Buildings | | | Sum of Major Fuel Expenditures | | | | RSE Row Factor |
|--|-------------------------|----------------------------------|--|--------------------------------|---------------------------------|---------------------------|---------------------------|----------------|
| | Total Number (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Million Btu (dollars) | |
| RSE Column Factor | 0.903 | 0.980 | 0.859 | 1,332 | 1,332 | 1,047 | 0.723 | |
| All Buildings | 4,528 | 63,184 | 14.0 | 70,826 | 15.6 | 1.12 | 12.24 | 4.06 |
| Building Floorspace (Square Feet) | | | | | | | | |
| 1,001 to 5,000 | 2,529 | 6,790 | 2.7 | 9,601 | 3.8 | 1.41 | 13.88 | 3.80 |
| 5,001 to 10,000 | 890 | 6,532 | 7.3 | 7,870 | 8.8 | 1.20 | 13.88 | 7.56 |
| 10,001 to 25,000 | 644 | 10,393 | 16.1 | 9,869 | 15.3 | .95 | 12.48 | 4.41 |
| 25,001 to 50,000 | 247 | 8,801 | 35.7 | 8,950 | 36.3 | 1.02 | 11.84 | 5.61 |
| 50,001 to 100,000 | 127 | 9,130 | 71.7 | 10,124 | 79.5 | 1.11 | 11.84 | 7.23 |
| 100,001 to 200,000 | 61 | 8,277 | 136.6 | 9,265 | 152.9 | 1.12 | 11.92 | 7.04 |
| 200,001 to 500,000 | 23 | 7,022 | 301.5 | 7,853 | 337.2 | 1.12 | 11.25 | 11.38 |
| Over 500,000 | 7 | 6,239 | 866.8 | 7,293 | 1,013.2 | 1.17 | 11.18 | 12.71 |
| Year Constructed | | | | | | | | |
| 1899 or Before | 172 | 1,654 | 9.6 | 1,214 | 7.1 | .73 | 9.51 | 15.55 |
| 1900 to 1919 | 242 | 4,245 | 17.5 | 2,448 | 10.1 | .58 | 10.22 | 15.42 |
| 1920 to 1945 | 680 | 8,098 | 11.9 | 7,033 | 10.3 | .87 | 11.06 | 10.26 |
| 1946 to 1959 | 868 | 10,511 | 12.1 | 10,334 | 11.9 | .98 | 10.46 | 8.03 |
| 1960 to 1969 | 821 | 12,167 | 14.8 | 14,894 | 18.1 | 1.22 | 11.68 | 7.80 |
| 1970 to 1979 | 884 | 13,329 | 15.1 | 17,807 | 20.2 | 1.34 | 13.27 | 7.16 |
| 1980 to 1983 | 317 | 4,274 | 13.5 | 6,194 | 19.5 | 1.45 | 14.32 | 9.58 |
| 1984 to 1986 | 329 | 5,670 | 17.2 | 7,184 | 21.8 | 1.27 | 15.48 | 9.88 |
| 1987 to 1989 | 215 | 3,235 | 15.1 | 3,718 | 17.3 | 1.15 | 13.11 | 12.03 |
| BUILDING USE | | | | | | | | |
| Principal Building Activity | | | | | | | | |
| Assembly | 617 | 6,909 | 11.2 | 5,986 | 9.7 | .87 | 13.59 | 14.37 |
| Education | 282 | 8,076 | 28.6 | 6,589 | 23.4 | .82 | 9.36 | 8.16 |
| Food Sales | 102 | 792 | 7.7 | 2,163 | 21.1 | 2.73 | 15.56 | 14.80 |
| Food Service | 241 | 1,167 | 4.8 | 3,282 | 13.6 | 2.81 | 12.88 | 9.32 |
| Health Care | 80 | 2,054 | 25.7 | 4,052 | 50.7 | 1.97 | 9.02 | 13.57 |
| Lodging | 140 | 3,476 | 24.8 | 4,014 | 28.7 | 1.15 | 9.44 | 10.91 |
| Mercantile and Service | 1,278 | 12,365 | 9.7 | 13,527 | 10.6 | 1.09 | 12.90 | 6.28 |
| Office | 679 | 11,802 | 17.4 | 18,323 | 27.0 | 1.55 | 14.90 | 8.87 |
| Parking Garage | 45 | 983 | 22.0 | 485 | 10.9 | .49 | 11.60 | 12.98 |
| Public Order and Safety | 50 | 616 | 12.3 | 875 | 17.5 | 1.42 | Q | 25.31 |
| Warehouse | 618 | 9,253 | 15.0 | 6,085 | 9.8 | .66 | 11.36 | 10.51 |
| Other | 62 | 1,529 | 24.7 | 4,224 | 68.1 | 2.76 | 12.29 | 23.71 |
| Vacant | 333 | 4,161 | 12.5 | 1,218 | 3.7 | .29 | 12.45 | 16.46 |
| Weekly Operating Hours | | | | | | | | |
| 39 or Fewer | 876 | 6,073 | 6.9 | 2,430 | 2.8 | .40 | 11.95 | 7.48 |
| 40 to 48 | 1,117 | 13,905 | 12.4 | 12,619 | 11.3 | .91 | 12.65 | 8.24 |
| 49 to 60 | 987 | 13,473 | 13.7 | 12,561 | 12.7 | .93 | 13.58 | 5.30 |
| 61 to 84 | 625 | 10,777 | 17.2 | 13,233 | 21.2 | 1.23 | 13.35 | 6.82 |
| 85 to 167 | 515 | 9,387 | 18.2 | 11,833 | 23.0 | 1.26 | 11.85 | 6.48 |
| 168 (Open Continuously) | 408 | 9,569 | 23.5 | 18,149 | 44.5 | 1.90 | 10.85 | 6.63 |
| Workers | | | | | | | | |
| 4 or Fewer | 2,491 | 15,146 | 6.1 | 9,013 | 3.6 | .60 | 12.94 | 4.66 |
| 5 to 9 | 906 | 7,938 | 8.8 | 6,902 | 7.6 | .87 | 12.93 | 5.89 |
| 10 to 19 | 507 | 6,445 | 12.7 | 6,483 | 12.8 | 1.01 | 12.01 | 8.59 |
| 20 to 49 | 381 | 9,665 | 25.4 | 11,724 | 30.8 | 1.21 | 12.48 | 8.60 |
| 50 to 99 | 132 | 7,389 | 56.1 | 8,651 | 65.7 | 1.17 | 12.35 | 7.76 |
| 100 to 249 | 79 | 6,771 | 85.9 | 11,155 | 141.6 | 1.65 | 11.25 | 8.61 |
| 250 or More | 32 | 9,829 | 308.0 | 16,898 | 529.4 | 1.72 | 12.19 | 10.60 |

See footnote at end of table.

Table 14. Commercial Buildings Expenditures for Sum of Major Fuels (Continued)

| Building Characteristics | All Buildings | | | Sum of Major Fuel Expenditures | | | | RSE Flow Factor |
|---|-------------------------|----------------------------------|--|--------------------------------|---------------------------------|---------------------------|---------------------------|-----------------|
| | Total Number (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Million Btu (dollars) | |
| RSE Column Factor: | 0.903 | 0.980 | 0.859 | 1.332 | 1.332 | 1.047 | 0.723 | |
| Ownership and Occupancy | | | | | | | | |
| Nongovernment Owned | 3,950 | 48,842 | 12.4 | 53,488 | 13.5 | 1.10 | 12.62 | 3.94 |
| Owner Occupied | 2,814 | 35,954 | 12.8 | 40,069 | 14.2 | 1.11 | 12.03 | 4.61 |
| Single Establishment | 2,445 | 27,081 | 11.1 | 30,511 | 12.5 | 1.13 | 11.43 | 5.45 |
| Multiple Establishment | 369 | 8,873 | 24.0 | 9,558 | 25.9 | 1.08 | 14.43 | 7.05 |
| Nonowner Occupied | 1,136 | 12,888 | 11.3 | 13,419 | 11.8 | 1.04 | 14.77 | 6.07 |
| Single Establishment | 672 | 6,248 | 9.3 | 6,574 | 9.8 | 1.05 | 13.95 | 8.47 |
| Multiple Establishment | 259 | 5,239 | 20.2 | 6,481 | 25.0 | 1.24 | 16.46 | 8.47 |
| Vacant | 206 | 1,401 | 6.8 | 363 | 1.8 | .26 | 8.38 | 18.82 |
| Government Owned | 577 | 14,342 | 24.8 | 17,338 | 30.0 | 1.21 | 11.19 | 9.98 |
| Federal | 40 | 1,917 | 47.6 | 2,854 | 70.8 | 1.49 | 10.47 | 26.22 |
| State | 137 | 3,902 | 28.4 | 6,056 | 44.1 | 1.55 | 10.36 | 16.63 |
| Local | 400 | 8,522 | 21.3 | 8,429 | 21.1 | .99 | 12.18 | 12.23 |
| Multibuilding Facility | | | | | | | | |
| Not on Multibuilding Facility | 3,030 | 37,237 | 12.3 | 36,983 | 12.2 | .99 | 12.81 | 3.73 |
| Part of Multibuilding Facility | 1,497 | 25,947 | 17.3 | 33,843 | 22.6 | 1.30 | 11.67 | 6.63 |
| On Facility with Central Plant | 203 | 8,346 | 41.0 | 16,124 | 79.3 | 1.93 | 10.12 | 13.91 |
| Percent Vacant at Least Three Months | | | | | | | | |
| 0 | 3,581 | 43,080 | 12.0 | 52,738 | 14.7 | 1.22 | 12.21 | 4.33 |
| 1 to 50 | 376 | 12,436 | 33.1 | 14,418 | 38.4 | 1.16 | 13.27 | 7.50 |
| 51 to 99 | 102 | 3,519 | 34.5 | 1,822 | 17.9 | .52 | 8.34 | 22.85 |
| 100 | 469 | 4,149 | 8.8 | 1,849 | 3.9 | .45 | 11.29 | 9.25 |
| Months in Use Out of Past 12 Months | | | | | | | | |
| 0 to 8 | 471 | 4,551 | 9.7 | 2,175 | 4.6 | .48 | 12.52 | 10.41 |
| 9 to 11 | 272 | 3,780 | 13.9 | 2,696 | 9.9 | .71 | 9.91 | 8.75 |
| 12 | 3,784 | 54,852 | 14.5 | 65,955 | 17.4 | 1.20 | 12.35 | 4.29 |
| LOCATION | | | | | | | | |
| Census Region | | | | | | | | |
| Northeast | 783 | 13,569 | 17.3 | 17,505 | 22.3 | 1.29 | 12.92 | 8.86 |
| Midwest | 1,046 | 15,955 | 15.3 | 16,468 | 15.7 | 1.03 | 9.92 | 7.53 |
| South | 1,847 | 22,039 | 11.9 | 21,759 | 11.8 | .99 | 13.20 | 7.08 |
| West | 851 | 11,620 | 13.7 | 15,093 | 17.7 | 1.30 | 13.41 | 8.41 |
| Census Division | | | | | | | | |
| Northeast | | | | | | | | |
| New England | 184 | 3,173 | 17.2 | 3,654 | 19.8 | 1.15 | 12.25 | 13.20 |
| Middle Atlantic | 599 | 10,395 | 17.4 | 13,852 | 23.1 | 1.33 | 13.11 | 10.66 |
| Midwest | | | | | | | | |
| East North Central | 686 | 10,681 | 15.6 | 11,089 | 16.2 | 1.04 | 10.21 | 9.10 |
| West North Central | 360 | 5,275 | 14.6 | 5,379 | 14.9 | 1.02 | 9.38 | 14.48 |
| South | | | | | | | | |
| South Atlantic | 737 | 10,090 | 13.7 | 10,067 | 13.7 | 1.00 | 14.76 | 12.92 |
| East South Central | 397 | 4,296 | 10.8 | 4,345 | 10.9 | 1.01 | 11.66 | 12.95 |
| West South Central | 712 | 7,653 | 10.7 | 7,347 | 10.3 | .96 | 12.38 | 8.36 |
| West | | | | | | | | |
| Mountain | 322 | 4,388 | 13.6 | 4,436 | 13.8 | 1.01 | 9.86 | 17.71 |
| Pacific | 529 | 7,232 | 13.7 | 10,657 | 20.1 | 1.47 | 15.77 | 9.20 |
| Metropolitan Status | | | | | | | | |
| Metropolitan | 3,073 | 50,809 | 16.5 | 60,604 | 19.7 | 1.19 | 12.68 | 4.68 |
| Nonmetropolitan | 1,454 | 12,375 | 8.5 | 10,222 | 7.0 | .83 | 10.14 | 7.83 |

See footnote at end of table.

Table 14. Commercial Buildings Expenditures for Sum of Major Fuels (Continued)

| Building Characteristics | All Buildings | | | Sum of Major Fuel Expenditures | | | | RSE Row Factor |
|--|-------------------------|----------------------------------|--|--------------------------------|---------------------------------|---------------------------|---------------------------|-------------------|
| | Total Number (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Million Btu (dollars) | |
| RSE Column Factor: | 0.903 | 0.900 | 0.859 | 1.932 | 1.332 | 1.047 | 0.723 | |
| Climate Zone: 45-Year Average | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | |
| Over 7,000 HDD | 357 | 5,062 | 14.2 | 5,496 | 15.4 | 1.09 | 8.91 | 11.29 |
| 5,500-7,000 HDD | 1,120 | 17,957 | 16.0 | 19,214 | 17.2 | 1.07 | 10.36 | 8.66 |
| 4,000-5,499 HDD | 965 | 15,385 | 15.9 | 17,726 | 18.4 | 1.15 | 12.73 | 11.27 |
| Under 4,000 HDD | 1,024 | 12,903 | 12.6 | 15,570 | 15.2 | 1.21 | 13.96 | 10.39 |
| 2,000 CDD or More and -- | | | | | | | | |
| Under 4,000 HDD | 1,063 | 11,876 | 11.2 | 12,820 | 12.1 | 1.08 | 15.85 | 10.51 |
| 1989 Degree-Days | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | |
| Over 7,000 HDD | 529 | 7,656 | 14.5 | 8,224 | 15.5 | 1.07 | 9.39 | 11.53 |
| 5,500-7,000 HDD | 1,285 | 21,992 | 17.1 | 23,469 | 18.3 | 1.07 | 10.64 | 8.08 |
| 4,000-5,499 HDD | 739 | 10,425 | 14.1 | 12,422 | 16.8 | 1.19 | 13.55 | 12.14 |
| Under 4,000 HDD | 975 | 12,043 | 12.3 | 14,548 | 14.9 | 1.21 | 14.27 | 11.26 |
| 2,000 CDD or More and -- | | | | | | | | |
| Under 4,000 HDD | 999 | 11,068 | 11.1 | 12,163 | 12.2 | 1.10 | 15.79 | 10.82 |
| STRUCTURE | | | | | | | | |
| Floors | | | | | | | | |
| 1 | 2,886 | 23,755 | 8.2 | 24,674 | 8.5 | 1.04 | 13.66 | 5.37 |
| 2 | 1,057 | 16,112 | 15.2 | 18,598 | 17.6 | 1.15 | 12.14 | 5.80 |
| 3 | 408 | 8,604 | 21.1 | 8,575 | 21.0 | 1.00 | 11.20 | 12.19 |
| 4 to 6 | 152 | 8,314 | 54.8 | 8,892 | 58.6 | 1.07 | 9.95 | 10.07 |
| 7 or More | 25 | 6,398 | 257.0 | 10,087 | 405.3 | 1.58 | 12.75 | 11.13 |
| Wall Materials | | | | | | | | |
| Masonry | 2,849 | 42,074 | 14.8 | 46,050 | 16.2 | 1.09 | 11.75 | 4.27 |
| Siding or Shingles | 802 | 4,788 | 6.0 | 4,173 | 5.2 | .87 | 12.82 | 8.17 |
| Metal Panels | 557 | 5,689 | 10.2 | 5,557 | 10.0 | .98 | 12.15 | 11.32 |
| Concrete Panels | 240 | 7,221 | 30.1 | 9,691 | 40.4 | 1.34 | 13.73 | 13.95 |
| Window Glass | 33 | 1,924 | 57.5 | 3,462 | 103.4 | 1.80 | 15.46 | 19.38 |
| Other | 46 | 1,487 | 32.1 | 1,893 | 40.8 | 1.27 | 12.11 | 22.24 |
| Roof Materials | | | | | | | | |
| Built-Up | 1,614 | 31,057 | 19.2 | 37,728 | 23.4 | 1.21 | 12.50 | 5.69 |
| Shingles (Not Wood) | 1,392 | 10,917 | 7.8 | 10,039 | 7.2 | .92 | 12.64 | 6.20 |
| Metal Surfacing | 901 | 8,197 | 9.1 | 7,299 | 8.1 | .89 | 12.24 | 9.80 |
| Synthetic or Rubber | 211 | 6,911 | 32.8 | 9,668 | 45.8 | 1.40 | 11.37 | 9.36 |
| Slate or Tile | 193 | 2,582 | 13.4 | 2,147 | 11.1 | .83 | 10.41 | 13.64 |
| Concrete | 72 | 1,932 | 26.8 | 1,907 | 26.4 | .99 | 17.20 | 29.44 |
| Wooden Materials | 106 | 727 | 6.8 | 880 | 8.3 | 1.21 | 13.88 | 13.17 |
| Other | 38 | 860 | 22.7 | Q | Q | 1.35 | 7.83 | 24.20 |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | |
| Roof or Ceiling Insulation | 3,056 | 45,091 | 14.8 | 55,069 | 18.0 | 1.22 | 12.28 | 4.60 |
| Wall Insulation | 2,026 | 29,692 | 14.7 | 37,704 | 18.6 | 1.27 | 12.34 | 5.47 |
| Storm or Multiple Glazing | 1,440 | 24,068 | 16.7 | 30,010 | 20.8 | 1.25 | 11.74 | 4.86 |
| Tinted, Reflective, or Shading Glass | 944 | 22,040 | 23.3 | 31,092 | 32.9 | 1.41 | 13.04 | 6.22 |
| Exterior or Interior Shadings or Awnings | 1,473 | 26,173 | 17.8 | 33,715 | 22.9 | 1.29 | 12.40 | 5.69 |
| Weather Stripping or Caulking | 2,774 | 44,694 | 16.1 | 56,238 | 20.3 | 1.26 | 12.36 | 4.68 |
| None of the Above | 750 | 7,767 | 10.4 | 3,925 | 5.2 | .51 | 11.71 | 9.63 |

See footnote at end of table.

Table 14. Commercial Buildings Expenditures for Sum of Major Fuels (Continued)

| Building Characteristics | All Buildings | | | Sum of Major Fuel Expenditures | | | | RSE Row Factor |
|--|-------------------------|----------------------------------|--|--------------------------------|---------------------------------|---------------------------|---------------------------|----------------------|
| | Total Number (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Million Btu (dollars) | |
| RSE Column Headers | 1,309 | 1,309 | 1,309 | 1,302 | 1,302 | 1,307 | 0,723 | |
| ENERGY SOURCES AND END USES* | | | | | | | | |
| Energy Sources | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 4,294 | 61,563 | 14.3 | 70,801 | 16.5 | 1.15 | 12.25 | 3.98 |
| Natural Gas | 2,420 | 41,143 | 17.0 | 48,225 | 19.9 | 1.17 | 11.12 | 5.01 |
| Fuel Oil | 581 | 12,600 | 21.7 | 17,356 | 29.9 | 1.38 | 10.93 | 11.63 |
| District Heat | 98 | 6,578 | 67.0 | 12,689 | 129.3 | 1.93 | 10.51 | 17.23 |
| District Chilled Water | 24 | 1,927 | 79.9 | 3,914 | 162.4 | 2.03 | 11.37 | 26.01 |
| Propane | 348 | 4,695 | 13.5 | 5,069 | 14.6 | 1.08 | 11.20 | 13.32 |
| Other | 130 | 1,542 | 11.9 | 1,033 | 7.9 | .67 | 11.83 | 17.46 |
| Energy End Uses | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Heated Buildings | 3,876 | 57,868 | 14.9 | 67,740 | 17.5 | 1.17 | 11.95 | 4.02 |
| Air-Conditioned Buildings | 3,184 | 51,770 | 16.3 | 64,029 | 20.1 | 1.24 | 12.55 | 4.32 |
| Buildings with Water Heating | 3,183 | 53,584 | 16.8 | 66,193 | 20.8 | 1.24 | 12.12 | 4.41 |
| Buildings with Cooking | 864 | 23,668 | 27.4 | 32,078 | 37.1 | 1.36 | 11.64 | 6.32 |
| Buildings with Manufacturing | 205 | 5,601 | 27.4 | 7,217 | 35.3 | 1.29 | 10.18 | 12.94 |
| Energy End-Use Combinations | | | | | | | | |
| Heated Buildings | | | | | | | | |
| With Air Conditioning | | | | | | | | |
| With Water Heating and Cooking | 660 | 20,786 | 31.5 | 28,964 | 43.9 | 1.39 | 11.79 | 6.93 |
| With Water Heating, Without Cooking | 1,908 | 25,904 | 13.6 | 29,723 | 15.6 | 1.15 | 12.58 | 4.91 |
| Without Water Heating or Cooking | 484 | 3,641 | 7.5 | 2,546 | 5.3 | .70 | 14.40 | 5.93 |
| Without Air Conditioning | | | | | | | | |
| With Water Heating and Cooking | 138 | 2,079 | 15.0 | 1,914 | 13.8 | .92 | 8.10 | 17.15 |
| With Water Heating, Without Cooking | 373 | 3,700 | 9.9 | 3,308 | 8.9 | .89 | 10.30 | 12.34 |
| Without Water Heating or Cooking | 294 | 1,538 | 5.2 | 936 | 3.2 | .61 | 10.16 | 14.05 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 496 | 3,858 | 7.8 | 488 | 1.0 | .13 | 20.77 | 9.74 |
| All Other Combinations | 176 | 1,678 | 9.6 | 2,948 | 16.8 | 1.76 | 24.93 | 27.09 |
| Space-Heating Energy Source | | | | | | | | |
| (Solely or in Combination) | | | | | | | | |
| Electricity | 1,283 | 18,702 | 14.6 | 22,228 | 17.3 | 1.19 | 14.83 | 5.61 |
| Natural Gas | 2,158 | 33,017 | 15.3 | 37,145 | 17.2 | 1.13 | 10.87 | 5.02 |
| Fuel Oil | 555 | 10,526 | 18.9 | 13,490 | 24.3 | 1.28 | 10.34 | 10.09 |
| District Heat | 94 | 6,130 | 65.0 | 10,763 | 114.0 | 1.76 | 10.68 | 14.52 |
| Propane | 238 | 1,767 | 7.4 | 1,605 | 6.7 | .91 | 13.63 | 18.65 |
| Other | 110 | 994 | 9.0 | 515 | 4.7 | .52 | 11.10 | 16.07 |
| Main Space-Heating Energy Source | | | | | | | | |
| Electricity | | | | | | | | |
| Electricity | 957 | 13,448 | 14.1 | 16,020 | 16.7 | 1.19 | 16.37 | 5.62 |
| Natural Gas | 2,079 | 31,110 | 15.0 | 34,603 | 16.6 | 1.11 | 10.84 | 5.18 |
| Fuel Oil | 473 | 5,599 | 11.8 | 5,838 | 12.3 | 1.04 | 11.73 | 10.01 |
| District Heat | 93 | 6,026 | 64.5 | 10,553 | 113.0 | 1.75 | 10.68 | 14.54 |
| Propane | 208 | 1,230 | 5.9 | 981 | 4.7 | .80 | 16.00 | 21.16 |
| Other | 70 | 766 | 11.0 | 294 | 4.2 | .38 | 11.39 | 23.05 |

See footnote at end of table.

MAJOR FUELS

Table 14. Commercial Buildings Expenditures for Sum of Major Fuels (Continued)

| Building Characteristics | All Buildings | | | Sum of Major Fuel Expenditures | | | | RSE Row Factor |
|--|--------------------------------|----------------------------------|--|--------------------------------|---------------------------------|---------------------------|---------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Million Btu (dollars) | |
| RSE Column Factor | 0.861 | 0.923 | 0.984 | 1.310 | 1.363 | 0.959 | 0.703 | |
| Air-Conditioning Energy Source (Solely or in Combination) | | | | | | | | |
| Electricity | 3,072 | 47,911 | 15.6 | 58,728 | 19.1 | 1.23 | 12.82 | 4.39 |
| Natural Gas | 97 | 1,976 | 20.5 | 2,431 | 25.2 | 1.23 | 10.80 | 13.12 |
| District Chilled Water | 24 | 1,938 | 81.6 | 4,067 | 171.3 | 2.10 | 11.29 | 23.53 |
| Other | 13 | 1,076 | 80.3 | 1,678 | 125.2 | 1.56 | 9.67 | 31.47 |
| Water-Heating Energy Source (Solely or in Combination) | | | | | | | | |
| Electricity | 1,554 | 21,493 | 13.8 | 25,694 | 16.5 | 1.20 | 14.59 | 6.26 |
| Natural Gas | 1,391 | 25,923 | 18.6 | 29,855 | 21.5 | 1.15 | 11.03 | 4.76 |
| Fuel Oil | 126 | 2,284 | 18.1 | 2,645 | 20.9 | 1.16 | 11.33 | 18.14 |
| District Heat | 49 | 4,751 | 97.8 | 9,123 | 187.9 | 1.92 | 10.16 | 18.39 |
| Propane | 88 | 1,023 | 11.6 | 1,264 | 14.3 | 1.24 | 15.28 | 25.30 |
| Other | 15 | 403 | 27.3 | 392 | 26.6 | .97 | 15.39 | 27.21 |
| Cooking Energy Source (Solely or in Combination) | | | | | | | | |
| Electricity | 387 | 10,850 | 28.0 | 13,684 | 35.3 | 1.26 | 11.82 | 8.06 |
| Natural Gas | 462 | 14,766 | 32.0 | 19,212 | 41.6 | 1.30 | 11.25 | 6.74 |
| Propane | 93 | 923 | 9.9 | 1,381 | 14.8 | 1.50 | 17.85 | 17.23 |
| Other | 7 | 1,150 | 166.9 | 3,082 | 447.1 | 2.68 | 9.99 | 29.63 |
| Manufacturing Energy Source (Solely or in Combination) | | | | | | | | |
| Electricity | 163 | 4,406 | 27.1 | 5,347 | 32.9 | 1.21 | 10.80 | 15.38 |
| Natural Gas | 23 | 838 | 36.1 | 1,321 | 57.0 | 1.58 | 7.69 | 20.36 |
| Other | 28 | 1,002 | 35.7 | 1,661 | 59.2 | 1.66 | 9.50 | 23.07 |
| HEATING AND COOLING | | | | | | | | |
| Percent Heated | | | | | | | | |
| Not Heated | 662 | 5,419 | 8.2 | 3,132 | 4.7 | .58 | 24.85 | 17.73 |
| 1 to 50 | 630 | 9,314 | 14.8 | 5,425 | 8.6 | .58 | 14.62 | 8.60 |
| 51 to 99 | 496 | 8,673 | 17.5 | 11,497 | 23.2 | 1.33 | 12.89 | 8.06 |
| 100 | 2,739 | 39,777 | 14.5 | 50,772 | 18.5 | 1.28 | 11.54 | 4.54 |
| Percent Cooled | | | | | | | | |
| Not Cooled | 1,344 | 11,413 | 8.5 | 6,797 | 5.1 | .60 | 9.89 | 8.19 |
| 1 to 50 | 1,037 | 17,821 | 17.2 | 14,183 | 13.7 | .80 | 10.61 | 6.77 |
| 51 to 99 | 597 | 13,139 | 22.0 | 17,906 | 30.0 | 1.36 | 12.71 | 5.82 |
| 100 | 1,550 | 20,811 | 13.4 | 31,940 | 20.6 | 1.53 | 13.56 | 6.87 |
| Heating Equipment (Solely or in Combination) | | | | | | | | |
| Furnaces | 1,619 | 15,592 | 9.6 | 16,477 | 10.2 | 1.06 | 11.88 | 5.76 |
| Boilers | 704 | 19,907 | 28.3 | 23,499 | 33.4 | 1.18 | 10.45 | 5.44 |
| Individual Space Heaters | 1,389 | 22,542 | 16.2 | 23,157 | 16.7 | 1.03 | 11.40 | 6.66 |
| Packaged Heating Units | 859 | 15,598 | 18.2 | 20,663 | 24.1 | 1.32 | 13.34 | 6.54 |
| Heat Pumps | 453 | 8,357 | 18.5 | 9,710 | 21.4 | 1.16 | 13.30 | 8.91 |
| Air Ducts | 1,990 | 37,297 | 18.7 | 48,644 | 24.4 | 1.30 | 12.21 | 4.97 |
| Heating or Reheating Coils | 243 | 15,693 | 64.6 | 24,493 | 100.8 | 1.56 | 11.68 | 7.87 |
| Fan-Coil Units | 185 | 11,839 | 63.8 | 16,876 | 91.0 | 1.43 | 10.69 | 9.80 |
| Steam or Hot Water Radiators or Baseboards | 498 | 15,822 | 31.7 | 18,748 | 37.6 | 1.18 | 9.50 | 6.41 |
| Other | 57 | 1,476 | 25.7 | 2,948 | 49.6 | 1.93 | 11.05 | 21.79 |

See footnotes at end of table.

Table 14. Commercial Buildings Expenditures for Sum of Major Fuels (Continued)

| Building Characteristics | All Buildings | | | Sum of Major Fuel Expenditures | | | | RISE (\$/Btu) |
|--|--------------------------------|----------------------------------|--|--------------------------------|---------------------------------|---------------------------|---------------------------|------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Million Btu (dollars) | |
| RISE Column Factor: | 0.0001 | 0.0002 | 0.0004 | 1.319 | 1.285 | 0.000 | 0.000 | |
| Cooling Equipment (Solely or in Combination) | | | | | | | | |
| Central Chillers | 201 | 14,048 | 69.9 | 22,078 | 109.9 | 1.57 | 12.43 | 6.60 |
| Individual Air Conditioners | 1,074 | 19,239 | 17.9 | 20,383 | 19.0 | 1.06 | 11.08 | 6.95 |
| Packaged Cooling Units | 1,980 | 34,753 | 17.6 | 44,020 | 22.2 | 1.27 | 12.69 | 4.79 |
| Heat Pumps | 437 | 7,827 | 17.9 | 10,348 | 23.7 | 1.32 | 13.39 | 11.06 |
| Air Ducts | 1,712 | 34,225 | 20.0 | 45,453 | 26.6 | 1.33 | 12.39 | 6.11 |
| Fan-Coil Units | 110 | 10,787 | 98.1 | 18,011 | 163.9 | 1.67 | 11.80 | 9.79 |
| Other | 100 | 1,468 | 14.6 | 1,647 | 16.4 | 1.12 | 9.44 | 26.82 |
| Year Main Central Chiller Installed | | | | | | | | |
| 1959 or Before | 26 | 1,477 | 56.0 | 2,226 | 84.5 | 1.51 | 12.72 | 19.75 |
| 1960 to 1969 | 52 | 3,718 | 72.1 | 5,902 | 114.5 | 1.59 | 11.23 | 19.81 |
| 1970 to 1979 | 50 | 3,541 | 71.4 | 5,879 | 118.6 | 1.66 | 14.24 | 17.09 |
| 1980 to 1986 | 47 | 3,515 | 74.4 | 5,782 | 122.3 | 1.65 | 12.51 | 17.28 |
| 1987 to 1989 | 26 | 1,798 | 68.9 | 2,288 | 87.7 | 1.27 | 11.44 | 16.89 |
| Year Packaged Cooling System Installed | | | | | | | | |
| 1959 or Before | 76 | 1,736 | 23.0 | 2,085 | 27.6 | 1.20 | 12.09 | 13.28 |
| 1960 to 1969 | 262 | 4,849 | 18.5 | 6,762 | 25.9 | 1.39 | 11.11 | 19.83 |
| 1970 to 1979 | 603 | 10,469 | 17.3 | 13,028 | 21.6 | 1.24 | 12.51 | 6.40 |
| 1980 to 1986 | 659 | 11,340 | 17.2 | 14,430 | 21.9 | 1.27 | 14.39 | 7.32 |
| 1987 to 1989 | 380 | 6,358 | 16.7 | 7,715 | 20.3 | 1.21 | 11.99 | 5.13 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | |
| Present in Building | 265 | 16,684 | 63.0 | 27,309 | 103.1 | 1.64 | 12.01 | 7.20 |
| Not Present | 4,263 | 46,499 | 10.9 | 43,517 | 10.2 | .94 | 12.38 | 4.15 |
| LIGHTING AND REFRIGERATION | | | | | | | | |
| Percent Lit When Open | | | | | | | | |
| Not Lit | 306 | 2,359 | 7.7 | 263 | .9 | .11 | 12.16 | 15.86 |
| 1 to 50 | 1,002 | 10,870 | 10.9 | 6,127 | 6.1 | .56 | 11.49 | 6.42 |
| 51 to 99 | 951 | 16,950 | 17.8 | 20,155 | 21.2 | 1.19 | 12.40 | 6.31 |
| 100 | 2,269 | 33,004 | 14.5 | 44,281 | 19.5 | 1.34 | 12.27 | 5.37 |
| Percent Lit When Closed | | | | | | | | |
| Not Lit | 2,693 | 28,054 | 10.4 | 25,443 | 9.4 | .91 | 11.86 | 5.70 |
| 1 to 50 | 1,706 | 31,825 | 18.7 | 38,660 | 22.7 | 1.21 | 12.28 | 4.91 |
| 51 to 99 | 68 | 2,308 | 34.2 | 5,495 | 81.4 | 2.38 | 13.48 | 18.48 |
| 100 | 62 | 997 | 16.1 | 1,228 | 19.8 | 1.23 | 14.11 | 21.55 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | |
| Incandescent Lamps | 2,404 | 38,790 | 16.1 | 44,285 | 18.4 | 1.14 | 11.70 | 4.71 |
| Fluorescent Lamps | 3,920 | 58,892 | 15.0 | 69,625 | 17.8 | 1.18 | 12.25 | 4.09 |
| High-Intensity Discharge Lamps | 456 | 18,188 | 39.9 | 22,495 | 49.3 | 1.24 | 11.36 | 7.42 |
| Other Lamps | 24 | 513 | 21.5 | 624 | 26.2 | 1.22 | 12.34 | 19.93 |
| High-Efficiency Ballasts | 1,074 | 24,226 | 22.6 | 34,017 | 31.7 | 1.40 | 12.46 | 6.59 |

See footnotes at end of table.

MAJOR FUELS

Table 14. Commercial Buildings Expenditures for Sum of Major Fuels (Continued)

| Building Characteristics | All Buildings | | | Sum of Major Fuel Expenditures | | | | RSE Row Factor |
|---|--------------------------------|----------------------------------|--|--------------------------------|---------------------------------|---------------------------|---------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Million Btu (dollars) | |
| RSE Column Factor: | 0.891 | 0.923 | 0.984 | 1.318 | 1.363 | 0.989 | 0.703 | |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | |
| Commercial | | | | | | | | |
| Refrigeration Units | 918 | 24,663 | 26.9 | 35,753 | 39.0 | 1.45 | 12.02 | 6.22 |
| Freezers | 713 | 21,675 | 30.4 | 33,567 | 47.1 | 1.55 | 11.98 | 6.06 |
| Residential | | | | | | | | |
| Refrigerators | 2,485 | 44,264 | 17.8 | 51,797 | 20.8 | 1.17 | 11.74 | 4.53 |
| Freezers | 619 | 12,421 | 20.1 | 16,588 | 26.8 | 1.34 | 11.22 | 8.14 |
| Ice-Making Machines | 775 | 23,443 | 30.3 | 35,987 | 46.5 | 1.54 | 12.04 | 6.12 |
| Refrigerated Vending Machines | 1,517 | 38,865 | 25.6 | 52,592 | 34.7 | 1.35 | 12.10 | 4.78 |
| Water Coolers | 1,750 | 42,864 | 24.5 | 53,317 | 30.5 | 1.24 | 11.97 | 4.92 |
| Other | 56 | 1,408 | 25.1 | 3,935 | 70.2 | 2.79 | 11.39 | 20.99 |
| ENERGY MANAGEMENT | | | | | | | | |
| Occupant Control | | | | | | | | |
| Any Control of Heating | 2,399 | 27,044 | 11.3 | 28,464 | 11.9 | 1.05 | 12.21 | 4.65 |
| With Thermostats | 2,100 | 24,773 | 11.8 | 26,237 | 12.5 | 1.06 | 12.16 | 5.05 |
| Any Control of Cooling | 1,977 | 26,314 | 13.3 | 28,556 | 14.4 | 1.09 | 12.31 | 4.81 |
| With Thermostats | 1,756 | 24,043 | 13.7 | 26,203 | 14.9 | 1.09 | 12.39 | 5.23 |
| Reduced Use During Off-Hours | | | | | | | | |
| Heating Only | 790 | 7,147 | 9.0 | 6,473 | 8.2 | .91 | 9.97 | 8.89 |
| Cooling Only | 283 | 4,112 | 14.5 | 5,775 | 20.4 | 1.40 | 13.46 | 17.95 |
| Heating and Cooling | 2,397 | 38,689 | 16.1 | 42,521 | 17.7 | 1.10 | 12.70 | 4.82 |
| Computerized Energy Management and Control System | | | | | | | | |
| Present in Building | 264 | 14,345 | 54.3 | 21,014 | 79.6 | 1.46 | 12.26 | 7.60 |
| Controls Heating and Cooling | 251 | 13,793 | 54.9 | 20,355 | 81.0 | 1.48 | 12.20 | 7.82 |
| Controls Lighting | 51 | 3,855 | 75.5 | 5,055 | 99.0 | 1.31 | 11.72 | 14.06 |
| Controls Other | 32 | 2,316 | 73.5 | 3,989 | 126.6 | 1.72 | 11.87 | 17.28 |
| Other Energy Management | | | | | | | | |
| Regular HVAC Maintenance | 2,102 | 43,014 | 20.5 | 57,884 | 27.5 | 1.35 | 12.13 | 4.54 |
| Participated in Utility Conservation Program | 324 | 10,826 | 33.4 | 14,564 | 44.9 | 1.35 | 12.08 | 7.75 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

a Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

**Table 15. Gross Expenditures Intensities for Sum of Major Fuels by Main Heating Fuel
(Dollars per Square Foot)**

| Building Characteristics | All Buildings | Buildings with Heating | | | | | Heating not Performed in Building | |
|--|---------------|------------------------|-------------|-------------|----------|----------|-----------------------------------|--|
| | | All Heated Buildings | Main Heat | | | | | |
| | | | Electricity | Natural Gas | Fuel Oil | District | | |
| All Buildings | 1.12 | 1.17 | 1.19 | 1.11 | 1.04 | 1.75 | 0.82 | |
| Building Floorspace (Square Feet) | | | | | | | | |
| 1,001 to 5,000 | 1.41 | 1.58 | 1.85 | 1.64 | 1.51 | 2.53 | .80 | |
| 5,001 to 10,000 | 1.20 | 1.14 | 1.28 | 1.08 | 1.20 | Q | Q | |
| 10,001 to 25,000 | .95 | 1.01 | 1.14 | .91 | .83 | 2.13 | .53 | |
| 25,001 to 50,000 | 1.02 | 1.08 | 1.18 | .97 | .88 | 2.45 | .43 | |
| 50,001 to 100,000 | 1.11 | 1.18 | 1.01 | 1.11 | .83 | 1.88 | .34 | |
| 100,001 to 200,000 | 1.12 | 1.15 | 1.26 | 1.08 | 1.27 | 1.53 | Q | |
| 200,001 to 500,000 | 1.12 | 1.14 | .95 | 1.14 | 1.17 | 1.42 | .54 | |
| Over 500,000 | 1.17 | 1.21 | .92 | 1.17 | Q | 1.65 | Q | |
| Year Constructed | | | | | | | | |
| 1899 or Before | .73 | .79 | Q | .68 | .71 | Q | Q | |
| 1900 to 1919 | .58 | .66 | .64 | .64 | .68 | 1.11 | Q | |
| 1920 to 1945 | .87 | .93 | .84 | .86 | .80 | 1.79 | .22 | |
| 1946 to 1959 | .98 | 1.04 | .80 | .93 | 1.29 | 1.40 | .47 | |
| 1960 to 1969 | 1.22 | 1.29 | 1.17 | 1.28 | 1.11 | 1.93 | .57 | |
| 1970 to 1979 | 1.34 | 1.30 | 1.28 | 1.27 | 1.37 | 1.80 | Q | |
| 1980 to 1983 | 1.45 | 1.53 | 1.47 | 1.47 | Q | Q | .84 | |
| 1984 to 1986 | 1.27 | 1.38 | 1.32 | 1.47 | Q | Q | .31 | |
| 1987 to 1989 | 1.15 | 1.23 | .90 | 1.28 | Q | Q | .71 | |
| BUILDING USE | | | | | | | | |
| Principal Building Activity | | | | | | | | |
| Assembly | .87 | .72 | .71 | .66 | .51 | 1.43 | Q | |
| Education | .82 | .81 | 1.06 | .76 | .75 | 1.14 | Q | |
| Food Sales | 2.73 | 2.69 | 2.99 | 2.94 | Q | Q | Q | |
| Food Service | 2.81 | 2.91 | 3.44 | 2.90 | 2.51 | Q | Q | |
| Health Care | 1.97 | 1.97 | 1.27 | 2.03 | Q | 2.43 | Q | |
| Lodging | 1.15 | 1.15 | 1.37 | 1.11 | Q | 1.37 | Q | |
| Mercantile and Service | 1.09 | 1.10 | 1.11 | 1.14 | 1.14 | Q | .93 | |
| Office | 1.55 | 1.55 | 1.53 | 1.48 | 1.22 | 1.92 | Q | |
| Parking Garage | .49 | .58 | .23 | Q | Q | Q | .37 | |
| Public Order and Safety | 1.42 | 1.44 | Q | 1.01 | Q | Q | NC | |
| Warehouse | .66 | .78 | .55 | .67 | 1.26 | Q | .25 | |
| Other | 2.76 | 3.16 | Q | 4.00 | Q | Q | Q | |
| Vacant | .29 | .44 | .40 | .46 | Q | Q | .22 | |
| Weekly Operating Hours | | | | | | | | |
| 39 or Fewer | .40 | .56 | .57 | .58 | .48 | Q | .25 | |
| 40 to 48 | .91 | .87 | .86 | .82 | .65 | 1.63 | Q | |
| 49 to 60 | .93 | .96 | .92 | .89 | .87 | 1.76 | .53 | |
| 61 to 84 | 1.23 | 1.24 | 1.25 | 1.15 | 1.22 | 1.90 | .92 | |
| 85 to 167 | 1.26 | 1.30 | 1.48 | 1.26 | 1.29 | 1.01 | .78 | |
| 168 (Open Continuously) | 1.90 | 2.01 | 1.81 | 2.06 | 2.49 | 2.24 | .68 | |
| Workers | | | | | | | | |
| 4 or Fewer | .60 | .73 | .87 | .70 | .82 | 1.04 | .34 | |
| 5 to 9 | .87 | .90 | 1.10 | .80 | .78 | 2.07 | Q | |
| 10 to 19 | 1.01 | 1.02 | 1.03 | 1.01 | 1.05 | 1.22 | .73 | |
| 20 to 49 | 1.21 | 1.10 | 1.16 | .98 | 1.12 | 1.83 | Q | |
| 50 to 99 | 1.17 | 1.16 | 1.53 | 1.02 | .72 | 2.00 | Q | |
| 100 to 249 | 1.65 | 1.65 | 1.50 | 1.60 | 1.86 | 1.78 | Q | |
| 250 or More | 1.72 | 1.72 | 1.33 | 1.96 | 1.68 | 1.75 | Q | |

See footnote at end of table.

MAJOR FUELS

Table 15. Gross Expenditures Intensities for Sum of Major Fuels by Main Heating Fuel (Continued)
(Dollars per Square Foot)

| Building Characteristics | All Buildings | Buildings with Heating | | | | | Heating not Performed in Building | RSE Flow Factor | | |
|---|---------------|------------------------|-------------|-------------|----------|----------|-----------------------------------|-----------------|--|--|
| | | All Heated Buildings | Main Heat | | | | | | | |
| | | | Electricity | Natural Gas | Fuel Oil | District | | | | |
| RSE Column Factor: | 0.656 | 0.600 | 0.537 | 0.780 | 1.494 | 1.357 | 1.901 | | | |
| Ownership and Occupancy | | | | | | | | | | |
| Nongovernment Owned | 1.10 | 1.16 | 1.21 | 1.11 | 0.98 | 2.02 | 0.55 | 6.68 | | |
| Owner Occupied | 1.11 | 1.17 | 1.17 | 1.09 | 1.05 | 2.04 | .58 | 7.41 | | |
| Single Establishment | 1.13 | 1.20 | 1.23 | 1.13 | 1.05 | 2.26 | .56 | 9.52 | | |
| Multiple Establishment | 1.08 | 1.09 | 1.08 | .97 | 1.08 | 1.66 | .72 | 9.80 | | |
| Nonowner Occupied | 1.04 | 1.15 | 1.28 | 1.18 | .75 | 1.75 | .46 | 11.98 | | |
| Single Establishment | 1.05 | 1.10 | 1.23 | 1.16 | .49 | Q | .61 | 16.20 | | |
| Multiple Establishment | 1.24 | 1.26 | 1.35 | 1.22 | 1.29 | Q | .47 | 14.53 | | |
| Vacant | .26 | .68 | Q | 1.05 | Q | Q | Q | 51.00 | | |
| Government Owned | 1.21 | 1.19 | 1.07 | 1.11 | 1.20 | 1.50 | Q | 17.11 | | |
| Federal | 1.49 | 1.50 | Q | 2.08 | Q | 1.29 | Q | 24.32 | | |
| State | 1.55 | 1.64 | 1.04 | 1.72 | Q | 1.66 | Q | 33.92 | | |
| Local | .99 | .91 | 1.06 | .87 | .97 | 1.44 | Q | 16.95 | | |
| Percent Vacant at Least Three Months | | | | | | | | | | |
| 0 | 1.22 | 1.25 | 1.31 | 1.18 | 1.11 | 1.95 | 1.01 | 9.61 | | |
| 1 to 50 | 1.16 | 1.18 | 1.08 | 1.13 | 1.43 | 1.65 | .39 | 10.82 | | |
| 51 to 99 | .52 | .53 | .52 | .43 | Q | Q | Q | 38.14 | | |
| 100 | .45 | .68 | .63 | .87 | .40 | Q | .34 | 20.51 | | |
| Months in Use Out of Past 12 Months | | | | | | | | | | |
| 0 to 8 | .48 | .73 | .79 | .92 | Q | Q | .39 | 20.31 | | |
| 9 to 11 | .71 | .72 | .70 | .84 | .56 | .83 | Q | 17.90 | | |
| 12 | 1.20 | 1.22 | 1.24 | 1.14 | 1.18 | 1.83 | .95 | 8.49 | | |
| LOCATION | | | | | | | | | | |
| Census Region | | | | | | | | | | |
| Northeast | 1.29 | 1.34 | 1.33 | 1.23 | 1.21 | 2.00 | .28 | 13.01 | | |
| Midwest | 1.03 | 1.08 | 1.31 | 1.03 | .88 | 1.62 | .24 | 11.58 | | |
| South | .99 | 1.02 | 1.08 | .94 | .58 | 1.74 | 1.11 | 11.29 | | |
| West | 1.30 | 1.37 | 1.30 | 1.43 | Q | 1.43 | .82 | 12.53 | | |
| Census Division | | | | | | | | | | |
| Northeast | | | | | | | | | | |
| New England | 1.15 | 1.19 | 1.21 | 1.42 | 1.05 | 1.73 | Q | 17.78 | | |
| Middle Atlantic | 1.33 | 1.39 | 1.37 | 1.21 | 1.32 | 2.06 | .31 | 15.80 | | |
| Midwest | | | | | | | | | | |
| East North Central | 1.04 | 1.09 | 1.51 | 1.00 | .80 | 1.65 | .22 | 13.52 | | |
| West North Central | 1.02 | 1.07 | .99 | 1.08 | Q | 1.54 | .28 | 14.10 | | |
| South | | | | | | | | | | |
| South Atlantic | 1.00 | .96 | .97 | 1.05 | .55 | 2.39 | Q | 12.22 | | |
| East South Central | 1.01 | 1.12 | 1.24 | .95 | Q | Q | Q | 17.28 | | |
| West South Central | .96 | 1.02 | 1.19 | .86 | Q | 1.58 | .47 | 15.01 | | |
| West | | | | | | | | | | |
| Mountain | 1.01 | 1.08 | 1.19 | 1.02 | Q | 1.19 | Q | 17.84 | | |
| Pacific | 1.47 | 1.55 | 1.36 | 1.65 | Q | 1.82 | .89 | 16.25 | | |
| Metropolitan Status | | | | | | | | | | |
| Metropolitan | 1.19 | 1.23 | 1.23 | 1.15 | 1.14 | 1.74 | .98 | 8.93 | | |
| Nonmetropolitan | .83 | .92 | .99 | .97 | .76 | 2.03 | .39 | 13.26 | | |
| Climate Zone: 45-Year Average | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | |
| Over 7,000 HDD | 1.09 | 1.14 | 1.27 | .99 | .98 | 1.98 | Q | 14.37 | | |
| 5,500-7,000 HDD | 1.07 | 1.12 | 1.34 | 1.07 | 1.10 | 1.43 | .28 | 12.01 | | |
| 4,000-5,499 HDD | 1.15 | 1.22 | 1.23 | 1.12 | 1.13 | 1.99 | .21 | 11.98 | | |
| Under 4,000 HDD | 1.21 | 1.28 | 1.09 | 1.39 | .44 | 1.92 | .61 | 16.30 | | |
| 2,000 CDD or More and -- | | | | | | | | | | |
| Under 4,000 HDD | 1.08 | 1.07 | 1.19 | .90 | .91 | 1.69 | Q | 10.86 | | |

See footnote at end of table.

Table 15. Gross Expenditures Intensities for Sum of Major Fuels by Main Heating Fuel (Continued)
(Dollars per Square Foot)

| Building Characteristics | All Buildings | Buildings with Heating | | | | | Heating not Performed in Building | RSE Row Factor | | |
|--|---------------|------------------------|-------------|-------------|----------|----------|-----------------------------------|----------------|--|--|
| | | All Heated Buildings | Main Heat | | | | | | | |
| | | | Electricity | Natural Gas | Fuel Oil | District | | | | |
| RSE Column Factor: | 0.656 | 0.600 | 0.837 | 0.788 | 1.494 | 1.357 | 1.901 | | | |
| ENERGY SOURCES AND END USES* | | | | | | | | | | |
| Energy Sources | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Electricity | 1.15 | 1.17 | 1.19 | 1.11 | 1.05 | 1.75 | 0.82 | 7.40 | | |
| Natural Gas | 1.17 | 1.17 | 1.28 | 1.11 | 1.12 | 1.79 | 1.41 | 9.86 | | |
| Fuel Oil | 1.38 | 1.37 | 1.44 | 1.56 | 1.04 | Q | Q | 15.12 | | |
| District Heat | 1.93 | 1.93 | Q | Q | Q | 1.75 | Q | 12.81 | | |
| District Chilled Water | 2.03 | 2.03 | Q | Q | Q | 1.65 | Q | 26.90 | | |
| Propane | 1.08 | 1.06 | 1.23 | 1.15 | 1.14 | Q | Q | 18.93 | | |
| Other | .67 | .67 | Q | Q | Q | Q | Q | 27.73 | | |
| Energy End Uses | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Heated Buildings | 1.17 | 1.17 | 1.19 | 1.11 | 1.04 | 1.75 | NC | 6.72 | | |
| Air-Conditioned Buildings | 1.24 | 1.22 | 1.24 | 1.13 | 1.11 | 1.80 | 1.98 | 8.47 | | |
| Buildings with Water Heating | 1.24 | 1.22 | 1.25 | 1.14 | 1.06 | 1.77 | Q | 7.09 | | |
| Buildings with Cooking | 1.36 | 1.35 | 1.42 | 1.29 | 1.07 | 1.74 | 1.46 | 9.76 | | |
| Buildings with Manufacturing | 1.29 | 1.32 | 1.28 | 1.17 | 1.22 | 1.57 | .73 | 18.06 | | |
| Energy End-Use Combinations | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | 1.39 | 1.39 | 1.46 | 1.32 | 1.18 | 1.73 | NC | 10.56 | | |
| With Water Heating, Without Cooking | 1.15 | 1.15 | 1.17 | 1.04 | 1.12 | 1.93 | NC | 7.98 | | |
| Without Water Heating or Cooking | .70 | .70 | .82 | .70 | .69 | Q | NC | 13.73 | | |
| Without Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | .92 | .92 | Q | 1.04 | .77 | Q | NC | 36.67 | | |
| With Water Heating, Without Cooking | .89 | .89 | .84 | .92 | Q | Q | NC | 22.07 | | |
| Without Water Heating or Cooking | .61 | .61 | .23 | .73 | .97 | Q | NC | 29.84 | | |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | .13 | NC | NC | NC | NC | NC | .21 | 13.04 | | |
| All Other Combinations | 1.76 | 1.59 | Q | Q | Q | NC | 1.78 | 34.01 | | |
| Space-Heating Energy Source | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Electricity | 1.19 | 1.19 | 1.19 | 1.01 | 1.02 | 2.93 | NC | 9.20 | | |
| Natural Gas | 1.13 | 1.13 | 1.30 | 1.11 | 1.26 | 2.21 | NC | 12.69 | | |
| Fuel Oil | 1.28 | 1.28 | 1.35 | 1.55 | 1.04 | 1.47 | NC | 15.26 | | |
| District Heat | 1.76 | 1.76 | Q | 2.02 | Q | 1.75 | NC | 17.48 | | |
| Propane | .91 | .91 | Q | 1.14 | Q | Q | NC | 34.92 | | |
| Other | .52 | .52 | Q | Q | Q | Q | NC | 21.46 | | |
| Ability to Switch Main Heating Fuel | | | | | | | | | | |
| No Alternate | 1.16 | 1.16 | 1.20 | 1.08 | 1.10 | 1.68 | NC | 6.47 | | |
| Alternate Main Heating Fuel | | | | | | | | | | |
| Electricity | .69 | .69 | Q | .57 | 1.01 | Q | NC | 24.01 | | |
| Natural Gas | 1.30 | 1.30 | 1.25 | Q | .88 | Q | NC | 25.07 | | |
| Fuel Oil | 1.58 | 1.58 | 1.29 | 1.68 | Q | 1.51 | NC | 22.73 | | |
| Propane | .81 | .82 | Q | .89 | .63 | Q | NC | 22.12 | | |
| Other | .74 | .74 | Q | Q | Q | Q | NC | 26.68 | | |

See footnote at end of table.

MAJOR FUELS

Table 15. Gross Expenditures Intensities for Sum of Major Fuels by Main Heating Fuel (Continued)
(Dollars per Square Foot)

| Building Characteristics | All Buildings | Buildings with Heating | | | | | Heating not Performed in Building | RSE Row Factor | | |
|--|---------------|------------------------|-------------|-------------|----------|----------|-----------------------------------|----------------|--|--|
| | | All Heated Buildings | Main Heat | | | | | | | |
| | | | Electricity | Natural Gas | Fuel Oil | District | | | | |
| RSE Column Factor | 0.856 | 0.800 | 0.897 | 0.780 | 1.494 | 1.397 | 1.391 | | | |
| Air-Conditioning Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 1.23 | 1.21 | 1.22 | 1.13 | 1.09 | 1.95 | Q | 7.25 | | |
| Natural Gas | 1.23 | 1.22 | Q | 1.21 | Q | Q | Q | 22.47 | | |
| District Chilled Water | 2.10 | 2.10 | Q | Q | Q | 1.66 | Q | 32.74 | | |
| Other | 1.56 | 1.56 | Q | Q | Q | 1.58 | NC | 16.59 | | |
| Water-Heating Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 1.20 | 1.15 | 1.21 | 1.03 | 1.08 | 2.06 | Q | 10.47 | | |
| Natural Gas | 1.15 | 1.15 | 1.42 | 1.12 | 1.05 | 1.92 | 1.32 | 12.17 | | |
| Fuel Oil | 1.16 | 1.15 | Q | Q | 1.05 | Q | Q | 12.48 | | |
| District Heat | 1.92 | 1.92 | Q | Q | Q | 1.69 | Q | 17.00 | | |
| Propane | 1.24 | 1.17 | Q | NC | Q | NC | Q | 43.81 | | |
| Other | .97 | .97 | Q | Q | Q | NC | Q | 47.54 | | |
| Cooking Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 1.26 | 1.27 | 1.38 | 1.11 | .83 | 1.80 | 1.12 | 10.99 | | |
| Natural Gas | 1.30 | 1.29 | 1.37 | 1.25 | 1.06 | 1.67 | Q | 11.29 | | |
| Propane | 1.50 | 1.39 | 1.66 | NC | 1.36 | Q | Q | 24.81 | | |
| Other | 2.68 | 2.68 | Q | Q | Q | 1.72 | NC | 37.50 | | |
| Manufacturing Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 1.21 | 1.25 | 1.28 | 1.15 | Q | Q | .74 | 19.63 | | |
| Natural Gas | 1.58 | 1.58 | Q | 1.60 | Q | Q | Q | 27.46 | | |
| Other | 1.66 | 1.69 | Q | 1.39 | Q | Q | Q | 31.78 | | |
| HEATING AND COOLING | | | | | | | | | | |
| Percent Heated | | | | | | | | | | |
| Not Heated | .58 | Q | Q | Q | Q | Q | .82 | 32.75 | | |
| 1 to 50 | .58 | .58 | .58 | .54 | .57 | Q | NC | 15.45 | | |
| 51 to 99 | 1.33 | 1.33 | 1.46 | 1.24 | 1.31 | 1.60 | NC | 12.46 | | |
| 100 | 1.28 | 1.28 | 1.34 | 1.23 | 1.07 | 1.82 | NC | 7.57 | | |
| Percent Cooled | | | | | | | | | | |
| Not Cooled | .60 | .84 | .48 | .93 | .90 | 1.27 | .24 | 18.91 | | |
| 1 to 50 | .80 | .80 | .67 | .75 | .95 | 1.69 | .67 | 13.90 | | |
| 51 to 99 | 1.36 | 1.36 | 1.41 | 1.19 | 1.49 | 1.82 | 1.39 | 9.54 | | |
| 100 | 1.53 | 1.48 | 1.41 | 1.50 | 1.17 | 1.84 | Q | 9.73 | | |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | |
| Present in Building | 1.64 | 1.64 | 1.53 | 1.63 | 1.66 | 1.82 | Q | 10.93 | | |
| Not Present | .94 | .99 | 1.06 | .92 | .87 | 1.68 | .77 | 8.84 | | |
| LIGHTING AND REFRIGERATION | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | |
| Not Lit | .11 | .48 | Q | Q | Q | Q | .21 | 27.70 | | |
| 1 to 50 | .56 | .60 | .70 | .59 | .59 | Q | .27 | 12.53 | | |
| 51 to 99 | 1.19 | 1.20 | 1.24 | 1.14 | 1.05 | 1.64 | .83 | 10.50 | | |
| 100 | 1.34 | 1.34 | 1.31 | 1.28 | 1.24 | 1.87 | Q | 8.32 | | |

See footnote at end of table.

Table 15. Gross Expenditures Intensities for Sum of Major Fuels by Main Heating Fuel (Continued)
(Dollars per Square Foot)

| Building Characteristics | All Buildings | Buildings with Heating | | | | | Heating not Performed in Building | RSE Factor | | |
|---|---------------|------------------------|-------------|-------------|----------|----------|-----------------------------------|------------|--|--|
| | | All Heated Buildings | Main Heat | | | | | | | |
| | | | Electricity | Natural Gas | Fuel Oil | District | | | | |
| RSE Column Factor: | 0.622 | 0.563 | 0.679 | 0.884 | 1.682 | 1.169 | 2.459 | | | |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | | |
| Commercial | | | | | | | | | | |
| Refrigeration Units | 1.45 | 1.45 | 1.53 | 1.42 | 1.21 | 1.74 | 1.42 | 9.78 | | |
| Freezers | 1.55 | 1.55 | 1.58 | 1.56 | 1.22 | 1.78 | 1.53 | 9.99 | | |
| Residential | | | | | | | | | | |
| Refrigerators | 1.17 | 1.18 | 1.16 | 1.10 | 1.10 | 1.75 | .84 | 7.60 | | |
| Freezers | 1.34 | 1.35 | 1.25 | 1.31 | 1.34 | 1.81 | .92 | 13.45 | | |
| Ice-Making Machines | 1.54 | 1.54 | 1.44 | 1.47 | 1.66 | 1.87 | 1.55 | 9.83 | | |
| Refrigerated Vending Machines | 1.35 | 1.32 | 1.32 | 1.26 | 1.15 | 1.77 | 3.07 | 8.54 | | |
| Water Coolers | 1.24 | 1.23 | 1.17 | 1.16 | 1.09 | 1.80 | Q | 8.31 | | |
| Other | 2.79 | 2.81 | 2.70 | 3.04 | Q | Q | Q | 32.11 | | |
| ENERGY MANAGEMENT | | | | | | | | | | |
| Occupant Control | | | | | | | | | | |
| Any Control of Heating | 1.05 | 1.05 | 1.10 | .98 | .99 | 2.04 | NC | 8.80 | | |
| With Thermostats | 1.06 | 1.06 | 1.08 | .99 | .99 | 2.06 | NC | 8.67 | | |
| Any Control of Cooling | 1.09 | 1.09 | 1.12 | .97 | 1.18 | 2.03 | 1.07 | 9.17 | | |
| With Thermostats | 1.09 | 1.09 | 1.11 | .99 | 1.15 | 2.04 | 1.03 | 9.40 | | |
| Reduced Use During Off-Hours | | | | | | | | | | |
| Heating Only | .91 | .91 | .69 | 1.06 | .79 | 1.27 | NC | 21.09 | | |
| Cooling Only | 1.40 | 1.19 | 1.37 | 1.02 | 1.27 | 2.13 | Q | 23.62 | | |
| Heating and Cooling | 1.10 | 1.10 | 1.11 | 1.06 | .99 | 1.53 | NC | 7.93 | | |
| Computerized Energy Management and Control System | | | | | | | | | | |
| Present in Building | 1.46 | 1.47 | 1.44 | 1.46 | 1.27 | 1.58 | Q | 10.20 | | |
| Controls Heating and Cooling | 1.48 | 1.48 | 1.44 | 1.47 | 1.28 | 1.58 | Q | 10.57 | | |
| Controls Lighting | 1.31 | 1.33 | 1.32 | 1.39 | Q | 1.23 | Q | 13.52 | | |
| Controls Other | 1.72 | 1.73 | 1.75 | 1.75 | Q | 1.75 | Q | 15.64 | | |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for space heating, not statistics on electricity consumed for space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

NC No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

MAJOR FUELS

Table 16. Consumption and Gross Energy Intensity by Census Region for Sum of Major Fuels

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | | Total Floorspace of Buildings (million square feet) | | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | | RSE Row Factor |
|--|--|----------|-------|-------|---|----------|--------|--------|--|----------|-------|-------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor | 1.000 | 1.146 | 1.160 | 1.205 | 0.691 | 0.691 | 0.619 | 0.640 | 1.052 | 1.055 | 0.997 | 0.911 | |
| All Buildings | 1,354 | 1,659 | 1,648 | 1,126 | 13,569 | 15,955 | 22,039 | 11,620 | 99.8 | 104.0 | 74.8 | 96.9 | 0.90 |
| Building Floorspace (Square Feet) | | | | | | | | | | | | | |
| 1,001 to 5,000 | 131 | 193 | 233 | 135 | 1,047 | 1,612 | 2,852 | 1,279 | 125.3 | 119.5 | 81.7 | 105.7 | 0.86 |
| 5,001 to 10,000 | 117 | 118 | 232 | 100 | 1,271 | 1,468 | 2,530 | 1,263 | 92.3 | 80.2 | 91.8 | 79.0 | 13.58 |
| 10,001 to 25,000 | 180 | 225 | 233 | 152 | 1,980 | 2,250 | 4,109 | 2,054 | 91.0 | 100.1 | 56.7 | 74.1 | 12.36 |
| 25,001 to 50,000 | 174 | 221 | 205 | 157 | 1,722 | 2,049 | 3,322 | 1,708 | 100.8 | 108.1 | 61.6 | 91.7 | 15.51 |
| 50,001 to 100,000 | 171 | 253 | 219 | 212 | 1,507 | 2,362 | 3,632 | 1,630 | 113.6 | 107.0 | 60.4 | 130.0 | 10.30 |
| 100,001 to 200,000 | 182 | 253 | 210 | 132 | 2,079 | 2,232 | 2,226 | 1,739 | 87.7 | 113.2 | 94.3 | 75.9 | 20.27 |
| 200,001 to 500,000 | 203 | 192 | 209 | 95 | 1,508 | 2,593 | 2,088 | 832 | 134.4 | 74.0 | 99.9 | 113.7 | 30.39 |
| Over 500,000 | 196 | Q | 108 | Q | 2,454 | 1,390 | 1,281 | 1,115 | 79.8 | 147.5 | 84.2 | 128.6 | 26.59 |
| Year Constructed | | | | | | | | | | | | | |
| 1899 or Before | 66 | 30 | 7 | Q | 743 | 445 | 308 | Q | 88.5 | 68.1 | 23.8 | Q | 22.09 |
| 1900 to 1919 | 84 | 68 | Q | 42 | 1,408 | 1,602 | 628 | 606 | 59.4 | 42.6 | Q | 68.9 | 28.82 |
| 1920 to 1945 | 223 | 263 | 73 | 76 | 2,574 | 2,401 | 2,250 | 873 | 86.6 | 109.6 | 32.5 | 87.4 | 20.65 |
| 1946 to 1959 | 206 | 236 | 326 | 219 | 2,196 | 2,250 | 4,089 | 1,975 | 94.0 | 105.1 | 79.7 | 111.0 | 10.54 |
| 1960 to 1969 | 369 | 375 | 300 | 230 | 2,736 | 3,286 | 4,057 | 2,089 | 135.0 | 114.3 | 73.9 | 110.3 | 14.69 |
| 1970 to 1979 | 218 | 375 | 463 | 286 | 2,030 | 3,160 | 5,217 | 2,923 | 107.2 | 118.6 | 88.8 | 97.9 | 15.00 |
| 1980 to 1983 | 60 | 101 | 190 | 81 | 439 | 893 | 1,926 | 1,015 | 136.8 | 113.2 | 98.9 | 79.6 | 19.70 |
| 1984 to 1986 | 80 | 117 | 153 | 115 | 849 | 1,218 | 2,437 | 1,166 | 94.2 | 95.9 | 62.6 | 98.4 | 18.77 |
| 1987 to 1989 | Q | 93 | 90 | 52 | 593 | 700 | 1,127 | 816 | 82.0 | 133.2 | 79.7 | 63.7 | 24.19 |
| BUILDING USE | | | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | | | |
| Assembly | 93 | 109 | 159 | 80 | 1,507 | 1,408 | 2,822 | 1,174 | 61.9 | 77.2 | 56.4 | 67.8 | 18.01 |
| Education | 149 | 225 | 151 | Q | 1,888 | 2,221 | 2,332 | 1,634 | 78.9 | 101.1 | 64.9 | 109.6 | 15.91 |
| Food Sales | Q | Q | 49 | Q | Q | Q | 278 | Q | Q | Q | 176.6 | Q | 21.40 |
| Food Service | 57 | 62 | 86 | 50 | 284 | 339 | 370 | 173 | 200.7 | 182.5 | 231.7 | 289.3 | 22.89 |
| Health Care | 76 | 250 | 73 | 51 | 378 | 912 | 472 | 292 | 201.7 | 273.6 | 154.0 | 173.5 | 23.65 |
| Lodging | 96 | 143 | 101 | 85 | 549 | 982 | 1,215 | 730 | 175.6 | 145.8 | 82.8 | 116.8 | 22.74 |
| Mercantile and Service | 308 | 309 | 294 | 137 | 2,647 | 3,059 | 4,778 | 1,882 | 116.3 | 101.1 | 61.5 | 73.0 | 11.56 |
| Office | 265 | 275 | 365 | 326 | 2,703 | 2,281 | 3,817 | 3,001 | 97.9 | 120.4 | 95.5 | 108.6 | 12.20 |
| Parking Garage | Q | 11 | Q | Q | 160 | 384 | 245 | 194 | Q | 28.9 | Q | Q | 42.50 |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Warehouse | 137 | 182 | 175 | 41 | 1,811 | 2,639 | 3,422 | 1,381 | 75.6 | 69.1 | 51.2 | 29.9 | 24.42 |
| Other | Q | 35 | Q | Q | 161 | 178 | 821 | 369 | Q | 193.6 | 160.1 | Q | 37.40 |
| Vacant | 31 | 20 | Q | 9 | 905 | 1,349 | 1,326 | 581 | 34.2 | 15.1 | Q | 15.2 | 23.87 |
| Weekly Operating Hours | | | | | | | | | | | | | |
| 39 or Fewer | 47 | 56 | 66 | 36 | 973 | 1,293 | 2,833 | 973 | 47.8 | 42.9 | 23.2 | 36.6 | 14.98 |
| 40 to 48 | 175 | 257 | 417 | 149 | 2,610 | 2,777 | 6,427 | 2,091 | 67.1 | 92.4 | 64.9 | 71.1 | 17.70 |
| 49 to 60 | 248 | 249 | 257 | 171 | 2,799 | 3,207 | 4,529 | 2,937 | 88.5 | 77.6 | 56.8 | 58.2 | 10.40 |
| 61 to 84 | 244 | 305 | 281 | 161 | 2,983 | 2,807 | 3,171 | 1,817 | 82.0 | 108.6 | 88.6 | 88.8 | 12.38 |
| 85 to 167 | 230 | 297 | 241 | 230 | 2,368 | 3,091 | 2,244 | 1,683 | 97.0 | 96.0 | 107.5 | 136.9 | 21.53 |
| 168 (Open Continuously) | 411 | 497 | 386 | 379 | 1,835 | 2,781 | 2,835 | 2,119 | 223.9 | 178.8 | 136.2 | 178.7 | 17.32 |
| Workers | | | | | | | | | | | | | |
| 4 or Fewer | 162 | 190 | 218 | 127 | 2,618 | 3,973 | 6,011 | 2,543 | 61.7 | 47.7 | 36.3 | 50.0 | 11.82 |
| 5 to 9 | 112 | 137 | 184 | 100 | 1,375 | 1,812 | 3,455 | 1,296 | 81.8 | 75.9 | 53.4 | 76.9 | 14.49 |
| 10 to 19 | 113 | 164 | 158 | 105 | 1,253 | 1,433 | 2,291 | 1,468 | 90.1 | 114.3 | 69.1 | 71.5 | 14.66 |
| 20 to 49 | 225 | 256 | 292 | 166 | 2,265 | 2,196 | 3,538 | 1,666 | 99.2 | 116.6 | 82.6 | 99.9 | 13.57 |
| 50 to 99 | 155 | 206 | 228 | 112 | 1,781 | 2,188 | 2,261 | 1,160 | 86.8 | 94.2 | 101.0 | 96.1 | 17.64 |
| 100 to 249 | 270 | 311 | 253 | 158 | 1,656 | 2,050 | 1,623 | 1,441 | 163.2 | 151.5 | 155.9 | 109.5 | 21.01 |
| 250 or More | 318 | 396 | 314 | 358 | 2,619 | 2,303 | 2,860 | 2,047 | 121.3 | 171.9 | 109.8 | 175.1 | 22.32 |

See footnotes at end of table.

Table 16. Consumption and Gross Energy Intensity by Census Region for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | | Total Floorspace of Buildings (million square feet) | | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | | RSE Row Factor |
|---|--|----------|-------|-------|---|----------|--------|--------|--|----------|-------|-------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.246 | 1.155 | 1.156 | 1.250 | 0.966 | 0.801 | 0.810 | 0.840 | 1.082 | 0.882 | 0.907 | 0.911 | |
| Ownership and Occupancy | | | | | | | | | | | | | |
| Nongovernment Owned | 1,000 | 1,294 | 1,206 | 739 | 10,335 | 12,619 | 17,086 | 8,801 | 96.8 | 102.6 | 70.6 | 84.0 | 9.49 |
| Owner Occupied | 832 | 1,072 | 882 | 544 | 8,281 | 10,003 | 11,893 | 5,776 | 100.5 | 107.2 | 74.2 | 94.2 | 10.21 |
| Single Establishment | 643 | 872 | 721 | 432 | 5,733 | 7,689 | 9,364 | 4,294 | 112.2 | 113.4 | 77.0 | 100.7 | 12.13 |
| Multiple Establishment | 189 | 201 | 161 | 112 | 2,547 | 2,314 | 2,529 | 1,482 | 74.2 | 86.7 | 63.7 | 75.4 | 13.04 |
| Nonowner Occupied | 168 | 222 | 324 | 195 | 2,055 | 2,616 | 5,193 | 3,025 | 81.7 | 84.9 | 62.3 | 64.5 | 14.26 |
| Single Establishment | 76 | 103 | 192 | 101 | 902 | 1,166 | 2,861 | 1,318 | 84.3 | 88.0 | 67.1 | 76.4 | 10.79 |
| Multiple Establishment | 87 | 111 | 105 | 91 | 991 | 1,165 | 1,588 | 1,496 | 88.1 | 94.9 | 66.2 | 60.7 | 17.42 |
| Vacant | Q | 9 | Q | Q | 162 | 284 | 744 | 211 | Q | 30.9 | Q | Q | 29.72 |
| Government Owned | 354 | 365 | 443 | 387 | 3,233 | 3,336 | 4,953 | 2,819 | 109.6 | 109.4 | 89.4 | 137.1 | 17.06 |
| Federal | Q | Q | 110 | Q | 183 | Q | 913 | Q | Q | Q | 120.5 | 182.1 | 33.52 |
| State | 177 | 134 | 131 | Q | 911 | 904 | 1,340 | 748 | 194.2 | 148.2 | 97.4 | Q | 26.88 |
| Local | 161 | 218 | 202 | 111 | 2,139 | 2,341 | 2,699 | 1,343 | 75.4 | 92.9 | 74.9 | 82.5 | 16.94 |
| Multibuilding Facility | | | | | | | | | | | | | |
| Not on Multibuilding Facility | 698 | 892 | 828 | 469 | 8,802 | 10,472 | 12,405 | 5,558 | 79.3 | 85.2 | 66.7 | 84.5 | 8.14 |
| Part of Multibuilding Facility | 657 | 767 | 821 | 656 | 4,766 | 5,483 | 9,635 | 6,062 | 137.7 | 139.9 | 85.2 | 108.3 | 15.15 |
| On Facility with Central Plant | 391 | 454 | 377 | 372 | 1,732 | 2,075 | 2,590 | 1,949 | 225.5 | 218.7 | 145.4 | 190.8 | 24.66 |
| Percent Vacant at Least Three Months | | | | | | | | | | | | | |
| 0 | 998 | 1,211 | 1,281 | 830 | 8,899 | 10,656 | 15,751 | 7,774 | 112.1 | 113.7 | 81.3 | 106.8 | 9.33 |
| 1 to 50 | 265 | 387 | 263 | 172 | 3,086 | 3,403 | 3,693 | 2,254 | 85.7 | 113.7 | 71.3 | 76.2 | 14.53 |
| 51 to 99 | Q | 33 | 23 | Q | 673 | 1,203 | 831 | Q | 95.3 | Q | 27.8 | 121.0 | 32.77 |
| 100 | 28 | 28 | 82 | 26 | 910 | 693 | 1,765 | 780 | 30.8 | 40.9 | 46.3 | 32.8 | 24.21 |
| Months in Use Out of Past 12 Months | | | | | | | | | | | | | |
| 0 to 8 | 31 | 45 | 58 | 39 | 756 | 942 | 2,013 | 840 | 41.6 | 48.1 | 28.9 | 46.3 | 23.54 |
| 9 to 11 | 72 | 60 | 87 | 53 | 1,136 | 704 | 1,180 | 760 | 63.5 | 84.8 | 73.9 | 69.6 | 20.08 |
| 12 | 1,251 | 1,554 | 1,503 | 1,034 | 11,677 | 14,309 | 18,846 | 10,020 | 107.1 | 108.6 | 79.8 | 103.2 | 9.86 |
| LOCATION | | | | | | | | | | | | | |
| Metropolitan Status | | | | | | | | | | | | | |
| Metropolitan | 1,102 | 1,341 | 1,323 | 1,014 | 11,561 | 12,652 | 16,220 | 10,376 | 95.3 | 106.0 | 81.5 | 97.7 | 9.82 |
| Nonmetropolitan | 253 | 318 | 326 | 112 | 2,008 | 3,303 | 5,819 | 1,244 | 125.8 | 96.4 | 56.0 | 90.0 | 16.46 |
| Climate Zone: 45-Year Average | | | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | | | |
| Over 7,000 HDD | 101 | 424 | NC | 93 | 953 | 3,419 | NC | 690 | 105.4 | 123.9 | NC | 134.2 | 17.86 |
| 5,500-7,000 HDD | 677 | 893 | NC | 285 | 6,356 | 9,171 | NC | 2,430 | 106.5 | 97.3 | NC | 117.5 | 16.44 |
| 4,000-5,499 HDD | 577 | 343 | 358 | 114 | 6,259 | 3,366 | 4,542 | 1,219 | 92.2 | 102.0 | 78.8 | 93.7 | 16.17 |
| Under 4,000 HDD | NC | NC | 593 | 523 | NC | NC | 7,221 | 5,682 | NC | NC | 82.1 | 92.0 | 14.68 |
| 2,000 CDD or More and -- | | | | | | | | | | | | | |
| Under 4,000 HDD | NC | NC | 698 | 111 | NC | NC | 10,277 | 1,600 | NC | NC | 67.9 | 69.3 | 14.98 |
| STRUCTURE | | | | | | | | | | | | | |
| Floors | | | | | | | | | | | | | |
| 1 | 271 | 466 | 751 | 318 | 3,667 | 4,870 | 10,838 | 4,380 | 74.0 | 95.7 | 69.3 | 72.7 | 11.47 |
| 2 | 386 | 412 | 426 | 309 | 3,109 | 3,866 | 5,922 | 3,216 | 124.0 | 106.6 | 71.9 | 95.9 | 12.77 |
| 3 | 254 | 188 | 161 | 162 | 2,260 | 2,842 | 2,221 | 1,281 | 112.5 | 66.3 | 72.4 | 126.3 | 18.80 |
| 4 to 6 | 215 | 303 | 150 | Q | 2,488 | 2,534 | 1,601 | 1,690 | 86.4 | 119.5 | 93.7 | 133.5 | 20.95 |
| 7 or More | 228 | 290 | 161 | 112 | 2,044 | 1,844 | 1,456 | 1,053 | 111.7 | 157.4 | 110.5 | 105.9 | 21.21 |
| Wall Materials | | | | | | | | | | | | | |
| Masonry | 911 | 1,317 | 1,076 | 615 | 9,751 | 11,860 | 14,362 | 6,100 | 93.5 | 111.1 | 74.9 | 100.8 | 9.58 |
| Siding or Shingles | 88 | 71 | 78 | 88 | 1,292 | 1,013 | 1,396 | 1,087 | 67.9 | 70.5 | 55.7 | 81.4 | 18.80 |
| Metal Panels | Q | 116 | 149 | 59 | 669 | 1,420 | 2,788 | 812 | Q | 81.5 | 53.4 | 72.3 | 20.29 |
| Concrete Panels | 100 | 87 | 239 | 280 | 899 | 1,061 | 2,531 | 2,730 | 111.0 | 82.1 | 94.5 | 102.4 | 26.78 |
| Window Glass | 83 | 47 | 38 | 56 | Q | 316 | 356 | 589 | 124.6 | 148.5 | 107.5 | 95.2 | 29.24 |
| Other | 39 | 21 | 68 | 28 | 294 | 286 | Q | 302 | 132.0 | 74.4 | Q | 92.4 | 29.80 |

See footnotes at end of table.

Table 16. Consumption and Gross Energy Intensity by Census Region for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | | Total Floorspace of Buildings (million square feet) | | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | | RSE Row Factor |
|--|--|--------------|--------------|--------------|---|--------------|--------------|--------------|--|--------------|--------------|--------------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.248 | 1.155 | 1.156 | 1.236 | 0.888 | 0.881 | 0.819 | 0.940 | 1.082 | 0.852 | 0.857 | 0.914 | |
| Roof Materials | | | | | | | | | | | | | |
| Built-Up | 547 | 809 | 960 | 702 | 5,738 | 8,083 | 10,861 | 6,374 | 95.3 | 100.1 | 88.4 | 110.2 | 11.47 |
| Shingles (Not Wood) | 224 | 216 | 171 | 184 | 2,884 | 2,274 | 3,456 | 2,303 | 77.5 | 95.1 | 49.3 | 79.8 | 13.71 |
| Metal Surfacing | 205 | 127 | 201 | 64 | 1,537 | 1,694 | 3,865 | 1,101 | 133.3 | 74.9 | 52.0 | 57.8 | 18.81 |
| Synthetic or Rubber | 247 | 315 | 229 | 58 | 1,789 | 2,402 | 2,152 | 568 | 138.2 | 131.2 | 106.5 | 103.0 | 19.84 |
| Slate or Tile | 49 | 41 | 41 | 75 | 673 | 506 | 811 | 592 | 73.5 | 81.5 | 50.0 | 126.4 | 30.48 |
| Concrete | Q | 33 | 24 | 15 | Q | 407 | 641 | 265 | 62.7 | 81.2 | 36.8 | 58.0 | 27.53 |
| Wooden Materials | Q | 14 | Q | 16 | Q | 223 | Q | 244 | Q | 64.5 | Q | 63.6 | 26.76 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | | | | | |
| Roof or Ceiling Insulation | 922 | 1,364 | 1,370 | 830 | 8,842 | 11,620 | 16,010 | 8,620 | 104.3 | 117.4 | 85.6 | 96.3 | 10.03 |
| Wall Insulation | 679 | 973 | 859 | 544 | 6,028 | 8,188 | 10,069 | 5,407 | 112.7 | 118.9 | 85.3 | 100.6 | 12.82 |
| Storm or Multiple Glazing | 650 | 1,091 | 513 | 303 | 6,133 | 8,829 | 6,362 | 2,744 | 105.9 | 123.6 | 80.6 | 110.5 | 9.82 |
| Tinted, Reflective, or Shading Glass | 465 | 669 | 706 | 546 | 3,728 | 4,994 | 7,934 | 5,384 | 124.8 | 133.9 | 88.9 | 101.4 | 13.01 |
| Exterior or Interior Shadings or Awnings | 595 | 763 | 775 | 586 | 5,801 | 6,340 | 9,303 | 4,728 | 102.6 | 120.4 | 83.3 | 123.9 | 11.81 |
| Weather Stripping or Caulking | 1,043 | 1,414 | 1,284 | 809 | 9,878 | 12,044 | 15,036 | 7,736 | 105.5 | 117.4 | 85.4 | 104.6 | 9.90 |
| None of the Above | 96 | 72 | 97 | 71 | 1,554 | 2,099 | 2,931 | 1,183 | 61.6 | 34.2 | 33.0 | 60.1 | 24.42 |
| ENERGY SOURCES AND END USES * | | | | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 1,353 | 1,656 | 1,647 | 1,126 | 13,326 | 15,704 | 21,215 | 11,318 | 101.5 | 105.4 | 77.7 | 99.5 | 8.94 |
| Natural Gas | 884 | 1,464 | 1,064 | 924 | 8,517 | 12,815 | 11,660 | 8,151 | 103.8 | 114.2 | 91.2 | 113.4 | 11.12 |
| Fuel Oil | 573 | 496 | 303 | 216 | 5,127 | 3,197 | 2,844 | 1,432 | 111.8 | 155.2 | 106.5 | 151.2 | 21.69 |
| District Heat | 337 | 320 | 259 | Q | 2,236 | 1,509 | 1,583 | Q | 150.6 | 212.0 | 163.7 | 232.9 | 27.28 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | 97 | 114 | 130 | Q | 1,073 | 1,061 | 1,738 | Q | 90.4 | 107.3 | 74.5 | 136.2 | 26.66 |
| Other | 26 | 35 | 16 | Q | 370 | 552 | 456 | Q | Q | 62.9 | 34.8 | Q | 32.70 |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | | | | |
| Heated Buildings | 1,350 | 1,647 | 1,568 | 1,101 | 12,969 | 15,067 | 19,170 | 10,662 | 104.1 | 109.3 | 81.8 | 103.3 | 9.26 |
| Air-Conditioned Buildings | 1,028 | 1,500 | 1,590 | 982 | 10,334 | 13,159 | 18,957 | 9,320 | 99.5 | 114.0 | 83.9 | 105.4 | 9.25 |
| Buildings with Water Heating | 1,305 | 1,588 | 1,504 | 1,066 | 12,447 | 14,211 | 16,925 | 10,002 | 104.8 | 111.7 | 88.9 | 106.6 | 9.53 |
| Buildings with Cooking | 694 | 792 | 694 | 574 | 5,870 | 6,490 | 7,194 | 4,114 | 118.3 | 122.1 | 96.5 | 139.7 | 12.82 |
| Buildings with Manufacturing | 117 | 194 | 222 | Q | 1,026 | 1,538 | 1,732 | 1,304 | 113.9 | 125.9 | 128.0 | 135.3 | 26.44 |
| Energy End-Use Combinations | | | | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | | | | |
| With Air Conditioning | 556 | 745 | 649 | 508 | 4,965 | 5,908 | 6,543 | 3,371 | 111.9 | 126.2 | 99.1 | 150.6 | 13.13 |
| With Water Heating and Cooking | 461 | 712 | 769 | 422 | 5,163 | 6,701 | 8,999 | 5,041 | 89.2 | 106.3 | 85.4 | 83.6 | 12.38 |
| With Water Heating, Without Cooking | 11 | 37 | 101 | 28 | 176 | 519 | 2,328 | 618 | 62.6 | 70.7 | 43.3 | 45.6 | 20.05 |
| Without Water Heating or Cooking | Q | 45 | Q | 55 | 849 | 568 | Q | 604 | Q | 79.7 | Q | 90.9 | 24.71 |
| Without Air Conditioning With Water Heating and Cooking | 154 | 78 | 22 | 67 | 1,423 | 909 | 582 | 786 | 108.1 | 85.9 | 37.9 | 85.7 | 20.50 |
| Without Water Heating or Cooking | Q | 30 | 17 | 14 | 365 | 453 | 556 | 165 | 86.3 | 65.5 | 30.7 | 84.3 | 26.93 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 3 | 5 | 10 | 5 | 552 | 762 | 1,847 | 696 | 6.0 | 6.7 | 5.5 | 6.9 | 26.42 |
| All Other Combinations | Q | Q | 78 | 28 | Q | Q | 1,125 | 340 | Q | Q | 69.6 | 81.0 | 24.60 |

See footnotes at end of table.

Table 16. Consumption and Gross Energy Intensity by Census Region for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | | Total Floorspace of Buildings (million square feet) | | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | | RSE Flow Factor |
|--|--|----------|-------|-------|---|----------|--------|-------|--|----------|-------|-------|-----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.248 | 1.155 | 1.158 | 1.256 | 0.966 | 0.881 | 0.818 | 0.940 | 1.082 | 0.852 | 0.867 | 0.911 | |
| Space-Heating Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 275 | 235 | 645 | 344 | 2,558 | 2,808 | 8,956 | 4,379 | 107.5 | 83.8 | 72.0 | 78.5 | 11.60 |
| Natural Gas | 628 | 1,294 | 822 | 675 | 5,970 | 11,709 | 9,098 | 6,241 | 105.1 | 110.5 | 90.3 | 108.1 | 11.41 |
| Fuel Oil | 504 | 447 | 243 | 110 | 4,772 | 2,746 | 2,314 | 694 | 105.7 | 163.0 | 105.2 | 158.3 | 18.03 |
| District Heat | 328 | 198 | 256 | Q | 2,209 | 1,143 | 1,577 | 1,202 | 148.5 | 173.4 | 162.2 | 187.9 | 27.55 |
| Propane | Q | Q | 30 | Q | 324 | 435 | 887 | 121 | Q | Q | 33.8 | 74.8 | 34.15 |
| Other | Q | 13 | Q | Q | 301 | 210 | Q | Q | 70.8 | 60.9 | 27.5 | Q | 33.33 |
| Main Space-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 103 | 151 | 477 | 247 | 1,351 | 1,746 | 6,911 | 3,441 | 76.3 | 86.5 | 69.1 | 71.8 | 12.95 |
| Natural Gas | 550 | 1,254 | 753 | 634 | 5,319 | 11,352 | 8,609 | 5,830 | 103.5 | 110.5 | 87.4 | 108.8 | 12.31 |
| Fuel Oil | 381 | 49 | 60 | Q | 3,860 | 518 | 1,117 | Q | 98.7 | 94.4 | 53.9 | Q | 20.27 |
| District Heat | 324 | 197 | 252 | Q | 2,180 | 1,126 | 1,557 | 1,163 | 148.5 | 175.1 | 161.7 | 185.0 | 27.63 |
| Propane | Q | Q | 14 | Q | 168 | 370 | 608 | Q | Q | Q | 22.8 | Q | 26.10 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | 16.3 | Q | 7.75 |
| Air-Conditioning Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 898 | 1,372 | 1,489 | 822 | 9,308 | 12,298 | 18,062 | 8,243 | 96.5 | 111.5 | 82.4 | 99.7 | 9.38 |
| Natural Gas | 65 | 86 | 43 | 31 | 517 | 673 | 445 | 340 | 126.2 | 128.2 | 96.2 | 90.1 | 27.57 |
| District Chilled Water | 61 | Q | 120 | Q | 332 | 284 | 856 | 465 | 183.4 | 191.6 | 140.4 | Q | 38.40 |
| Other | 49 | Q | Q | Q | 386 | Q | Q | Q | 126.4 | Q | Q | Q | 21.74 |
| Water-Heating Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 356 | 370 | 736 | 300 | 4,029 | 4,384 | 9,136 | 3,945 | 88.4 | 84.4 | 80.5 | 75.9 | 10.72 |
| Natural Gas | 595 | 958 | 612 | 540 | 5,414 | 8,834 | 6,468 | 5,206 | 110.0 | 108.4 | 94.6 | 103.8 | 10.49 |
| Fuel Oil | 179 | Q | 24 | Q | 1,747 | Q | 273 | Q | 102.6 | Q | 89.2 | Q | 27.44 |
| District Heat | 255 | 274 | Q | Q | 1,780 | 1,235 | 877 | Q | 143.2 | 221.7 | 151.6 | 275.8 | 31.04 |
| Propane | 23 | Q | 11 | Q | 276 | 324 | 334 | Q | 82.7 | Q | 32.0 | Q | 41.01 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Cooking Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 231 | 402 | 362 | 162 | 2,705 | 2,923 | 3,666 | 1,555 | 85.3 | 137.6 | 98.8 | 104.2 | 16.75 |
| Natural Gas | 395 | 527 | 376 | 409 | 3,426 | 4,587 | 3,845 | 2,909 | 115.4 | 114.9 | 97.8 | 140.7 | 12.83 |
| Propane | 40 | Q | 29 | Q | 412 | Q | 367 | Q | 95.8 | Q | 79.2 | Q | 32.42 |
| Other | 69 | Q | Q | Q | 387 | 576 | Q | Q | 178.1 | 267.8 | Q | Q | 32.39 |
| Manufacturing Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 69 | 101 | 168 | Q | 682 | 1,047 | 1,560 | 1,116 | 101.4 | 96.3 | 107.7 | 140.8 | 34.70 |
| Natural Gas | Q | 75 | Q | Q | Q | 308 | Q | Q | Q | 241.8 | Q | Q | 34.43 |
| Other | Q | Q | Q | Q | Q | 467 | Q | Q | Q | 145.0 | Q | Q | 36.03 |
| HEATING AND COOLING Percent Heated | | | | | | | | | | | | | |
| Not Heated | 8 | 12 | 81 | 25 | 629 | 907 | 2,902 | 982 | 12.9 | 13.7 | 27.9 | 25.0 | 23.77 |
| 1 to 50 | 71 | 110 | 110 | 80 | 1,766 | 2,396 | 3,338 | 1,814 | 40.4 | 45.9 | 32.9 | 44.1 | 18.43 |
| 51 to 99 | 146 | 176 | 361 | 208 | 1,215 | 1,801 | 3,549 | 2,108 | 119.8 | 97.9 | 101.9 | 98.8 | 17.08 |
| 100 | 1,129 | 1,361 | 1,096 | 813 | 9,959 | 10,851 | 12,250 | 6,716 | 113.4 | 125.4 | 89.5 | 121.0 | 9.86 |
| Percent Cooled | | | | | | | | | | | | | |
| Not Cooled | 326 | 160 | 58 | 143 | 3,234 | 2,797 | 3,082 | 2,300 | 100.8 | 57.2 | 18.8 | 62.3 | 14.46 |
| 1 to 50 | 428 | 438 | 333 | 137 | 4,866 | 5,302 | 5,288 | 2,364 | 88.0 | 82.6 | 63.0 | 57.9 | 14.30 |
| 51 to 99 | 261 | 464 | 432 | 253 | 2,462 | 3,495 | 4,834 | 2,347 | 105.8 | 132.7 | 89.3 | 107.6 | 12.99 |
| 100 | 340 | 597 | 826 | 593 | 3,006 | 4,361 | 8,835 | 4,608 | 113.0 | 137.0 | 93.4 | 128.7 | 18.46 |

See footnotes at end of table.

Table 16. Consumption and Gross Energy Intensity by Census Region for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | | Total Floorspace of Buildings (million square feet) | | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | | RSE Row Factor |
|------------------------------|--|----------|-------|-------|---|----------|--------|-------|--|----------|-------|-------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.246 | 1.155 | 1.158 | 1.256 | 0.966 | 0.861 | 0.819 | 0.840 | 1.062 | 0.852 | 0.867 | 0.911 | |
| LIGHTING | | | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | | | |
| Not Lit | Q | 8 | 5 | Q | 408 | 429 | 1,085 | 437 | Q | 18.7 | 4.8 | Q | 30.17 |
| 1 to 50 | 142 | 171 | 118 | 103 | 1,765 | 3,175 | 4,087 | 1,843 | 80.3 | 53.7 | 28.9 | 55.9 | 13.89 |
| 51 to 99 | 317 | 478 | 480 | 350 | 3,806 | 4,529 | 5,520 | 3,096 | 83.3 | 105.5 | 87.0 | 113.2 | 14.46 |
| 100 | 890 | 1,003 | 1,045 | 670 | 7,590 | 7,822 | 11,347 | 6,245 | 117.3 | 128.3 | 92.1 | 107.3 | 11.51 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

nc No cases in responding sample.

a Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 17. Expenditures by Census Region for Sum of Major Fuels

| Building Characteristics | Sum of Major Fuel Expenditures (million dollars) | | | | Sum of Major Fuel Expenditures (dollars) | | | | | | | | RSE Flow Factor |
|--|--|----------|--------|--------|--|----------|-------|-------|-----------------|----------|-------|-------|-----------------|
| | | | | | per Million Btu | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor | 1.548 | 1.315 | 1.307 | 1.690 | 0.798 | 0.527 | 0.663 | 0.661 | 1.244 | 0.990 | 0.975 | 1.073 | 7.92 |
| All Buildings | 17,505 | 16,468 | 21,759 | 15,093 | 12.92 | 9.92 | 13.20 | 13.41 | 1.29 | 1.03 | 0.99 | 1.30 | |
| Building Floorspace (Square Feet) | | | | | | | | | | | | | |
| 1,001 to 5,000 | 1,900 | 2,207 | 3,575 | 1,919 | 14.49 | 11.46 | 15.35 | 14.19 | 1.82 | 1.37 | 1.25 | 1.50 | 7.94 |
| 5,001 to 10,000 | 1,521 | 1,187 | 3,758 | 1,405 | 12.96 | 10.08 | 16.18 | 14.07 | 1.20 | .81 | 1.49 | 1.11 | 13.53 |
| 10,001 to 25,000 | 2,161 | 2,261 | 3,115 | 2,332 | 11.99 | 10.04 | 13.36 | 15.32 | 1.09 | 1.00 | .76 | 1.14 | 10.89 |
| 25,001 to 50,000 | 2,483 | 2,059 | 2,470 | 1,938 | 14.31 | 9.30 | 12.07 | 12.38 | 1.44 | 1.00 | .74 | 1.13 | 12.74 |
| 50,001 to 100,000 | 1,742 | 2,525 | 3,069 | 2,789 | 10.17 | 9.99 | 14.00 | 13.16 | 1.16 | 1.07 | .85 | 1.71 | 15.76 |
| 100,001 to 200,000 | 2,490 | 2,515 | 2,211 | 2,050 | 13.65 | 9.95 | 10.53 | 15.52 | 1.20 | 1.13 | .99 | 1.18 | 16.70 |
| 200,001 to 500,000 | 2,179 | 1,925 | 2,299 | 1,450 | 10.75 | 10.03 | 11.02 | 15.31 | 1.45 | .74 | 1.10 | 1.74 | 23.29 |
| Over 500,000 | 3,030 | 1,791 | 1,262 | 1,210 | 15.47 | 8.73 | 11.70 | 8.44 | 1.23 | 1.29 | .99 | 1.09 | 20.11 |
| Year Constructed | | | | | | | | | | | | | |
| 1899 or Before | 662 | 265 | 106 | Q | 10.07 | 8.75 | 14.53 | Q | .89 | .60 | .35 | Q | 17.11 |
| 1900 to 1919 | 1,157 | 599 | 321 | 370 | 13.83 | 8.77 | Q | 8.87 | .82 | .37 | .51 | .61 | 20.73 |
| 1920 to 1945 | 2,880 | 2,453 | 908 | 792 | 12.92 | 9.33 | 12.40 | 10.37 | 1.12 | 1.02 | .40 | .91 | 17.88 |
| 1946 to 1959 | 2,569 | 2,112 | 3,752 | 1,901 | 12.45 | 8.93 | 11.51 | 8.67 | 1.17 | .94 | .92 | .96 | 13.61 |
| 1960 to 1969 | 4,255 | 3,569 | 3,827 | 3,242 | 11.52 | 9.51 | 12.76 | 14.07 | 1.56 | 1.09 | .94 | 1.55 | 12.71 |
| 1970 to 1979 | 2,820 | 3,956 | 6,600 | 4,431 | 12.96 | 10.56 | 14.24 | 15.48 | 1.39 | 1.25 | 1.27 | 1.52 | 11.86 |
| 1980 to 1983 | 969 | 1,079 | 2,716 | 1,429 | 16.12 | 10.68 | 14.26 | 17.69 | 2.21 | 1.21 | 1.41 | 1.41 | 14.20 |
| 1984 to 1986 | 1,552 | 1,419 | 2,234 | 1,979 | 19.39 | 12.15 | 14.64 | 17.25 | 1.83 | 1.17 | .92 | 1.70 | 15.22 |
| 1987 to 1989 | 642 | 1,015 | 1,294 | 767 | Q | 10.89 | 14.40 | 14.76 | 1.08 | 1.45 | 1.15 | .94 | 17.41 |
| BUILDING USE | | | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | | | |
| Assembly | 1,266 | 1,031 | 2,868 | 822 | 13.57 | 9.49 | 18.03 | 10.32 | .84 | .73 | 1.02 | .70 | 16.28 |
| Education | 1,664 | 1,848 | 1,733 | 1,345 | 11.17 | 8.23 | 11.44 | 7.50 | .88 | .83 | .74 | .82 | 12.18 |
| Food Sales | Q | Q | 708 | Q | Q | Q | 14.40 | Q | Q | Q | 2.54 | Q | 13.55 |
| Food Service | 794 | 661 | 1,165 | 662 | 13.92 | 10.67 | 13.58 | 13.24 | 2.79 | 1.95 | 3.15 | 3.83 | 15.89 |
| Health Care | 780 | 1,882 | 814 | 576 | 10.23 | 7.54 | 11.19 | 11.37 | 2.06 | 2.06 | 1.72 | 1.97 | 17.45 |
| Lodging | 759 | 1,222 | 1,154 | 879 | 7.88 | 8.54 | 11.47 | 10.30 | 1.38 | 1.24 | .95 | 1.20 | 21.24 |
| Mercantile and Service | 3,739 | 3,430 | 4,183 | 2,175 | 12.14 | 11.09 | 14.24 | 15.83 | 1.41 | 1.12 | .88 | 1.16 | 9.18 |
| Office | 4,489 | 3,189 | 5,261 | 5,384 | 16.97 | 11.61 | 14.43 | 16.52 | 1.66 | 1.40 | 1.38 | 1.79 | 8.79 |
| Parking Garage | 171 | 144 | Q | Q | 9.36 | 12.96 | Q | Q | Q | .38 | Q | Q | 31.86 |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | 0 |
| Warehouse | 1,809 | 1,880 | 1,579 | 817 | 13.22 | 10.31 | 9.02 | 19.79 | 1.00 | .71 | .46 | .59 | 16.83 |
| Other | Q | 421 | Q | Q | Q | 12.19 | 12.24 | 13.92 | Q | 2.36 | 1.96 | Q | 18.77 |
| Vacant | 494 | 227 | 363 | 135 | 15.97 | 11.09 | 9.63 | 15.33 | .55 | .17 | .27 | .23 | 24.60 |
| Weekly Operating Hours | | | | | | | | | | | | | |
| 39 or Fewer | 517 | 529 | 925 | 459 | 11.12 | 9.54 | 14.08 | 12.88 | .53 | .41 | .33 | .47 | 14.12 |
| 40 to 48 | 2,347 | 2,385 | 5,950 | 1,938 | 13.39 | 9.29 | 14.26 | 13.03 | .90 | .86 | .93 | .93 | 12.94 |
| 49 to 60 | 3,514 | 2,799 | 3,638 | 2,610 | 14.19 | 11.25 | 14.14 | 15.26 | 1.26 | .87 | .80 | .89 | 12.50 |
| 61 to 84 | 3,751 | 3,345 | 3,761 | 2,376 | 15.34 | 10.98 | 13.39 | 14.73 | 1.26 | 1.19 | 1.19 | 1.31 | 10.94 |
| 85 to 167 | 3,311 | 3,162 | 2,947 | 2,413 | 14.41 | 10.66 | 12.21 | 10.47 | 1.40 | 1.02 | 1.31 | 1.43 | 13.38 |
| 168 (Open Continuously) | 4,065 | 4,249 | 4,539 | 5,296 | 9.89 | 8.54 | 11.76 | 13.99 | 2.22 | 1.53 | 1.60 | 2.50 | 14.37 |
| Workers | | | | | | | | | | | | | |
| 4 or Fewer | 2,073 | 1,975 | 3,271 | 1,693 | 12.82 | 10.42 | 15.00 | 13.31 | .79 | .50 | .54 | .67 | 8.52 |
| 5 to 9 | 1,323 | 1,486 | 2,638 | 1,455 | 11.76 | 10.81 | 14.31 | 14.60 | .96 | .82 | .76 | 1.12 | 10.49 |
| 10 to 19 | 1,463 | 1,566 | 1,965 | 1,489 | 12.96 | 9.56 | 12.42 | 14.19 | 1.17 | 1.09 | .86 | 1.01 | 12.70 |
| 20 to 49 | 2,502 | 2,606 | 4,524 | 2,091 | 11.13 | 10.18 | 15.48 | 12.57 | 1.10 | 1.19 | 1.28 | 1.26 | 14.00 |
| 50 to 99 | 2,261 | 1,950 | 2,771 | 1,669 | 14.63 | 9.46 | 12.13 | 14.96 | 1.27 | .89 | 1.23 | 1.44 | 13.64 |
| 100 to 249 | 3,275 | 3,021 | 2,725 | 2,134 | 12.12 | 9.72 | 10.77 | 13.52 | 1.98 | 1.47 | 1.68 | 1.48 | 15.59 |
| 250 or More | 4,608 | 3,864 | 3,864 | 4,562 | 14.50 | 9.76 | 12.31 | 12.73 | 1.76 | 1.68 | 1.35 | 2.23 | 15.61 |

See footnotes at end of table.

MAJOR FUELS

Table 17. Expenditures by Census Region for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Expenditures (million dollars) | | | | Sum of Major Fuel Expenditures (dollars) | | | | | | | | RSE Row Factor |
|---|--|----------|--------|--------|--|----------|-------|-------|-----------------|----------|-------|-------|----------------|
| | | | | | per Million Btu | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.548 | 1.315 | 1.307 | 1.536 | 0.788 | 0.527 | 0.663 | 0.681 | 1.244 | 0.999 | 0.978 | 1.073 | |
| Ownership and Occupancy | | | | | | | | | | | | | |
| Nongovernment Owned | 13,451 | 13,360 | 15,527 | 11,150 | 13.45 | 10.32 | 12.88 | 15.08 | 1.30 | 1.06 | 0.91 | 1.27 | 7.22 |
| Owner Occupied | 10,716 | 10,612 | 11,144 | 7,598 | 12.88 | 9.90 | 12.63 | 13.96 | 1.29 | 1.06 | .94 | 1.32 | 6.31 |
| Single Establishment | 7,443 | 8,324 | 8,935 | 5,810 | 11.57 | 9.55 | 12.39 | 13.43 | 1.30 | 1.08 | .95 | 1.35 | 9.90 |
| Multiple Establishment | 3,273 | 2,288 | 2,209 | 1,788 | 17.32 | 11.40 | 13.71 | 16.00 | 1.28 | .99 | .87 | 1.21 | 10.72 |
| Nonowner Occupied | 2,735 | 2,748 | 4,384 | 3,552 | 16.29 | 12.38 | 13.55 | 18.22 | 1.33 | 1.05 | .84 | 1.17 | 10.73 |
| Single Establishment | 1,262 | 1,134 | 2,415 | 1,762 | 16.61 | 11.05 | 12.59 | 17.49 | 1.40 | .97 | .84 | 1.34 | 13.47 |
| Multiple Establishment | 1,426 | 1,539 | 1,786 | 1,730 | 16.33 | 13.92 | 17.00 | 19.05 | 1.44 | 1.32 | 1.12 | 1.16 | 13.26 |
| Vacant | Q | 75 | Q | Q | 8.53 | 6.86 | Q | Q | .26 | Q | Q | Q | 26.81 |
| Government Owned | 4,055 | 3,108 | 6,232 | 3,943 | 11.44 | 8.51 | 14.08 | 10.20 | 1.25 | .93 | 1.26 | 1.40 | 17.93 |
| Federal | Q | Q | 1,488 | Q | Q | Q | 13.52 | 7.64 | Q | Q | 1.63 | 1.39 | 24.50 |
| State | 1,884 | 1,112 | 1,342 | Q | 10.65 | 8.31 | 10.28 | 11.99 | 2.07 | 1.23 | 1.00 | Q | 21.69 |
| Local | 1,966 | 1,849 | 3,402 | 1,213 | 12.18 | 8.50 | 16.83 | 10.94 | .92 | .79 | 1.26 | .90 | 16.51 |
| Multibuilding Facility | | | | | | | | | | | | | |
| Not on Multibuilding Facility | 9,973 | 9,364 | 10,854 | 6,792 | 14.29 | 10.49 | 13.12 | 14.47 | 1.13 | .89 | .88 | 1.22 | 6.91 |
| Part of Multibuilding Facility | 7,532 | 7,105 | 10,905 | 8,301 | 11.47 | 9.26 | 13.28 | 12.65 | 1.58 | 1.30 | 1.13 | 1.37 | 13.38 |
| On Facility with Central Plant | 3,518 | 3,730 | 5,087 | 3,788 | 9.01 | 8.22 | 13.50 | 10.19 | 2.03 | 1.80 | 1.96 | 1.94 | 21.87 |
| Percent Vacant at Least Three Months | | | | | | | | | | | | | |
| 0 | 12,303 | 11,871 | 16,953 | 11,612 | 12.33 | 9.80 | 13.24 | 13.99 | 1.38 | 1.11 | 1.08 | 1.49 | 6.25 |
| 1 to 50 | 4,289 | 3,939 | 3,582 | 2,608 | 16.21 | 10.18 | 13.62 | 15.19 | 1.39 | 1.16 | .97 | 1.16 | 11.46 |
| 51 to 99 | 586 | 359 | 302 | Q | 9.13 | 10.93 | 13.08 | 5.85 | .87 | Q | .36 | .71 | 20.52 |
| 100 | 328 | 300 | 923 | 298 | 11.69 | 10.57 | 11.29 | 11.63 | .36 | .43 | .52 | .38 | 18.39 |
| Months in Use Out of Past 12 Months | | | | | | | | | | | | | |
| 0 to 8 | 355 | 501 | 861 | 459 | 11.27 | 11.05 | 14.81 | 11.80 | .47 | .53 | .43 | .55 | 20.54 |
| 9 to 11 | 647 | 553 | 901 | 595 | 8.96 | 9.27 | 10.33 | 11.23 | .57 | .79 | .76 | .78 | 15.00 |
| 12 | 16,504 | 15,414 | 19,997 | 14,039 | 13.19 | 9.92 | 13.30 | 13.58 | 1.41 | 1.08 | 1.06 | 1.40 | 8.02 |
| LOCATION | | | | | | | | | | | | | |
| Metropolitan Status | | | | | | | | | | | | | |
| Metropolitan | 15,207 | 13,481 | 17,801 | 14,114 | 13.80 | 10.05 | 13.46 | 13.92 | 1.32 | 1.07 | 1.10 | 1.36 | 8.51 |
| Nonmetropolitan | 2,298 | 2,987 | 3,959 | 978 | 9.10 | 9.38 | 12.15 | 8.74 | 1.14 | .90 | .68 | .79 | 13.37 |
| Climate Zone: 45-Year Average | | | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | | | |
| Over 7,000 HDD | 1,140 | 3,545 | NC | 811 | 11.34 | 8.37 | NC | 8.75 | 1.20 | 1.04 | NC | 1.17 | 23.93 |
| 5,500-7,000 HDD | 7,544 | 9,301 | NC | 2,369 | 11.15 | 10.42 | NC | 8.30 | 1.19 | 1.01 | NC | .97 | 11.04 |
| 4,000-5,499 HDD | 8,822 | 3,622 | 4,186 | 1,097 | 15.28 | 10.55 | 11.69 | 9.61 | 1.41 | 1.08 | .92 | .90 | 11.86 |
| Under 4,000 HDD | NC | NC | 6,908 | 8,661 | NC | NC | 11.66 | 16.57 | NC | NC | .96 | 1.52 | 9.50 |
| 2,000 CDD or More and -- | | | | | | | | | | | | | |
| Under 4,000 HDD | NC | NC | 10,666 | 2,155 | NC | NC | 15.28 | 19.44 | NC | NC | 1.04 | 1.35 | 12.35 |
| STRUCTURE | | | | | | | | | | | | | |
| Floors | | | | | | | | | | | | | |
| 1 | 4,016 | 5,163 | 10,585 | 4,910 | 14.80 | 11.08 | 14.10 | 15.43 | 1.10 | 1.06 | .98 | 1.12 | 8.61 |
| 2 | 4,477 | 4,200 | 5,449 | 4,471 | 11.61 | 10.19 | 12.79 | 14.49 | 1.44 | 1.09 | .92 | 1.39 | 9.64 |
| 3 | 2,857 | 1,743 | 2,012 | Q | 11.24 | 9.25 | 12.50 | 12.14 | 1.26 | .61 | .91 | 1.53 | 17.44 |
| 4 to 6 | 2,288 | 2,684 | 1,722 | 2,197 | 10.64 | 8.86 | 11.48 | 9.74 | .92 | 1.06 | 1.08 | 1.30 | 17.28 |
| 7 or More | 3,868 | 2,678 | 1,990 | 1,550 | 16.94 | 9.23 | 12.37 | 13.89 | 1.89 | 1.45 | 1.37 | 1.47 | 14.43 |

See footnotes at end of table.

Table 17. Expenditures by Census Region for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Expenditures (million dollars) | | | | Sum of Major Fuel Expenditures (dollars) | | | | | | | | RSE Row Factor |
|--|--|----------|--------|--------|--|----------|-------|-------|-----------------|----------|-------|------|----------------|
| | | | | | per Million Btu | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| WALL MATERIALS | | | | | | | | | | | | | |
| Masonry | 11,801 | 12,576 | 13,419 | 8,255 | 12.95 | 9.55 | 12.47 | 13.42 | 1.21 | 1.06 | 0.93 | 1.35 | 7.77 |
| Siding or Shingles | 1,098 | 765 | 1,130 | 1,180 | 12.51 | 10.70 | 14.53 | 13.34 | .85 | .75 | .81 | 1.09 | 15.10 |
| Metal Panels | 1,460 | 1,263 | 1,935 | 899 | 10.90 | 10.92 | 13.01 | 15.30 | 2.18 | .89 | .69 | 1.11 | 16.70 |
| Concrete Panels | 1,311 | 1,019 | 3,962 | 3,399 | 13.13 | 11.71 | 16.56 | 12.15 | 1.46 | .96 | 1.57 | 1.24 | 21.05 |
| Window Glass | Q | Q | 549 | 930 | 17.19 | 12.01 | 14.33 | 16.58 | 2.14 | 1.78 | 1.54 | 1.58 | 19.82 |
| Other | 415 | 283 | 765 | 431 | 10.68 | Q | Q | 15.45 | 1.41 | Q | 1.26 | 1.43 | 27.74 |
| ROOF MATERIALS | | | | | | | | | | | | | |
| Built-Up | 7,660 | 8,253 | 12,467 | 9,348 | 14.00 | 10.20 | 12.98 | 13.31 | 1.33 | 1.02 | 1.15 | 1.47 | 10.13 |
| Shingles (Not Wood) | 2,830 | 2,207 | 2,565 | 2,438 | 12.66 | 10.21 | 15.04 | 13.26 | .98 | .97 | .74 | 1.06 | 10.91 |
| Metal Surfacing | 2,252 | 1,283 | 2,704 | 1,061 | 10.99 | 10.10 | 13.45 | 16.66 | 1.47 | .76 | .70 | .96 | 14.47 |
| Synthetic or Rubber | 3,051 | 3,041 | 2,801 | 774 | 12.34 | 9.65 | 12.22 | 13.24 | 1.71 | 1.27 | 1.30 | 1.36 | 14.47 |
| Slate or Tile | 463 | 350 | 489 | 845 | 9.35 | 8.48 | 12.05 | 11.30 | .69 | .69 | .60 | 1.43 | 24.74 |
| Concrete | Q | 382 | 437 | 220 | 22.33 | Q | 18.52 | 14.31 | 1.40 | Q | .68 | .83 | 24.44 |
| Wooden Materials | Q | 193 | Q | 277 | Q | 13.42 | Q | 17.82 | Q | .86 | Q | 1.13 | 20.83 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| BUILDING SHELL CONSERVATION FEATURES (Solely or in Combination) | | | | | | | | | | | | | |
| Roof or Ceiling Insulation | 12,228 | 13,499 | 18,218 | 11,124 | 13.26 | 9.90 | 13.30 | 13.39 | 1.38 | 1.16 | 1.14 | 1.29 | 6.18 |
| Wall Insulation | 8,699 | 9,915 | 11,984 | 7,106 | 12.80 | 10.19 | 13.95 | 13.07 | 1.44 | 1.21 | 1.19 | 1.31 | 10.18 |
| Storm or Multiple Glazing | 8,494 | 10,642 | 6,817 | 4,057 | 13.08 | 9.76 | 13.29 | 13.38 | 1.38 | 1.21 | 1.07 | 1.48 | 6.14 |
| Tinted, Reflective, or Shading Glass | 6,557 | 6,795 | 10,076 | 7,664 | 14.10 | 10.16 | 14.28 | 14.04 | 1.76 | 1.36 | 1.27 | 1.42 | 11.24 |
| Exterior or Interior Shadings or Awnings | 8,145 | 7,659 | 10,504 | 7,407 | 13.68 | 10.04 | 13.55 | 12.64 | 1.40 | 1.21 | 1.13 | 1.57 | 6.87 |
| Weather Stripping or Caulking | 14,007 | 14,086 | 17,531 | 10,614 | 13.44 | 9.96 | 13.65 | 13.12 | 1.42 | 1.17 | 1.17 | 1.37 | 8.53 |
| None of the Above | 1,088 | 702 | 1,175 | 960 | 11.37 | 9.78 | 12.15 | 13.50 | .70 | .33 | .40 | .81 | 17.86 |
| ENERGY SOURCES AND END USES * | | | | | | | | | | | | | |
| Energy Sources (Solely or In Combination) | | | | | | | | | | | | | |
| Electricity | 17,497 | 16,456 | 21,755 | 15,093 | 12.93 | 9.94 | 13.21 | 13.41 | 1.31 | 1.05 | 1.03 | 1.33 | 7.25 |
| Natural Gas | 11,031 | 13,816 | 11,868 | 11,510 | 12.47 | 9.44 | 11.16 | 12.46 | 1.30 | 1.08 | 1.02 | 1.41 | 6.39 |
| Fuel Oil | 7,026 | 4,267 | 3,065 | 2,999 | 12.26 | 8.60 | 10.12 | 13.85 | 1.37 | 1.33 | 1.08 | 2.09 | 17.71 |
| District Heat | 4,562 | 2,700 | Q | Q | 13.54 | 8.44 | 10.58 | 9.22 | 2.04 | 1.79 | 1.73 | 2.15 | 21.63 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | 1,444 | 1,237 | 1,486 | Q | 14.87 | 10.86 | 11.47 | 8.06 | 1.35 | 1.17 | .85 | 1.10 | 18.33 |
| Other | 254 | 369 | 251 | Q | 9.92 | 10.64 | 15.79 | Q | .69 | .67 | .55 | Q | 25.91 |
| Energy End Uses (Solely or In Combination) | | | | | | | | | | | | | |
| Heated Buildings | 17,398 | 16,312 | 19,472 | 14,558 | 12.89 | 9.90 | 12.42 | 13.22 | 1.34 | 1.08 | 1.02 | 1.37 | 7.13 |
| Air-Conditioned Buildings | 14,382 | 14,968 | 21,013 | 13,666 | 13.98 | 9.98 | 13.21 | 13.91 | 1.39 | 1.14 | 1.11 | 1.47 | 7.90 |
| Buildings with Water Heating | 16,871 | 15,670 | 19,584 | 14,068 | 12.93 | 9.87 | 13.02 | 13.20 | 1.36 | 1.10 | 1.16 | 1.41 | 8.13 |
| Buildings with Cooking | 8,507 | 7,586 | 9,281 | 6,705 | 12.26 | 9.58 | 13.37 | 11.67 | 1.45 | 1.17 | 1.29 | 1.63 | 10.16 |
| Buildings with Manufacturing | 1,368 | 1,817 | 2,222 | 1,809 | 11.71 | 9.38 | 10.03 | 10.25 | 1.33 | 1.18 | 1.28 | 1.39 | 19.16 |

See footnotes at end of table.

MAJOR FUELS

Table 17. Expenditures by Census Region for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Expenditures (million dollars) | | | | Sum of Major Fuel Expenditures (dollars) | | | | | | | | RSE Row Factor |
|--|--|----------|--------|--------|--|----------|-------|-------|-----------------|----------|-------|-------|----------------|
| | | | | | per Million Btu | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor | 1.548 | 1.318 | 1.267 | 1.268 | 0.781 | 0.627 | 0.582 | 0.691 | 1.244 | 1.009 | 0.978 | 1.071 | |
| Energy End-Use Combinations | | | | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | 7,411 | 7,172 | 8,412 | 5,970 | 13.34 | 9.62 | 12.97 | 11.76 | 1.49 | 1.21 | 1.29 | 1.77 | 10.69 |
| With Water Heating, Without Cooking | 6,826 | 7,284 | 8,967 | 6,646 | 14.82 | 10.23 | 11.67 | 15.77 | 1.32 | 1.09 | 1.00 | 1.32 | 8.77 |
| Without Water Heating or Cooking | 123 | 470 | 1,458 | 496 | 11.14 | 12.80 | 14.46 | 17.59 | .70 | .91 | .63 | .80 | 15.95 |
| Without Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | Q | 389 | Q | 453 | 7.67 | 8.60 | Q | 8.25 | 1.21 | .69 | Q | .75 | 18.93 |
| With Water Heating, Without Cooking | 1,584 | 772 | 257 | 695 | 10.30 | 9.89 | 11.64 | 10.32 | 1.11 | .85 | .44 | .88 | 17.91 |
| Without Water Heating or Cooking | Q | 221 | 191 | 141 | 12.14 | 7.47 | 11.17 | 10.16 | 1.05 | .49 | .34 | .86 | 18.81 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 82 | 104 | 196 | 106 | 24.56 | 20.22 | 19.17 | 22.12 | .15 | .14 | .11 | .15 | 20.77 |
| All Other Combinations | Q | 135 | Q | 587 | Q | 28.51 | 21.33 | Q | Q | Q | Q | 1.73 | 20.10 |
| Space-Heating Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 3,840 | 3,245 | 9,589 | 5,554 | 13.96 | 13.80 | 14.87 | 16.16 | 1.50 | 1.16 | 1.07 | 1.27 | 8.94 |
| Natural Gas | 7,401 | 12,153 | 8,709 | 8,883 | 11.79 | 9.39 | 10.60 | 13.17 | 1.24 | 1.04 | .96 | 1.42 | 8.93 |
| Fuel Oil | 6,094 | 3,765 | 2,335 | 1,296 | 12.08 | 8.41 | 9.60 | 11.79 | 1.28 | 1.37 | 1.01 | 1.87 | 16.63 |
| District Heat | 4,440 | 1,832 | 2,742 | 1,749 | 13.54 | 9.25 | 10.73 | 7.74 | 2.01 | 1.60 | 1.74 | 1.46 | 21.18 |
| Propane | Q | Q | 461 | 162 | 18.87 | 10.13 | 15.36 | 17.83 | 1.24 | 1.34 | .52 | 1.33 | 24.95 |
| Other | 200 | 135 | Q | Q | 9.38 | 10.55 | 14.11 | Q | .66 | .64 | .39 | Q | 25.48 |
| Main Space-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 1,792 | 2,282 | 7,460 | 4,485 | 17.38 | 15.12 | 15.63 | 18.16 | 1.33 | 1.31 | 1.08 | 1.30 | 9.39 |
| Natural Gas | 6,548 | 11,640 | 8,071 | 8,344 | 11.90 | 9.28 | 10.73 | 13.15 | 1.23 | 1.03 | .94 | 1.43 | 9.40 |
| Fuel Oil | 4,664 | 456 | 642 | Q | 12.24 | 9.32 | 10.67 | Q | 1.21 | .88 | .58 | Q | 15.75 |
| District Heat | 4,364 | 1,820 | 2,712 | 1,658 | 13.48 | 9.23 | 10.77 | 7.71 | 2.00 | 1.62 | 1.74 | 1.43 | 21.76 |
| Propane | Q | Q | 273 | Q | Q | 13.03 | 19.66 | Q | Q | Q | .45 | Q | 15.42 |
| Other | Q | Q | Q | Q | Q | Q | 15.93 | Q | Q | Q | .26 | Q | 18.12 |
| Air-Conditioning Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 12,697 | 13,716 | 19,935 | 12,380 | 14.14 | 10.00 | 13.39 | 15.06 | 1.36 | 1.12 | 1.10 | 1.50 | 7.86 |
| Natural Gas | 711 | 886 | 518 | 315 | 10.90 | 10.27 | 12.09 | 10.28 | 1.38 | 1.32 | 1.16 | .93 | 21.15 |
| District Chilled Water | 699 | 440 | 1,196 | Q | 11.46 | 8.09 | 9.95 | 13.90 | 2.10 | 1.55 | 1.40 | Q | 27.92 |
| Other | 875 | Q | Q | Q | 17.92 | Q | Q | Q | 2.26 | Q | Q | Q | 12.32 |
| Water-Heating Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 5,550 | 4,561 | 10,829 | 4,754 | 15.59 | 12.33 | 14.71 | 15.87 | 1.38 | 1.04 | 1.19 | 1.21 | 9.61 |
| Natural Gas | 6,706 | 9,030 | 6,955 | 7,164 | 11.26 | 9.43 | 11.37 | 13.25 | 1.24 | 1.02 | 1.08 | 1.38 | 9.40 |
| Fuel Oil | 2,122 | Q | 219 | Q | 11.84 | Q | 8.98 | Q | 1.21 | Q | .80 | Q | 21.90 |
| District Heat | 3,364 | 2,185 | 1,395 | Q | 13.20 | 7.98 | 10.49 | 9.20 | 1.89 | 1.77 | 1.59 | Q | 25.36 |
| Propane | 382 | Q | 220 | Q | 16.77 | 11.79 | 20.60 | Q | 1.39 | 1.61 | .66 | Q | 24.31 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |

See footnotes at end of table.

Table 17. Expenditures by Census Region for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Expenditures (million dollars) | | | | Sum of Major Fuel Expenditures (dollars) | | | | | | | | RSE Row Factor |
|---|--|----------|--------|-------|--|----------|-------|-------|-----------------|----------|-------|-------|----------------|
| | | | | | per Million Btu | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.548 | 1.315 | 1.307 | 1.538 | 0.788 | 0.527 | 0.683 | 0.691 | 1.244 | 0.890 | 0.970 | 1.073 | |
| Cooking Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 2,944 | 3,789 | 4,984 | 1,967 | 12.75 | 9.42 | 13.76 | 12.14 | 1.09 | 1.30 | 1.36 | 1.27 | 13.54 |
| Natural Gas | 5,172 | 5,056 | 4,582 | 4,402 | 13.08 | 9.60 | 12.19 | 10.76 | 1.51 | 1.10 | 1.19 | 1.51 | 10.07 |
| Propane | 588 | Q | 565 | Q | 14.87 | Q | 19.46 | Q | 1.43 | Q | 1.54 | Q | 20.43 |
| Other | 729 | Q | Q | Q | 10.57 | 7.55 | Q | Q | 1.88 | 2.02 | Q | Q | 24.55 |
| Manufacturing Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 888 | 986 | 1,898 | 1,574 | 12.84 | 9.78 | 11.30 | 10.02 | 1.30 | .94 | 1.22 | 1.41 | 23.54 |
| Natural Gas | Q | 530 | Q | Q | Q | 7.10 | Q | Q | Q | 1.72 | Q | Q | 23.87 |
| Other | Q | Q | Q | Q | Q | 11.48 | Q | Q | Q | 1.67 | Q | Q | 17.06 |
| HEATING AND COOLING | | | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | | | |
| Not Heated | 142 | 160 | Q | 538 | 17.53 | 12.90 | 28.31 | 21.88 | .23 | .18 | .79 | .55 | 24.47 |
| 1 to 50 | 1,074 | 1,285 | 1,604 | 1,462 | 15.05 | 11.70 | 14.61 | 18.26 | .61 | .54 | .48 | .81 | 12.59 |
| 51 to 99 | 1,832 | 1,807 | 4,590 | 3,269 | 12.58 | 10.25 | 12.70 | 15.69 | 1.51 | 1.00 | 1.29 | 1.55 | 12.29 |
| 100 | 14,458 | 13,217 | 13,273 | 9,825 | 12.80 | 9.71 | 12.11 | 12.09 | 1.45 | 1.22 | 1.08 | 1.46 | 7.06 |
| Percent Cooled | | | | | | | | | | | | | |
| Not Cooled | 3,123 | 1,500 | 747 | 1,427 | 9.58 | 9.38 | 12.89 | 9.95 | .97 | .54 | .24 | .62 | 12.91 |
| 1 to 50 | 5,063 | 3,865 | 3,513 | 1,742 | 11.83 | 8.82 | 10.54 | 12.72 | 1.04 | .73 | .66 | .74 | 11.79 |
| 51 to 99 | 3,700 | 4,851 | 5,640 | 3,715 | 14.20 | 10.46 | 13.07 | 14.71 | 1.50 | 1.39 | 1.17 | 1.58 | 10.28 |
| 100 | 5,619 | 6,252 | 11,860 | 8,210 | 16.54 | 10.46 | 14.36 | 13.85 | 1.87 | 1.43 | 1.34 | 1.78 | 11.84 |
| LIGHTING | | | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | | | |
| Not Lit | Q | 72 | 62 | Q | Q | 8.90 | 12.06 | Q | Q | .17 | .06 | Q | 32.72 |
| 1 to 50 | 1,598 | 1,455 | 1,695 | 1,380 | 11.27 | 8.53 | 14.38 | 13.40 | .91 | .46 | .41 | .75 | 10.55 |
| 51 to 99 | 4,279 | 4,900 | 5,965 | 5,012 | 13.50 | 10.26 | 12.42 | 14.31 | 1.12 | 1.08 | 1.08 | 1.62 | 10.77 |
| 100 | 11,559 | 10,042 | 14,037 | 8,643 | 12.99 | 10.01 | 13.43 | 12.90 | 1.52 | 1.28 | 1.24 | 1.38 | 9.95 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

P No applicable RSE row factor.

NC No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

MAJOR FUELS

Table 18. Consumption and Gross Energy Intensity by Building Size for Sum of Major Fuels

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | Total Floorspace of Buildings (million square feet) | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | RSE Column Factor |
|------------------------------------|--|-------------------------------|--------------------------|---|-------------------------------|--------------------------|--|-------------------------------|--------------------------|-------------------|
| | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | |
| RSE Column Factor: | 0.967 | 1.076 | 1.747 | 0.714 | 0.707 | 1.051 | 0.941 | 0.941 | 1.051 | |
| All Buildings | 1,259 | 2,402 | 2,127 | 13,321 | 28,325 | 21,538 | 94.5 | 84.8 | 98.8 | 0.91 |
| Year Constructed | | | | | | | | | | |
| 1899 or Before | 37 | 87 | Q | 569 | 1,016 | Q | 65.5 | 86.0 | Q | 24.42 |
| 1900 to 1919 | 58 | 102 | Q | 737 | 1,783 | Q | 78.2 | 57.4 | Q | 17.67 |
| 1920 to 1945 | 166 | 243 | 227 | 2,105 | 3,479 | 2,514 | 78.6 | 69.9 | 90.3 | 16.15 |
| 1946 to 1959 | 242 | 386 | 360 | 2,596 | 4,605 | 3,309 | 93.1 | 83.8 | 108.9 | 14.53 |
| 1960 to 1969 | 207 | 586 | 482 | 2,224 | 5,600 | 4,344 | 93.3 | 104.6 | 110.9 | 11.99 |
| 1970 to 1979 | 297 | 486 | 560 | 2,606 | 5,692 | 5,031 | 113.8 | 85.4 | 111.2 | 10.40 |
| 1980 to 1983 | 97 | 185 | 151 | 904 | 1,986 | 1,384 | 106.8 | 93.2 | 109.0 | 10.06 |
| 1984 to 1986 | 92 | 186 | 186 | 961 | 2,635 | 2,074 | 95.7 | 70.5 | 89.9 | 10.10 |
| 1987 to 1989 | 64 | 141 | 79 | 619 | 1,528 | 1,088 | 103.8 | 92.1 | 72.4 | 22.27 |
| BUILDING USE | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | |
| Assembly | 149 | 200 | Q | 2,188 | 3,327 | Q | 68.2 | 60.2 | Q | 16.07 |
| Education | 57 | 344 | 303 | 680 | 4,063 | 3,333 | 84.3 | 84.7 | 90.8 | 14.20 |
| Food Sales | 49 | 69 | Q | 256 | 378 | Q | 192.3 | 181.7 | Q | 22.81 |
| Food Service | 203 | 51 | NC | 680 | 486 | NC | 298.8 | 105.8 | NC | 39.81 |
| Health Care | 22 | 51 | 377 | 198 | 345 | 1,511 | 109.5 | 147.1 | 249.3 | 24.00 |
| Lodging | 49 | 264 | 112 | 401 | 1,795 | 1,279 | 123.3 | 146.8 | 87.9 | 13.00 |
| Mercantile and Service | 360 | 410 | 279 | 3,873 | 5,412 | 3,080 | 92.9 | 75.7 | 90.5 | 11.77 |
| Office | 187 | 497 | 546 | 1,781 | 4,755 | 5,266 | 104.8 | 104.5 | 103.7 | 9.60 |
| Parking Garage | 15 | Q | 12 | 145 | Q | 657 | 104.9 | Q | 19.0 | 27.91 |
| Public Order and Safety | 18 | Q | Q | 164 | Q | Q | 109.5 | Q | Q | 20.10 |
| Warehouse | 65 | 258 | 213 | 1,831 | 4,957 | 2,465 | 35.4 | 52.0 | 86.3 | 17.47 |
| Other | Q | 204 | Q | 150 | 989 | Q | 273.8 | 205.9 | Q | 46.80 |
| Vacant | Q | 23 | Q | 974 | 1,430 | Q | 44.4 | 15.9 | Q | 29.89 |
| Weekly Operating Hours | | | | | | | | | | |
| 39 or Fewer | 105 | 83 | Q | 2,733 | 2,675 | Q | 38.6 | 31.0 | Q | 12.68 |
| 40 to 48 | 295 | 495 | 208 | 3,458 | 7,178 | 3,270 | 85.3 | 68.9 | 63.6 | 11.82 |
| 49 to 60 | 202 | 382 | 340 | 2,858 | 6,619 | 3,995 | 70.8 | 57.7 | 85.2 | 10.05 |
| 61 to 84 | 226 | 409 | 357 | 1,714 | 4,366 | 4,697 | 131.6 | 93.6 | 76.0 | 10.44 |
| 85 to 167 | 230 | 379 | 390 | 1,456 | 3,727 | 4,204 | 157.9 | 101.6 | 92.7 | 15.52 |
| 168 (Open Continuously) | 201 | 655 | 817 | 1,102 | 3,760 | 4,707 | 182.0 | 174.2 | 173.6 | 12.50 |
| Workers | | | | | | | | | | |
| 4 or Fewer | 503 | 181 | 12 | 7,550 | 5,836 | 1,759 | 66.6 | 31.0 | 7.1 | 12.88 |
| 5 to 9 | 316 | 210 | Q | 3,076 | 3,986 | Q | 102.8 | 52.6 | Q | 15.97 |
| 10 to 19 | 251 | 272 | Q | 1,772 | 4,066 | Q | 141.5 | 67.0 | Q | 11.41 |
| 20 to 49 | 179 | 659 | 101 | 861 | 6,946 | 1,858 | 208.3 | 94.9 | 54.4 | 10.82 |
| 50 to 99 | Q | 511 | 183 | Q | 4,186 | 3,173 | Q | 122.1 | 57.5 | 11.22 |
| 100 to 249 | Q | 441 | 548 | Q | 2,815 | 3,924 | Q | 156.5 | 139.7 | 10.77 |
| 250 or More | NC | Q | 1,258 | NC | 489 | 9,340 | NC | Q | 134.7 | 12.92 |
| Ownership and Occupancy | | | | | | | | | | |
| Nongovernment Owned | 1,088 | 1,708 | 1,443 | 11,769 | 22,205 | 14,868 | 92.5 | 76.9 | 97.0 | 5.57 |
| Owner Occupied | 834 | 1,311 | 1,186 | 8,552 | 15,876 | 11,527 | 97.5 | 82.6 | 102.9 | 7.54 |
| Single Establishment | 739 | 1,114 | 816 | 7,360 | 12,706 | 7,015 | 100.4 | 87.7 | 116.3 | 6.59 |
| Multiple Establishment | 95 | 198 | 370 | 1,192 | 3,169 | 4,512 | 79.5 | 62.4 | 82.0 | 10.27 |
| Nonowner Occupied | 255 | 397 | 257 | 3,217 | 6,329 | 3,342 | 79.2 | 62.7 | 76.9 | 10.76 |
| Single Establishment | 159 | 199 | 113 | 1,908 | 3,059 | 1,280 | 83.6 | 64.9 | 88.5 | 15.11 |
| Multiple Establishment | 63 | 190 | 141 | 696 | 2,658 | 1,885 | 89.9 | 71.5 | 74.8 | 15.23 |
| Vacant | Q | 8 | Q | 613 | 612 | Q | Q | 12.9 | Q | 32.50 |
| Government Owned | 170 | 694 | 684 | 1,553 | 6,120 | 6,669 | 109.8 | 113.4 | 102.6 | 14.06 |
| Federal | Q | 67 | Q | 85 | 542 | 1,290 | Q | 122.8 | 151.3 | 40.07 |
| State | 35 | 301 | 249 | 328 | 1,652 | 1,922 | 106.4 | 182.2 | 129.4 | 25.02 |
| Local | 125 | 327 | 240 | 1,139 | 3,926 | 3,456 | 109.5 | 83.2 | 69.5 | 14.80 |

See footnotes at end of table.

Table 18. Consumption and Gross Energy Intensity by Building Size for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | Total Floorspace of Buildings (million square feet) | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | RSE Row Factor |
|--------------------------------------|--|-------------------------------|--------------------------|---|-------------------------------|--------------------------|--|-------------------------------|--------------------------|----------------|
| | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | |
| RSE Column Factor: | 0.967 | 1.078 | 1.747 | 0.714 | 0.707 | 1.263 | 0.764 | 0.869 | 1.270 | |
| Multibuilding Facility | | | | | | | | | | |
| Not on Multibuilding Facility | 842 | 1,169 | 875 | 8,859 | 16,869 | 11,508 | 95.1 | 69.3 | 76.1 | 6.65 |
| Part of Multibuilding Facility | 416 | 1,233 | 1,252 | 4,462 | 11,455 | 10,029 | 93.3 | 107.6 | 124.8 | 9.89 |
| On Facility with Central Plant | 87 | 670 | 836 | 408 | 3,246 | 4,692 | 212.6 | 206.4 | 178.2 | 20.24 |
| LOCATION | | | | | | | | | | |
| Census Region | | | | | | | | | | |
| Northeast | 248 | 525 | 581 | 2,318 | 5,210 | 6,041 | 107.2 | 100.8 | 96.2 | 12.75 |
| Midwest | 310 | 700 | 650 | 3,079 | 6,661 | 6,215 | 100.8 | 105.0 | 104.5 | 11.57 |
| South | 465 | 657 | 526 | 5,382 | 11,062 | 5,595 | 86.4 | 59.4 | 94.1 | 10.86 |
| West | 235 | 521 | 370 | 2,542 | 5,392 | 3,686 | 92.5 | 96.6 | 100.4 | 13.83 |
| Census Division | | | | | | | | | | |
| Northeast | | | | | | | | | | |
| New England | 61 | 140 | 98 | 534 | 1,427 | 1,212 | 114.1 | 97.8 | 80.6 | 23.49 |
| Middle Atlantic | 187 | 385 | 483 | 1,783 | 3,782 | 4,830 | 105.1 | 101.9 | 100.1 | 14.82 |
| Midwest | | | | | | | | | | |
| East North Central | 198 | 476 | 412 | 1,967 | 4,527 | 4,187 | 100.8 | 105.2 | 98.3 | 14.52 |
| West North Central | 112 | 223 | 238 | 1,113 | 2,134 | 2,028 | 100.8 | 104.6 | 117.3 | 18.47 |
| South | | | | | | | | | | |
| South Atlantic | 155 | 288 | 238 | 2,155 | 5,404 | 2,531 | 72.0 | 53.4 | 94.2 | 15.41 |
| East South Central | 147 | 132 | 94 | 1,111 | 2,140 | 1,045 | 132.1 | 61.7 | 89.8 | 24.76 |
| West South Central | 163 | 236 | 194 | 2,116 | 3,519 | 2,019 | 77.1 | 67.2 | 96.2 | 16.24 |
| West | | | | | | | | | | |
| Mountain | 100 | 171 | Q | 909 | 2,086 | 1,393 | 110.3 | 82.0 | 128.3 | 21.10 |
| Pacific | 135 | 350 | 191 | 1,633 | 3,306 | 2,293 | 82.5 | 105.8 | 83.4 | 14.39 |
| Metropolitan Status | | | | | | | | | | |
| Metropolitan | 938 | 1,943 | 1,899 | 8,869 | 22,196 | 19,744 | 105.8 | 87.5 | 96.2 | 7.25 |
| Nonmetropolitan | 321 | 460 | 228 | 4,452 | 6,129 | 1,794 | 72.1 | 75.0 | 127.2 | 14.01 |
| Climate Zone: 45-Year Average | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | |
| Over 7,000 HDD | 110 | 366 | 140 | 995 | 2,902 | 1,165 | 110.6 | 126.2 | 120.5 | 16.97 |
| 5,500-7,000 HDD | 365 | 736 | 754 | 3,286 | 7,449 | 7,223 | 111.1 | 98.8 | 104.3 | 12.19 |
| 4,000-5,499 HDD | 242 | 508 | 644 | 2,812 | 6,271 | 6,302 | 85.9 | 81.0 | 102.1 | 15.46 |
| Under 4,000 HDD | 267 | 465 | 383 | 2,993 | 5,544 | 4,366 | 89.3 | 83.8 | 87.8 | 14.97 |
| 2,000 CDD or More and -- | | | | | | | | | | |
| Under 4,000 HDD | 275 | 327 | 206 | 3,236 | 6,159 | 2,481 | 85.0 | 53.2 | 83.2 | 15.79 |
| ENERGY SOURCES AND END USES * | | | | | | | | | | |
| Energy Sources | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Electricity | 1,258 | 2,399 | 2,124 | 12,706 | 27,577 | 21,280 | 99.0 | 87.0 | 99.8 | 6.44 |
| Natural Gas | 913 | 1,658 | 1,765 | 7,378 | 17,410 | 16,356 | 123.8 | 95.2 | 107.9 | 7.62 |
| Fuel Oil | 173 | 486 | 929 | 1,519 | 4,489 | 6,592 | 114.1 | 108.2 | 141.0 | 15.72 |
| District Heat | Q | 456 | 709 | Q | 1,877 | 4,553 | Q | 243.2 | 155.8 | 20.41 |
| District Chilled Water | Q | Q | 202 | Q | Q | 1,372 | Q | Q | 147.4 | 22.75 |
| Propane | 56 | 174 | Q | 1,040 | 1,946 | 1,708 | 53.7 | 89.3 | 130.5 | 26.10 |
| Other | 23 | 31 | Q | 390 | 619 | Q | 58.5 | 50.4 | Q | 33.33 |
| Energy End Uses | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Heated Buildings | 1,197 | 2,361 | 2,109 | 11,378 | 25,848 | 20,641 | 105.2 | 91.3 | 102.2 | 6.45 |
| Air-Conditioned Buildings | 1,020 | 2,107 | 1,974 | 9,374 | 23,045 | 19,351 | 108.8 | 91.4 | 102.0 | 6.64 |
| Buildings with Water Heating | 1,094 | 2,273 | 2,095 | 9,277 | 24,101 | 20,206 | 117.9 | 94.3 | 103.7 | 6.73 |
| Buildings with Cooking | 369 | 884 | 1,502 | 2,307 | 8,263 | 13,098 | 159.9 | 107.0 | 114.7 | 0.22 |
| Buildings with Manufacturing | 53 | 296 | 361 | 489 | 2,593 | 2,520 | 107.5 | 114.0 | 143.1 | 22.62 |

See footnotes at end of table.

MAJOR FUELS

Table 18. Consumption and Gross Energy Intensity by Building Size for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | Total Floorspace of Buildings (million square feet) | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | RSE Row Factor |
|--|--|-------------------------------|--------------------------|---|-------------------------------|--------------------------|--|-------------------------------|--------------------------|----------------|
| | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | |
| RSE Column Factor | 0.967 | 1.075 | 1.247 | 0.714 | 0.767 | 1.263 | 0.784 | 0.895 | 1.270 | |
| Space-Heating Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 319 | 738 | 442 | 3,514 | 9,596 | 5,592 | 90.7 | 76.9 | 79.1 | 9.02 |
| Natural Gas | 792 | 1,386 | 1,240 | 6,711 | 15,009 | 11,297 | 118.1 | 92.3 | 109.7 | 7.98 |
| Fuel Oil | 170 | 422 | 713 | 1,484 | 4,045 | 4,997 | 114.4 | 104.4 | 142.7 | 14.80 |
| District Heat | Q | 369 | 598 | 147 | 1,736 | 4,246 | 279.5 | 212.4 | 140.8 | 23.69 |
| Propane | 26 | Q | Q | 729 | 922 | Q | 36.3 | 89.6 | Q | 36.15 |
| Other | 16 | Q | Q | 339 | 486 | Q | 48.5 | 44.2 | Q | 39.62 |
| Main Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 239 | 428 | 312 | 2,561 | 6,449 | 4,437 | 93.4 | 66.3 | 70.2 | 0.75 |
| Natural Gas | 752 | 1,303 | 1,136 | 6,488 | 14,108 | 10,514 | 116.0 | 92.4 | 108.0 | 8.41 |
| Fuel Oil | 145 | 222 | 130 | 1,306 | 2,756 | 1,536 | 110.7 | 80.7 | 84.9 | 20.14 |
| District Heat | Q | 366 | 580 | 147 | 1,721 | 4,157 | 279.5 | 212.9 | 139.6 | 29.77 |
| Propane | 16 | Q | Q | 652 | 539 | Q | 24.6 | Q | Q | 24.99 |
| Other | 6 | Q | Q | 222 | 416 | Q | 26.4 | Q | Q | 48.12 |
| Air-Conditioning Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 970 | 1,979 | 1,631 | 9,058 | 21,868 | 16,984 | 107.1 | 90.5 | 96.1 | 6.74 |
| Natural Gas | 45 | 70 | 110 | 277 | 958 | 740 | 162.3 | 73.2 | 148.5 | 16.28 |
| District Chilled Water | Q | Q | 219 | Q | 505 | 1,395 | Q | Q | 157.3 | 21.57 |
| Other | Q | Q | Q | Q | Q | 944 | Q | Q | 164.9 | 20.23 |
| Water-Heating Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 431 | 718 | 613 | 4,623 | 9,892 | 6,979 | 93.1 | 72.6 | 87.8 | 9.02 |
| Natural Gas | 601 | 1,145 | 960 | 4,103 | 11,777 | 10,044 | 146.4 | 97.2 | 95.6 | 8.20 |
| Fuel Oil | 41 | 94 | 98 | 297 | 1,183 | 804 | 139.4 | 79.3 | 122.1 | 26.48 |
| District Heat | Q | 310 | 566 | Q | 1,117 | 3,574 | Q | 277.4 | 158.5 | 24.19 |
| Propane | 11 | Q | Q | 237 | 576 | Q | 45.7 | 111.1 | Q | 36.03 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| Cooking Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 143 | 344 | 671 | 956 | 3,999 | 5,895 | 149.3 | 86.0 | 113.8 | 11.55 |
| Natural Gas | 258 | 497 | 953 | 1,254 | 4,593 | 8,919 | 205.8 | 108.1 | 106.8 | 9.69 |
| Propane | 25 | 41 | Q | 292 | 474 | Q | 85.8 | 87.0 | Q | 33.21 |
| Other | Q | Q | Q | Q | Q | 918 | Q | Q | 214.0 | 20.99 |
| Manufacturing Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 43 | 165 | 288 | 390 | 1,898 | 2,117 | 109.7 | 86.8 | 135.9 | 25.90 |
| Natural Gas | Q | 85 | 79 | Q | 394 | 382 | Q | 215.6 | 207.6 | 54.73 |
| Other | Q | Q | Q | Q | 546 | Q | Q | 158.7 | Q | 37.33 |
| HEATING AND COOLING | | | | | | | | | | |
| Percent Heated | | | | | | | | | | |
| Not Heated | 64 | 44 | 18 | 1,984 | 2,528 | 908 | 32.2 | 17.4 | 20.1 | 21.55 |
| 1 to 50 | 114 | 189 | 68 | 1,837 | 4,633 | 2,843 | 62.1 | 40.8 | 23.9 | 16.72 |
| 51 to 99 | 161 | 321 | 410 | 1,521 | 3,382 | 3,771 | 105.6 | 94.9 | 108.8 | 32.74 |
| 100 | 920 | 1,848 | 1,631 | 7,979 | 17,782 | 14,016 | 115.4 | 103.9 | 116.4 | 7.10 |
| Percent Cooled | | | | | | | | | | |
| Not Cooled | 239 | 295 | Q | 3,947 | 5,279 | 2,186 | 60.5 | 55.9 | Q | 12.30 |
| 1 to 50 | 263 | 688 | 386 | 3,174 | 8,964 | 5,683 | 82.8 | 76.7 | 67.9 | 11.15 |
| 51 to 99 | 222 | 462 | 725 | 1,664 | 5,071 | 6,405 | 133.2 | 91.2 | 113.2 | 10.10 |
| 100 | 536 | 957 | 863 | 4,537 | 9,011 | 7,264 | 118.1 | 106.2 | 118.8 | 10.54 |

See footnotes at end of table.

Table 18. Consumption and Gross Energy Intensity by Building Size for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | Total Floorspace of Buildings (million square feet) | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | RSE Row Factor |
|--|--|-------------------------------|--------------------------|---|-------------------------------|--------------------------|--|-------------------------------|--------------------------|----------------|
| | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | |
| RSE Column Factor: | 0.967 | 1.078 | 1.747 | 0.714 | 0.707 | 1.263 | 0.764 | 0.888 | 1.270 | |
| LIGHTING | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | |
| Not Lit | 8 | 11 | Q | 857 | 1,044 | Q | 9.2 | 10.4 | Q | 31.44 |
| 1 to 50 | 210 | 238 | 85 | 3,089 | 5,559 | 2,223 | 67.9 | 42.9 | 38.3 | 13.30 |
| 51 to 99 | 282 | 705 | 638 | 2,836 | 7,446 | 6,668 | 99.4 | 94.6 | 95.7 | 9.97 |
| 100 | 759 | 1,448 | 1,401 | 6,539 | 14,275 | 12,189 | 116.1 | 101.4 | 114.9 | 8.30 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | | |
| Incandescent Lamps | 689 | 1,535 | 1,562 | 7,015 | 16,759 | 15,016 | 98.2 | 91.6 | 104.0 | 7.14 |
| Fluorescent Lamps | 1,200 | 2,363 | 2,120 | 11,475 | 26,372 | 21,045 | 104.6 | 89.6 | 100.7 | 6.42 |
| High-Intensity Discharge Lamps | 137 | 606 | 1,237 | 1,108 | 5,849 | 11,231 | 124.1 | 103.5 | 110.2 | 12.31 |
| Other Lamps | Q | Q | 31 | Q | Q | 280 | Q | Q | 112.2 | 20.79 |
| High-Efficiency Ballasts | 382 | 1,158 | 1,190 | 2,722 | 11,062 | 10,443 | 140.3 | 104.7 | 114.0 | 9.39 |
| ENERGY MANAGEMENT | | | | | | | | | | |
| Occupant Control | | | | | | | | | | |
| Any Control of Heating | 720 | 911 | 700 | 7,249 | 12,144 | 7,650 | 99.3 | 75.0 | 91.5 | 9.04 |
| With Thermostats | 643 | 852 | 664 | 6,339 | 11,196 | 7,239 | 101.4 | 76.1 | 91.7 | 9.74 |
| Any Control of Cooling | 608 | 933 | 779 | 5,911 | 12,023 | 8,381 | 102.9 | 77.6 | 93.0 | 8.61 |
| With Thermostats | 533 | 825 | 756 | 5,269 | 10,747 | 8,027 | 101.1 | 76.8 | 94.2 | 9.37 |
| Reduced Use During Off-Hours | | | | | | | | | | |
| Heating Only | 210 | 278 | Q | 2,289 | 3,260 | 1,598 | 91.7 | 85.4 | Q | 13.59 |
| Cooling Only | 103 | 174 | 151 | 859 | 1,932 | 1,321 | 120.3 | 90.3 | 114.4 | 22.63 |
| Heating and Cooling | 649 | 1,293 | 1,406 | 7,189 | 16,421 | 15,079 | 90.2 | 78.7 | 93.2 | 7.69 |
| Computerized Energy Management and Control System | | | | | | | | | | |
| Present in Building | 79 | 482 | 1,153 | 516 | 4,318 | 9,511 | 153.5 | 111.6 | 121.2 | 11.75 |
| Controls Heating and Cooling | 77 | 460 | 1,131 | 492 | 4,176 | 9,124 | 156.3 | 110.1 | 123.9 | 12.05 |
| Controls Lighting | Q | 98 | 316 | Q | 882 | 2,908 | Q | 111.4 | 108.7 | 17.95 |
| Controls Other | Q | 74 | 260 | Q | 576 | 1,716 | Q | 127.7 | 151.6 | 21.39 |
| Other Energy Management | | | | | | | | | | |
| Regular HVAC Maintenance | 745 | 2,018 | 2,010 | 5,870 | 19,529 | 17,614 | 126.9 | 103.3 | 114.1 | 7.38 |
| Participated in Utility Conservation Program | 92 | 527 | 586 | 839 | 4,319 | 5,668 | 110.1 | 122.1 | 103.4 | 11.75 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

† No applicable RSE row factor.

NC No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

MAJOR FUELS

Table 19. Consumption and Gross Energy Intensity by Selected Principal Building Activities for Sum of Major Fuels

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | Total Floorspace of Buildings (million square feet) | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | RSE Row Factor |
|--|--|--------|-----------|---|--------|-----------|--|--------|-----------|----------------|
| | Mercantile | Office | All Other | Mercantile | Office | All Other | Mercantile | Office | All Other | |
| | RSE Column Factor | 1.329 | 1.121 | 1.113 | 0.944 | 1.000 | 0.686 | 0.987 | 0.980 | 0.883 |
| All Buildings | 1,048 | 1,230 | 3,510 | 12,365 | 11,802 | 39,016 | 84.8 | 104.2 | 90.0 | 6.41 |
| Building Floorspace (Square Feet) | | | | | | | | | | |
| 1,001 to 5,000 | 204 | 108 | 380 | 2,120 | 961 | 3,709 | 96.4 | 112.1 | 102.4 | 7.52 |
| 5,001 to 10,000 | 155 | 79 | 333 | 1,753 | 821 | 3,959 | 88.6 | 96.2 | 84.1 | 12.99 |
| 10,001 to 25,000 | 167 | 185 | 439 | 2,639 | 1,721 | 6,033 | 63.1 | 107.6 | 72.8 | 10.94 |
| 25,001 to 50,000 | 158 | 179 | 419 | 1,395 | 1,459 | 5,948 | 113.5 | 122.5 | 70.5 | 14.98 |
| 50,001 to 100,000 | 85 | 133 | 637 | 1,378 | 1,575 | 6,177 | 61.7 | 84.4 | 103.2 | 14.39 |
| 100,001 to 200,000 | 109 | 151 | 517 | 1,417 | 1,465 | 5,395 | 77.1 | 102.9 | 95.9 | 16.88 |
| 200,001 to 500,000 | Q | 189 | 399 | 692 | 1,695 | 4,635 | 158.9 | 111.7 | 86.0 | 27.81 |
| Over 500,000 | 60 | 206 | 386 | 972 | 2,107 | 3,161 | 61.3 | 97.9 | 122.2 | 23.34 |
| Year Constructed | | | | | | | | | | |
| 1899 or Before | Q | 45 | 54 | 428 | 289 | 937 | 67.0 | 155.9 | 57.5 | 26.86 |
| 1900 to 1919 | 29 | 48 | 163 | 514 | 552 | 3,180 | 56.1 | 87.0 | 51.2 | 24.50 |
| 1920 to 1945 | 91 | 130 | 416 | 1,322 | 1,166 | 5,610 | 68.5 | 111.1 | 74.1 | 16.54 |
| 1946 to 1959 | 141 | 194 | 653 | 1,694 | 1,849 | 6,968 | 83.0 | 105.0 | 93.7 | 16.53 |
| 1960 to 1969 | 295 | 199 | 781 | 2,458 | 1,736 | 7,973 | 120.0 | 114.9 | 97.9 | 14.58 |
| 1970 to 1979 | 281 | 273 | 789 | 3,464 | 2,425 | 7,440 | 81.0 | 112.4 | 106.0 | 11.90 |
| 1980 to 1983 | 75 | 112 | 245 | 873 | 1,174 | 2,226 | 85.7 | 95.7 | 110.2 | 16.22 |
| 1984 to 1986 | 55 | 163 | 246 | 896 | 1,860 | 2,914 | 61.2 | 87.5 | 84.6 | 15.07 |
| 1987 to 1989 | 54 | 66 | 164 | 717 | 750 | 1,768 | 76.0 | 87.4 | 92.6 | 23.05 |
| BUILDING USE | | | | | | | | | | |
| Weekly Operating Hours | | | | | | | | | | |
| 39 or Fewer | 12 | Q | 183 | 286 | Q | 5,670 | 43.2 | Q | 32.2 | 14.45 |
| 40 to 48 | 111 | 333 | 554 | 2,105 | 3,366 | 8,434 | 52.8 | 98.8 | 65.7 | 10.05 |
| 49 to 60 | 206 | 366 | 353 | 3,368 | 4,022 | 6,083 | 61.1 | 90.9 | 58.1 | 10.37 |
| 61 to 84 | 350 | 228 | 413 | 3,902 | 2,390 | 4,485 | 89.8 | 95.5 | 92.0 | 11.75 |
| 85 to 167 | 200 | 73 | 726 | 1,934 | 780 | 6,672 | 103.4 | 93.3 | 108.7 | 15.00 |
| 168 (Open Continuously) | 169 | 222 | 1,282 | 770 | 1,127 | 7,671 | 219.0 | 196.9 | 167.1 | 16.91 |
| Workers | | | | | | | | | | |
| 4 or Fewer | 191 | 37 | 469 | 3,007 | 502 | 11,636 | 63.6 | 72.7 | 40.3 | 9.59 |
| 5 to 9 | 149 | 67 | 318 | 2,127 | 759 | 5,053 | 70.0 | 88.0 | 63.0 | 12.54 |
| 10 to 19 | 116 | 109 | 314 | 1,417 | 1,114 | 3,915 | 82.2 | 98.1 | 80.3 | 12.13 |
| 20 to 49 | 166 | 150 | 624 | 1,943 | 1,492 | 6,230 | 85.2 | 100.5 | 100.1 | 12.88 |
| 50 to 99 | 170 | 131 | 399 | 1,393 | 1,338 | 4,657 | 122.3 | 98.1 | 85.6 | 16.51 |
| 100 to 249 | 173 | 194 | 625 | 1,321 | 1,728 | 3,721 | 130.9 | 112.3 | 167.9 | 18.53 |
| 250 or More | 83 | 542 | 762 | 1,157 | 4,868 | 3,804 | 71.6 | 111.2 | 200.2 | 17.74 |
| Ownership and Occupancy | | | | | | | | | | |
| Nongovernment Owned | 1,005 | 951 | 2,283 | 11,966 | 9,449 | 27,427 | 84.0 | 100.6 | 83.2 | 6.81 |
| Owner Occupied | 700 | 692 | 1,939 | 7,985 | 6,644 | 21,326 | 87.6 | 104.2 | 90.9 | 7.98 |
| Single Establishment | 486 | 393 | 1,790 | 4,945 | 3,046 | 19,091 | 98.2 | 129.1 | 93.7 | 10.35 |
| Multiple Establishment | 214 | 299 | 149 | 3,040 | 3,598 | 2,235 | 70.4 | 83.1 | 66.8 | 10.84 |
| Nonowner Occupied | 305 | 259 | 344 | 3,981 | 2,805 | 6,101 | 76.7 | 92.2 | 56.4 | 12.00 |
| Single Establishment | 111 | 131 | 229 | 1,743 | 1,216 | 3,289 | 63.9 | 107.8 | 69.6 | 15.34 |
| Multiple Establishment | 194 | 128 | 72 | 2,238 | 1,589 | 1,412 | 86.7 | 80.3 | 51.1 | 18.04 |
| Vacant | -- | -- | Q | -- | -- | 1,401 | -- | -- | Q | 19.41 |
| Government Owned | 43 | 279 | 1,227 | 399 | 2,353 | 11,590 | 108.2 | 118.4 | 105.9 | 17.96 |
| Federal | Q | 94 | Q | Q | Q | Q | Q | 117.6 | 167.1 | 36.97 |
| State | Q | 106 | 470 | Q | 618 | 3,214 | Q | 171.9 | 146.2 | 26.71 |
| Local | Q | 78 | 591 | Q | 932 | 7,381 | Q | 83.6 | 80.1 | 15.30 |
| LOCATION | | | | | | | | | | |
| Census Region | | | | | | | | | | |
| Northeast | 308 | 265 | 782 | 2,647 | 2,703 | 8,218 | 116.3 | 97.9 | 95.2 | 13.49 |
| Midwest | 309 | 275 | 1,076 | 3,059 | 2,281 | 10,615 | 101.1 | 120.4 | 101.3 | 11.23 |
| South | 294 | 365 | 990 | 4,778 | 3,817 | 13,445 | 61.5 | 95.5 | 73.6 | 11.04 |
| West | 137 | 326 | 663 | 1,882 | 3,001 | 6,738 | 73.0 | 108.6 | 98.3 | 11.31 |

See footnotes at end of table.

Table 19. Consumption and Gross Energy Intensity by Selected Principal Building Activities for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | Total Floorspace of Buildings (million square feet) | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | RSE Flow Factor |
|--------------------------------------|--|--------|-----------|---|--------|-----------|--|--------|-----------|-----------------|
| | Mercantile | Office | All Other | Mercantile | Office | All Other | Mercantile | Office | All Other | |
| RSE Column Factor: | 1.329 | 1.121 | 1.113 | 0.944 | 1.000 | 0.886 | 0.987 | 0.980 | 0.883 | |
| Census Division | | | | | | | | | | |
| Northeast | | | | | | | | | | |
| New England | 57 | 67 | 174 | 608 | 693 | 1,873 | 93.2 | 97.4 | 93.0 | 19.32 |
| Middle Atlantic | 251 | 197 | 608 | 2,039 | 2,011 | 6,346 | 123.2 | 98.0 | 95.8 | 16.52 |
| Midwest | | | | | | | | | | |
| East North Central | 197 | 180 | 709 | 1,852 | 1,615 | 7,214 | 106.4 | 111.2 | 98.3 | 14.24 |
| West North Central | 112 | 95 | 366 | 1,207 | 666 | 3,402 | 92.8 | 142.6 | 107.7 | 17.70 |
| South | | | | | | | | | | |
| South Atlantic | 124 | 148 | 409 | 2,048 | 1,767 | 6,275 | 60.6 | 84.0 | 65.3 | 16.35 |
| East South Central | 52 | 102 | 218 | 899 | Q | 2,419 | 58.1 | 104.3 | 90.3 | 24.66 |
| West South Central | 117 | 114 | 362 | 1,830 | 1,073 | 4,751 | 64.2 | 106.4 | 76.2 | 14.09 |
| West | | | | | | | | | | |
| Mountain | 50 | 109 | 291 | 797 | 707 | 2,884 | 62.4 | 154.5 | 100.9 | 24.02 |
| Pacific | 88 | 217 | 372 | 1,084 | 2,293 | 3,854 | 80.8 | 94.4 | 96.4 | 15.69 |
| Metropolitan Status | | | | | | | | | | |
| Metropolitan | 773 | 1,102 | 2,904 | 8,987 | 10,698 | 31,124 | 86.0 | 103.1 | 93.3 | 6.80 |
| Nonmetropolitan | 275 | 127 | 606 | 3,379 | 1,104 | 7,892 | 81.4 | 115.2 | 76.8 | 14.82 |
| Climate Zone: 45-Year Average | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | |
| Over 7,000 HDD | 133 | 111 | 372 | 1,322 | 662 | 3,079 | 100.5 | 168.4 | 121.0 | 17.68 |
| 5,500-7,000 HDD | 358 | 338 | 1,159 | 3,327 | 2,873 | 11,757 | 107.5 | 117.7 | 98.6 | 18.07 |
| 4,000-5,499 HDD | 233 | 302 | 858 | 2,642 | 3,105 | 9,638 | 88.1 | 97.2 | 89.0 | 13.42 |
| Under 4,000 HDD | 170 | 327 | 618 | 2,515 | 3,513 | 6,875 | 67.5 | 93.1 | 90.0 | 14.12 |
| 2,000 CDD or More and -- | | | | | | | | | | |
| Under 4,000 HDD | 155 | 151 | 502 | 2,559 | 1,649 | 7,667 | 60.6 | 91.7 | 65.5 | 13.70 |
| ENERGY SOURCES AND END USES * | | | | | | | | | | |
| Energy Sources | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Electricity | 1,047 | 1,227 | 3,508 | 12,361 | 11,796 | 37,406 | 84.7 | 104.0 | 93.8 | 6.20 |
| Natural Gas | 829 | 768 | 2,739 | 8,790 | 7,220 | 25,133 | 94.3 | 106.3 | 109.0 | 8.03 |
| Fuel Oil | 166 | 320 | 1,103 | 1,616 | 2,909 | 8,075 | 102.5 | 110.0 | 136.6 | 16.10 |
| District Heat | Q | 334 | 861 | Q | 2,316 | 4,148 | Q | 144.1 | 207.7 | 24.16 |
| District Chilled Water | Q | Q | 268 | Q | Q | 1,221 | Q | Q | 219.3 | 36.31 |
| Propane | 69 | Q | 377 | 910 | Q | 3,660 | 75.9 | Q | 103.0 | 23.44 |
| Other | 25 | Q | 53 | 516 | Q | 905 | 48.4 | Q | 58.9 | 30.22 |
| Energy End Uses | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Heated Buildings | 1,032 | 1,221 | 3,414 | 12,040 | 11,682 | 34,146 | 85.7 | 104.5 | 100.0 | 6.56 |
| Air-Conditioned Buildings | 852 | 1,208 | 3,041 | 10,803 | 11,635 | 29,332 | 78.9 | 103.8 | 103.7 | 6.31 |
| Buildings with Water Heating | 923 | 1,182 | 3,358 | 10,163 | 11,195 | 32,226 | 90.8 | 105.6 | 104.2 | 6.93 |
| Buildings with Cooking | 415 | 465 | 1,875 | 4,035 | 3,917 | 15,715 | 102.9 | 118.7 | 119.3 | 11.77 |
| Buildings with Manufacturing | 110 | 115 | 484 | 853 | 968 | 3,780 | 129.0 | 118.9 | 127.9 | 25.49 |

See footnotes at end of table.

MAJOR FUELS

Table 19. Consumption and Gross Energy Intensity by Selected Principal Building Activities for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | Total Floorspace of Buildings (million square feet) | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | RSE Row Factor |
|--|--|--------|-----------|---|--------|-----------|--|--------|-----------|----------------|
| | Mercantile | Office | All Other | Mercantile | Office | All Other | Mercantile | Office | All Other | |
| RSE Column Factor: | 1.329 | 1.121 | 1.113 | 0.944 | 1.090 | 0.686 | 0.987 | 0.980 | 0.883 | |
| Energy End-Use Combinations | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | 341 | 451 | 1,666 | 3,865 | 3,751 | 13,170 | 88.2 | 120.2 | 126.5 | 10.82 |
| With Water Heating, | 425 | 707 | 1,231 | 5,281 | 7,241 | 13,381 | 80.4 | 97.7 | 92.0 | 8.40 |
| Without Cooking | | | | | | | | | | |
| Without Water Heating or Cooking | 71 | 36 | 69 | 1,393 | 472 | 1,776 | 51.3 | 76.3 | 39.1 | 17.66 |
| Without Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | Q | Q | 166 | Q | Q | 1,961 | Q | Q | 84.5 | 14.97 |
| With Water Heating, | 83 | Q | 224 | 843 | Q | 2,761 | 98.3 | Q | 81.3 | 18.24 |
| Without Cooking | | | | | | | | | | |
| Without Water Heating or Cooking | 42 | Q | 50 | 529 | Q | 999 | 79.2 | Q | 49.7 | 22.92 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | Q | Q | 21 | Q | Q | 3,762 | Q | Q | 5.7 | 15.11 |
| All Other Combinations | 21 | 14 | 84 | 302 | 170 | 1,205 | 70.1 | 79.8 | 69.3 | 27.33 |
| Space-Heating Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 300 | 411 | 788 | 4,530 | 4,545 | 9,627 | 66.2 | 90.3 | 81.9 | 9.06 |
| Natural Gas | 725 | 530 | 2,163 | 7,427 | 4,990 | 20,600 | 97.6 | 106.2 | 105.0 | 8.67 |
| Fuel Oil | 142 | 190 | 973 | 1,444 | 1,819 | 7,263 | 98.0 | 104.7 | 134.0 | 14.91 |
| District Heat | Q | 335 | 661 | Q | 2,335 | 3,682 | Q | 143.3 | 179.6 | 19.67 |
| Propane | 27 | Q | Q | 510 | Q | 1,231 | 53.0 | Q | 73.0 | 30.21 |
| Other | 14 | Q | 31 | 382 | Q | 567 | 36.1 | Q | 55.6 | 32.23 |
| Main Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 218 | 342 | 419 | 3,330 | 3,908 | 6,210 | 65.3 | 87.4 | 67.5 | 10.26 |
| Natural Gas | 686 | 512 | 1,994 | 6,961 | 4,814 | 19,334 | 98.5 | 106.3 | 103.1 | 9.05 |
| Fuel Oil | 105 | 65 | 327 | 1,099 | 723 | 3,777 | 95.9 | 89.6 | 86.7 | 18.35 |
| District Heat | Q | 319 | 657 | Q | 2,254 | 3,659 | Q | 141.6 | 179.6 | 20.32 |
| Propane | 13 | Q | Q | 362 | Q | 842 | 37.0 | Q | Q | 27.22 |
| Other | 7 | Q | Q | 290 | Q | 434 | 24.5 | Q | Q | 36.28 |
| Air-Conditioning Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 818 | 1,091 | 2,671 | 10,448 | 10,595 | 26,867 | 78.3 | 103.0 | 99.4 | 6.78 |
| Natural Gas | 30 | 42 | 153 | 339 | 283 | 1,354 | 89.1 | 146.9 | 113.2 | 21.80 |
| District Chilled Water | Q | 72 | 284 | Q | 648 | 1,229 | Q | 110.8 | 230.9 | 31.35 |
| Other | Q | 38 | Q | Q | 290 | Q | Q | 129.3 | 179.5 | 18.70 |
| Water-Heating Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 390 | 543 | 829 | 5,785 | 5,522 | 10,187 | 67.4 | 98.3 | 81.4 | 9.39 |
| Natural Gas | 533 | 455 | 1,718 | 4,553 | 4,110 | 17,260 | 117.0 | 110.7 | 99.5 | 9.26 |
| Fuel Oil | 26 | 29 | 179 | 269 | 328 | 1,687 | 97.1 | 87.8 | 105.8 | 22.87 |
| District Heat | Q | 202 | 688 | Q | 1,414 | 3,234 | Q | 142.7 | 212.6 | 25.47 |
| Propane | Q | Q | Q | Q | Q | 916 | Q | Q | 82.0 | 43.40 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Cooking Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 133 | 203 | 821 | 1,537 | 1,690 | 7,623 | 86.8 | 120.3 | 107.7 | 15.79 |
| Natural Gas | 257 | 276 | 1,174 | 2,954 | 2,384 | 9,428 | 87.0 | 115.7 | 124.6 | 12.19 |
| Propane | 14 | Q | 62 | 182 | Q | 723 | 78.0 | Q | 85.6 | 29.87 |
| Other | Q | 28 | 279 | Q | 172 | 965 | Q | 165.5 | 289.5 | 35.53 |

See footnotes at end of table.

Table 19. Consumption and Gross Energy Intensity by Selected Principal Building Activities for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | Total Floorspace of Buildings (million square feet) | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | RSE Row Factor |
|---|--|--------|-----------|---|--------|-----------|--|--------|-----------|----------------|
| | Mercantile | Office | All Other | Mercantile | Office | All Other | Mercantile | Office | All Other | |
| | 1.329 | 1.121 | 1.113 | 0.944 | 1.090 | 0.886 | 0.997 | 0.990 | 0.893 | |
| Manufacturing Energy Source (Solely or in Combination) | | | | | | | | | | |
| Electricity | 62 | 107 | 326 | 575 | Q | 2,960 | 107.4 | 122.9 | 110.3 | 30.79 |
| Natural Gas | Q | Q | 101 | Q | Q | 567 | Q | Q | 178.4 | 34.13 |
| Other | Q | Q | 139 | Q | Q | 749 | Q | Q | 185.5 | 36.49 |
| HEATING AND COOLING Percent Heated | | | | | | | | | | |
| Not Heated | 16 | Q | 100 | 329 | 125 | 4,966 | 48.4 | Q | 20.2 | 22.13 |
| 1 to 50 | 87 | 34 | 249 | 1,905 | 495 | 6,914 | 45.9 | 69.5 | 36.0 | 16.90 |
| 51 to 99 | 148 | 287 | 457 | 2,011 | 3,045 | 3,618 | 73.5 | 94.2 | 126.4 | 14.35 |
| 100 | 797 | 899 | 2,704 | 8,121 | 8,137 | 23,519 | 98.2 | 110.4 | 115.0 | 7.26 |
| Percent Cooled | | | | | | | | | | |
| Not Cooled | 196 | 22 | 470 | 1,562 | 167 | 9,684 | 125.4 | 129.1 | 48.5 | 18.74 |
| 1 to 50 | 303 | 109 | 924 | 3,848 | 984 | 12,989 | 78.7 | 111.0 | 71.2 | 13.14 |
| 51 to 99 | 213 | 435 | 760 | 2,640 | 4,431 | 6,068 | 80.8 | 98.2 | 125.3 | 12.04 |
| 100 | 336 | 664 | 1,356 | 4,315 | 6,220 | 10,275 | 78.0 | 106.7 | 131.9 | 8.69 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | |
| Present in Building | 174 | 812 | 1,287 | 1,823 | 6,571 | 8,290 | 95.7 | 123.6 | 155.3 | 11.18 |
| Not Present | 874 | 417 | 2,223 | 10,542 | 5,231 | 30,726 | 82.9 | 79.8 | 72.4 | 6.76 |
| LIGHTING AND REFRIGERATION Percent Lit When Open | | | | | | | | | | |
| Not Lit | Q | Q | 20 | Q | Q | 2,332 | Q | Q | 8.7 | 21.68 |
| 1 to 50 | 104 | 78 | 351 | 1,911 | 1,035 | 7,923 | 54.6 | 75.2 | 44.3 | 13.16 |
| 51 to 99 | 267 | 430 | 928 | 3,287 | 4,582 | 9,082 | 81.3 | 93.8 | 102.2 | 12.19 |
| 100 | 675 | 722 | 2,211 | 7,145 | 6,180 | 19,679 | 94.5 | 116.8 | 112.3 | 8.53 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | | |
| Incandescent Lamps | 544 | 799 | 2,443 | 6,816 | 7,986 | 23,988 | 79.8 | 100.0 | 101.9 | 7.05 |
| Fluorescent Lamps | 1,034 | 1,227 | 3,422 | 12,212 | 11,739 | 34,942 | 84.7 | 104.5 | 97.9 | 6.44 |
| High-Intensity Discharge Lamps | 280 | 367 | 1,334 | 2,893 | 3,493 | 11,802 | 96.9 | 105.0 | 113.0 | 14.87 |
| Other Lamps | Q | Q | 31 | Q | Q | 202 | Q | Q | 153.3 | 29.61 |
| High-Efficiency Ballasts | 523 | 669 | 1,538 | 5,287 | 5,631 | 13,307 | 98.9 | 118.8 | 115.6 | 10.31 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | | |
| Commercial | | | | | | | | | | |
| Refrigeration Units | 468 | 474 | 2,031 | 5,221 | 4,086 | 15,356 | 89.7 | 116.0 | 132.3 | 9.47 |
| Freezers | 423 | 438 | 1,941 | 4,634 | 3,756 | 13,285 | 91.2 | 116.7 | 146.1 | 9.81 |
| Residential | | | | | | | | | | |
| Refrigerators | 695 | 1,068 | 2,647 | 7,776 | 10,148 | 26,340 | 89.4 | 105.2 | 100.5 | 7.98 |
| Freezers | 128 | 201 | 1,150 | 1,650 | 1,634 | 9,138 | 77.6 | 122.8 | 125.8 | 13.80 |
| Ice-Making Machines | 414 | 579 | 1,994 | 4,498 | 4,964 | 13,981 | 92.1 | 116.7 | 142.7 | 9.75 |
| Refrigerated Vending Machines | 773 | 990 | 2,584 | 8,104 | 8,984 | 21,777 | 95.4 | 110.2 | 118.6 | 8.05 |
| Water Coolers | 654 | 1,079 | 2,721 | 7,803 | 9,888 | 25,174 | 83.8 | 109.2 | 108.1 | 8.04 |
| Other | Q | 61 | 262 | Q | 312 | 859 | Q | 196.8 | 304.3 | 29.10 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

c Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

-- Data not applicable.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

MAJOR FUELS

Table 20. Consumption and Gross Energy Intensity by Year Constructed for Sum of Major Fuels

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | | Total Floorspace of Buildings (million square feet) | | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | | RSE Row Factor |
|--|--|-----------|-----------|-----------|---|-----------|-----------|-----------|--|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| RSE Column Factor | 1.158 | 1.294 | 1.184 | 1.243 | 0.806 | 0.808 | 0.861 | 0.879 | 0.982 | 1.065 | 0.922 | 0.954 | |
| All Buildings | 1,991 | 1,275 | 1,342 | 1,180 | 24,508 | 12,167 | 13,329 | 13,180 | 81.2 | 104.8 | 100.7 | 89.6 | 7.73 |
| Building Floorspace (Square Feet) | | | | | | | | | | | | | |
| 1,001 to 5,000 | 290 | 111 | 156 | 134 | 3,149 | 1,197 | 1,266 | 1,178 | 92.2 | 92.9 | 123.6 | 113.5 | 8.89 |
| 5,001 to 10,000 | 212 | 96 | 140 | 119 | 2,859 | 1,027 | 1,340 | 1,306 | 74.1 | 93.7 | 104.6 | 91.2 | 14.28 |
| 10,001 to 25,000 | 253 | 189 | 167 | 182 | 3,863 | 2,064 | 2,180 | 2,286 | 65.5 | 91.7 | 76.4 | 79.6 | 12.72 |
| 25,001 to 50,000 | 298 | 130 | 171 | 158 | 3,493 | 1,648 | 1,884 | 1,776 | 85.3 | 78.7 | 90.7 | 88.8 | 14.96 |
| 50,001 to 100,000 | 268 | 267 | 148 | 172 | 3,527 | 1,889 | 1,628 | 2,087 | 76.0 | 141.4 | 91.1 | 82.3 | 16.33 |
| 100,001 to 200,000 | 156 | 211 | 277 | 133 | 2,226 | 2,253 | 2,254 | 1,543 | 70.2 | 93.5 | 122.9 | 86.2 | 19.03 |
| 200,001 to 500,000 | 221 | 198 | 109 | 169 | 2,805 | 1,518 | 1,196 | 1,502 | 78.8 | 130.4 | 91.5 | 112.6 | 24.19 |
| Over 500,000 | 292 | 73 | 173 | 114 | 2,586 | 572 | 1,581 | 1,501 | 113.0 | 127.7 | 109.4 | 76.0 | 26.23 |
| BUILDING USE | | | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | | | |
| Assembly | 192 | 86 | 117 | 46 | 3,274 | 1,249 | 1,482 | 904 | 58.6 | 68.8 | 79.1 | 50.5 | 17.36 |
| Education | 338 | 209 | 119 | 38 | 3,962 | 2,201 | 1,319 | 593 | 85.2 | 95.1 | 90.5 | 63.8 | 16.50 |
| Food Sales | 28 | Q | Q | 34 | 263 | Q | 169 | 105.7 | Q | Q | 198.4 | 24.13 | |
| Food Service | 75 | 39 | 79 | 62 | 436 | 282 | 268 | 181 | 173.2 | 137.8 | 293.8 | 340.9 | 22.17 |
| Health Care | Q | 47 | 142 | 66 | 802 | 355 | 586 | 310 | 241.6 | 132.1 | 242.1 | 214.3 | 23.57 |
| Lodging | 123 | 133 | 74 | 95 | 1,038 | 1,042 | 578 | 818 | 118.4 | 127.9 | 128.6 | 116.1 | 22.94 |
| Mercantile and Service | 289 | 295 | 281 | 184 | 3,957 | 2,458 | 3,464 | 2,486 | 72.9 | 120.0 | 81.0 | 74.1 | 12.84 |
| Office | 417 | 199 | 273 | 341 | 3,856 | 1,736 | 2,425 | 3,785 | 108.1 | 114.9 | 112.4 | 90.0 | 12.26 |
| Parking Garage | Q | Q | Q | 8 | Q | Q | 270 | 427 | Q | Q | Q | 19.7 | 33.37 |
| Public Order and Safety | 19 | Q | Q | Q | 292 | Q | Q | Q | 65.2 | Q | Q | Q | 39.07 |
| Warehouse | 152 | 84 | 153 | 147 | 3,159 | 1,702 | 2,178 | 2,214 | 48.0 | 49.1 | 70.4 | 66.3 | 23.98 |
| Other | 77 | Q | 37 | Q | 404 | 228 | 242 | 655 | Q | Q | 154.1 | 189.9 | 35.05 |
| Vacant | 66 | 11 | Q | 12 | 2,932 | 464 | 233 | 531 | 22.7 | 22.8 | Q | 22.1 | 31.31 |
| Weekly Operating Hours | | | | | | | | | | | | | |
| 39 or Fewer | 101 | 38 | 45 | 20 | 3,355 | 1,019 | 988 | 710 | 30.0 | 37.3 | 45.0 | 28.4 | 15.73 |
| 40 to 48 | 436 | 191 | 211 | 160 | 6,171 | 2,411 | 2,681 | 2,641 | 70.6 | 79.2 | 78.7 | 60.6 | 12.32 |
| 49 to 60 | 357 | 176 | 172 | 220 | 5,153 | 2,305 | 2,807 | 3,207 | 69.4 | 76.2 | 61.3 | 68.5 | 12.80 |
| 61 to 84 | 314 | 222 | 242 | 214 | 3,569 | 2,209 | 2,468 | 2,532 | 88.0 | 100.4 | 97.9 | 84.5 | 13.62 |
| 85 to 167 | 294 | 245 | 285 | 175 | 3,416 | 2,302 | 2,112 | 1,557 | 86.0 | 106.3 | 134.7 | 112.5 | 18.20 |
| 168 (Open Continuously) | 489 | 404 | 388 | 391 | 2,843 | 1,920 | 2,274 | 2,532 | 172.0 | 210.3 | 170.9 | 154.6 | 16.64 |
| Workers | | | | | | | | | | | | | |
| 4 or Fewer | 320 | 123 | 134 | 119 | 7,477 | 2,308 | 2,698 | 2,663 | 42.7 | 53.5 | 49.8 | 44.7 | 9.99 |
| 5 to 9 | 199 | 88 | 135 | 112 | 3,371 | 1,358 | 1,688 | 1,521 | 59.1 | 64.8 | 80.1 | 73.4 | 15.69 |
| 10 to 19 | 189 | 109 | 117 | 126 | 2,582 | 1,395 | 1,150 | 1,318 | 73.2 | 77.9 | 101.4 | 95.3 | 14.26 |
| 20 to 49 | 307 | 226 | 221 | 185 | 3,371 | 2,186 | 2,088 | 2,020 | 91.2 | 103.4 | 105.6 | 91.8 | 14.10 |
| 50 to 99 | 211 | 219 | 171 | 100 | 2,472 | 2,042 | 1,703 | 1,172 | 85.4 | 107.1 | 100.2 | 85.2 | 17.37 |
| 100 to 249 | 293 | 264 | 215 | 220 | 2,020 | 1,473 | 1,563 | 1,715 | 145.0 | 179.3 | 137.8 | 128.0 | 20.09 |
| 250 or More | 471 | 246 | 349 | 319 | 3,214 | 1,406 | 2,438 | 2,771 | 146.7 | 175.2 | 143.2 | 115.1 | 21.27 |
| Ownership and Occupancy | | | | | | | | | | | | | |
| Nongovernment Owned | 1,297 | 862 | 1,018 | 1,062 | 17,503 | 9,145 | 10,400 | 11,794 | 74.1 | 94.3 | 97.9 | 90.0 | 8.34 |
| Owner Occupied | 1,080 | 708 | 762 | 781 | 13,383 | 6,932 | 7,510 | 8,129 | 80.7 | 102.1 | 101.5 | 96.1 | 9.74 |
| Single Establishment | 872 | 583 | 606 | 608 | 10,585 | 5,478 | 5,470 | 5,548 | 82.4 | 106.3 | 110.7 | 109.5 | 11.55 |
| Multiple Establishment | 207 | 125 | 156 | 174 | 2,798 | 1,454 | 2,040 | 2,581 | 74.2 | 86.2 | 76.6 | 67.2 | 13.98 |
| Nonowner Occupied | 217 | 154 | 256 | 280 | 4,120 | 2,213 | 2,890 | 3,665 | 52.8 | 69.7 | 88.7 | 76.5 | 14.35 |
| Single Establishment | 109 | 64 | 144 | 154 | 2,088 | 1,060 | 1,397 | 1,703 | 52.2 | 60.0 | 103.4 | 90.6 | 17.85 |
| Multiple Establishment | 79 | 85 | 105 | 124 | 1,168 | 914 | 1,328 | 1,829 | 68.1 | 93.3 | 78.7 | 68.0 | 17.86 |
| Vacant | Q | Q | Q | Q | 864 | 239 | 165 | 132 | Q | Q | Q | Q | 30.57 |
| Government Owned | 694 | 413 | 324 | 119 | 7,005 | 3,022 | 2,929 | 1,386 | 99.0 | 136.7 | 110.5 | 85.6 | 16.73 |
| Federal | Q | Q | Q | Q | 1,376 | Q | 196 | Q | 147.0 | Q | 154.2 | Q | 46.43 |
| State | 218 | 190 | 129 | Q | 1,566 | 834 | 1,013 | 489 | 139.1 | 227.4 | 127.3 | 98.0 | 29.37 |
| Local | 273 | 199 | 164 | 55 | 4,063 | 1,973 | 1,720 | 766 | 67.3 | 100.8 | 95.6 | 71.9 | 16.77 |

See footnote at end of table.

Table 20. Consumption and Gross Energy Intensity by Year Constructed for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | | Total Floorspace of Buildings (million square feet) | | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | | RSE Row Factor |
|---|--|-----------|-----------|-----------|---|-----------|-----------|-----------|--|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| RSE Column Factor | 1.158 | 1.294 | 1.184 | 1.243 | 0.806 | 0.808 | 0.861 | 0.879 | 0.992 | 1.065 | 0.922 | 0.954 | |
| Multibuilding Facility | | | | | | | | | | | | | |
| Not on Multibuilding Facility | 988 | 583 | 682 | 635 | 15,104 | 7,148 | 7,460 | 7,525 | 65.4 | 81.6 | 91.4 | 84.3 | 7.76 |
| Part of Multibuilding Facility | 1,003 | 692 | 660 | 546 | 9,404 | 5,019 | 5,869 | 5,654 | 106.7 | 137.8 | 112.5 | 96.5 | 12.25 |
| On Facility with Central Plant | 591 | 460 | 329 | 213 | 3,142 | 1,898 | 2,241 | 1,065 | 188.0 | 242.4 | 146.9 | 200.2 | 21.15 |
| Percent Vacant at Least Three Months | | | | | | | | | | | | | |
| 0 | 1,364 | 1,042 | 1,085 | 830 | 15,823 | 9,011 | 10,067 | 8,179 | 86.2 | 115.6 | 107.7 | 101.4 | 8.11 |
| 1 to 50 | 401 | 157 | 229 | 298 | 4,009 | 2,019 | 2,582 | 3,826 | 100.1 | 77.9 | 88.7 | 78.0 | 15.09 |
| 51 to 99 | Q | 47 | Q | 11 | 2,615 | 400 | Q | 363 | 58.1 | 117.0 | Q | 29.3 | 26.88 |
| 100 | 74 | 29 | 19 | 42 | 2,061 | 738 | 538 | 811 | 35.8 | 39.8 | 35.4 | 51.2 | 21.49 |
| Months in Use Out of Past 12 Months | | | | | | | | | | | | | |
| 0 to 8 | 46 | 23 | Q | 84 | 2,385 | 666 | 349 | 1,151 | 19.5 | 35.1 | Q | 72.8 | 20.68 |
| 9 to 11 | 130 | 87 | 34 | 20 | 1,702 | 993 | 698 | 387 | 76.2 | 88.1 | 49.1 | 52.9 | 19.65 |
| 12 | 1,815 | 1,164 | 1,287 | 1,076 | 20,420 | 10,508 | 12,282 | 11,642 | 88.9 | 110.8 | 104.8 | 92.4 | 8.17 |
| LOCATION | | | | | | | | | | | | | |
| Census Region | | | | | | | | | | | | | |
| Northeast | 579 | 369 | 218 | 189 | 6,922 | 2,736 | 2,030 | 1,881 | 83.6 | 135.0 | 107.2 | 100.3 | 17.19 |
| Midwest | 598 | 375 | 375 | 311 | 6,699 | 3,286 | 3,160 | 2,811 | 89.3 | 114.3 | 118.6 | 110.7 | 13.32 |
| South | 452 | 300 | 463 | 433 | 7,274 | 4,057 | 5,217 | 5,491 | 62.2 | 73.9 | 88.8 | 78.8 | 12.05 |
| West | 362 | 230 | 286 | 248 | 3,613 | 2,089 | 2,923 | 2,996 | 100.1 | 110.3 | 97.9 | 82.6 | 17.35 |
| Census Division | | | | | | | | | | | | | |
| Northeast | | | | | | | | | | | | | |
| New England | 129 | Q | 52 | 33 | 1,544 | 717 | 477 | 436 | 83.8 | Q | 108.4 | 75.6 | 21.60 |
| Middle Atlantic | 449 | 285 | 166 | 156 | 5,378 | 2,019 | 1,554 | 1,444 | 83.6 | 141.2 | 106.8 | 107.8 | 20.65 |
| Midwest | | | | | | | | | | | | | |
| East North Central | 364 | 276 | 238 | 208 | 4,845 | 2,207 | 1,867 | 1,762 | 75.2 | 125.1 | 127.4 | 117.9 | 14.80 |
| West North Central | Q | 99 | 137 | 103 | 1,854 | 1,079 | 1,292 | 1,050 | 126.1 | 92.1 | 105.8 | 98.5 | 20.37 |
| South | | | | | | | | | | | | | |
| South Atlantic | 209 | 127 | 191 | 155 | 3,339 | 1,725 | 2,148 | 2,877 | 62.5 | 73.7 | 89.1 | 53.8 | 18.26 |
| East South Central | 108 | 44 | 92 | 128 | 1,504 | 782 | 961 | 1,049 | 72.0 | 56.5 | 96.0 | 122.0 | 24.64 |
| West South Central | 135 | 129 | 180 | 150 | 2,431 | 1,550 | 2,107 | 1,565 | 55.6 | 83.0 | 85.3 | 95.8 | 16.70 |
| West | | | | | | | | | | | | | |
| Mountain | 235 | 44 | 77 | 93 | 1,754 | 600 | 908 | 1,127 | 134.2 | 74.1 | 85.2 | 82.3 | 26.50 |
| Pacific | 126 | 186 | 209 | 155 | 1,859 | 1,489 | 2,015 | 1,870 | 67.9 | 124.9 | 103.7 | 82.8 | 18.27 |
| Metropolitan Status | | | | | | | | | | | | | |
| Metropolitan | 1,607 | 1,032 | 1,096 | 1,045 | 18,806 | 10,018 | 10,831 | 11,154 | 85.4 | 103.0 | 101.2 | 93.7 | 8.49 |
| Nonmetropolitan | 384 | 243 | 246 | 136 | 5,702 | 2,149 | 2,498 | 2,025 | 67.4 | 113.0 | 98.4 | 67.0 | 15.61 |
| Climate Zone: 45-Year Average | | | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | | | |
| Over 7,000 HDD | 215 | 171 | 116 | 115 | 2,093 | 1,065 | 977 | 927 | 102.5 | 160.5 | 119.1 | 123.8 | 20.00 |
| 5,500-7,000 HDD | 755 | 432 | 343 | 325 | 8,563 | 3,625 | 2,848 | 2,921 | 88.1 | 119.1 | 120.5 | 111.3 | 14.19 |
| 4,000-5,499 HDD | 616 | 265 | 300 | 212 | 6,880 | 2,634 | 3,231 | 2,640 | 89.6 | 100.5 | 92.9 | 80.2 | 15.73 |
| Under 4,000 HDD | 240 | 250 | 345 | 280 | 3,845 | 2,296 | 3,535 | 3,226 | 62.4 | 108.8 | 97.7 | 86.8 | 18.38 |
| 2,000 CDD or More and -- | | | | | | | | | | | | | |
| Under 4,000 HDD | 166 | 158 | 237 | 248 | 3,127 | 2,547 | 2,738 | 3,465 | 53.0 | 61.9 | 86.5 | 71.7 | 15.03 |
| STRUCTURE | | | | | | | | | | | | | |
| Floors | | | | | | | | | | | | | |
| 1 | 408 | 410 | 575 | 413 | 6,644 | 5,248 | 6,492 | 5,371 | 61.4 | 78.2 | 88.6 | 76.8 | 10.08 |
| 2 | 475 | 371 | 315 | 371 | 5,604 | 3,477 | 3,207 | 3,824 | 84.8 | 106.7 | 98.2 | 97.1 | 12.76 |
| 3 | 398 | 186 | 91 | 92 | 5,744 | 1,069 | 912 | 880 | 69.2 | 173.5 | 99.3 | 104.1 | 19.82 |
| 4 to 6 | 420 | 170 | 127 | 177 | 4,339 | 1,271 | 1,043 | 1,661 | 96.8 | 133.9 | 121.6 | 106.3 | 21.94 |
| 7 or More | 290 | 138 | 234 | 128 | 2,177 | 1,103 | 1,674 | 1,444 | 133.4 | 125.5 | 139.9 | 88.8 | 20.65 |

See footnote at end of table.

MAJOR FUELS
Table 20. Consumption and Gross Energy Intensity by Year Constructed for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | | Total Floorspace of Buildings (million square feet) | | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | | RSE Row Factor |
|--|--|-----------|-----------|-----------|---|-----------|-----------|-----------|--|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| | RSE Column Factor: | 1.158 | 1.294 | 1.184 | 1.243 | 0.806 | 0.808 | 0.861 | 0.879 | 0.982 | 1.065 | 0.922 | 0.954 |
| Wall Materials | | | | | | | | | | | | | |
| Masonry | 1,550 | 920 | 812 | 638 | 19,366 | 8,653 | 7,471 | 6,584 | 80.0 | 106.3 | 108.7 | 96.9 | 8.95 |
| Siding or Shingles | 127 | 43 | 78 | 77 | 1,905 | 651 | 1,401 | 830 | 66.4 | 66.1 | 56.0 | 93.2 | 17.73 |
| Metal Panels | 59 | Q | 136 | 132 | 787 | 1,215 | 1,840 | 1,847 | 75.2 | Q | 74.1 | 71.6 | 20.43 |
| Concrete Panels | Q | 108 | 220 | 206 | 1,539 | 1,212 | 1,867 | 2,604 | 111.6 | 89.1 | 117.9 | 79.1 | 21.74 |
| Window Glass | Q | 43 | 74 | 95 | Q | 276 | 504 | 995 | Q | 154.5 | 147.3 | 95.0 | 28.70 |
| Other | 71 | Q | 21 | 32 | Q | Q | 245 | 321 | 93.4 | Q | 85.8 | 101.1 | 29.41 |
| Roof Materials | | | | | | | | | | | | | |
| Built-Up | 1,052 | 698 | 762 | 507 | 12,543 | 6,479 | 6,901 | 5,133 | 83.9 | 107.8 | 110.4 | 98.7 | 10.32 |
| Shingles (Not Wood) | 350 | 179 | 150 | 115 | 5,775 | 1,970 | 1,493 | 1,679 | 60.5 | 91.1 | 100.5 | 68.7 | 13.29 |
| Metal Surfacing | 116 | 151 | 132 | 198 | 1,519 | 1,601 | 2,342 | 2,736 | 76.2 | 94.4 | 56.4 | 72.2 | 20.44 |
| Synthetic or Rubber | 177 | 170 | 232 | 271 | 1,759 | 1,289 | 1,714 | 2,149 | 100.6 | 132.0 | 135.5 | 126.0 | 20.22 |
| Slate or Tile | 125 | 33 | 21 | 27 | 1,693 | Q | 270 | 289 | 74.1 | Q | 77.9 | 91.9 | 27.52 |
| Concrete | 29 | 26 | 15 | Q | 339 | 313 | 298 | 982 | 86.6 | 84.5 | 50.2 | 40.8 | 28.89 |
| Wooden Materials | 28 | Q | Q | Q | 362 | Q | Q | Q | 78.1 | Q | Q | Q | 24.56 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | 219.8 | Q | Q | Q | 28.47 |
| Building Shell Conservation | | | | | | | | | | | | | |
| Features (Solely or in Combination) | | | | | | | | | | | | | |
| Roof or Ceiling Insulation | 1,442 | 842 | 1,135 | 1,067 | 14,642 | 8,495 | 10,936 | 11,017 | 98.5 | 99.1 | 103.8 | 96.8 | 8.74 |
| Wall Insulation | 734 | 593 | 751 | 978 | 7,261 | 5,463 | 7,414 | 9,555 | 101.1 | 108.6 | 101.2 | 102.3 | 11.33 |
| Storm or Multiple Glazing | 797 | 435 | 581 | 743 | 7,483 | 4,480 | 5,316 | 6,789 | 106.5 | 97.2 | 109.3 | 109.5 | 10.36 |
| Tinted, Reflective, or Shading Glass | 604 | 401 | 676 | 704 | 5,067 | 3,742 | 6,104 | 7,126 | 119.2 | 107.3 | 110.7 | 98.8 | 11.10 |
| Exterior or Interior Shadings or Awnings | 945 | 526 | 650 | 598 | 9,659 | 4,710 | 5,649 | 6,154 | 97.9 | 111.6 | 115.1 | 97.2 | 11.23 |
| Weather Stripping or Caulking | 1,495 | 952 | 1,052 | 1,049 | 14,990 | 8,707 | 10,178 | 10,819 | 99.7 | 109.4 | 103.4 | 97.0 | 8.54 |
| None of the Above | 163 | 86 | 64 | 22 | 4,556 | 1,323 | 920 | 969 | 35.9 | 65.1 | 69.5 | 22.7 | 21.41 |
| ENERGY SOURCES AND END USES* | | | | | | | | | | | | | |
| Energy Sources | | | | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 1,988 | 1,272 | 1,342 | 1,180 | 23,483 | 11,921 | 13,172 | 12,987 | 84.7 | 106.7 | 101.9 | 90.9 | 7.54 |
| Natural Gas | 1,539 | 982 | 978 | 836 | 17,051 | 8,467 | 8,103 | 7,522 | 90.2 | 116.0 | 120.8 | 117.2 | 9.79 |
| Fuel Oil | 604 | 268 | 401 | 316 | 5,744 | 2,275 | 2,399 | 2,182 | 105.2 | 117.7 | 167.0 | 144.8 | 18.53 |
| District Heat | 580 | 302 | 206 | Q | 3,281 | 1,214 | 1,227 | Q | 176.7 | 249.1 | 167.8 | 139.3 | 27.78 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | Q | 79 | 119 | 86 | 1,790 | 831 | 1,020 | 1,054 | 94.4 | 95.5 | 116.3 | 81.2 | 28.63 |
| Other | 31 | 26 | 12 | Q | 616 | Q | 247 | 287 | 50.6 | 66.7 | 49.2 | 62.0 | 37.29 |
| Energy End Uses | | | | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | | | | |
| Heated Buildings | 1,973 | 1,255 | 1,294 | 1,145 | 22,491 | 11,183 | 12,373 | 11,821 | 87.7 | 112.2 | 104.6 | 96.9 | 7.78 |
| Air-Conditioned Buildings | 1,656 | 1,067 | 1,252 | 1,126 | 18,427 | 10,056 | 11,616 | 11,671 | 89.9 | 106.1 | 107.8 | 96.5 | 8.12 |
| Buildings with Water Heating | 1,858 | 1,217 | 1,258 | 1,130 | 20,421 | 10,476 | 11,304 | 11,383 | 91.0 | 116.1 | 111.2 | 99.3 | 8.18 |
| Buildings with Cooking | 934 | 636 | 679 | 505 | 9,376 | 4,733 | 5,213 | 4,346 | 99.7 | 134.4 | 130.2 | 116.3 | 11.83 |
| Buildings with Manufacturing | 319 | 107 | 171 | 112 | 2,652 | 786 | 1,085 | 1,078 | 120.3 | 136.7 | 157.4 | 103.5 | 28.12 |

See footnote at end of table.

Table 20. Consumption and Gross Energy Intensity by Year Constructed for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | | Total Floorspace of Buildings (million square feet) | | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | | RSE Row Factor |
|--|--|-----------|-----------|-----------|---|-----------|-----------|-----------|--|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| | RSE Column Factor: | 1.158 | 1.294 | 1.184 | 1.243 | 0.806 | 0.808 | 0.861 | 0.879 | 0.982 | 1.065 | 0.922 | 0.954 |
| Energy End-Use Combinations | | | | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | 816 | 527 | 646 | 468 | 7,930 | 4,153 | 4,778 | 3,926 | 102.9 | 126.9 | 135.2 | 119.3 | 12.65 |
| With Water Heating, Without Cooking | 748 | 486 | 526 | 603 | 8,671 | 4,979 | 5,620 | 6,635 | 86.2 | 97.7 | 93.6 | 90.8 | 10.29 |
| Without Water Heating or Cooking | 84 | 37 | 35 | 21 | 1,653 | 683 | 757 | 548 | 51.0 | 54.1 | 46.0 | 37.6 | 19.56 |
| Without Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | 110 | Q | Q | Q | 1,332 | 424 | Q | Q | 82.8 | Q | Q | Q | 21.71 |
| With Water Heating, Without Cooking | 176 | 90 | 33 | 22 | 2,288 | 674 | 469 | 269 | 76.8 | 133.0 | 71.3 | 83.5 | 25.82 |
| Without Water Heating or Cooking | 33 | 15 | 34 | 10 | 570 | 256 | 492 | 220 | 58.2 | 60.0 | 68.5 | 44.7 | 28.81 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 9 | 4 | 4 | 7 | 1,770 | 718 | 574 | 797 | 4.8 | 5.2 | 7.5 | 8.6 | 23.50 |
| All Other Combinations | 15 | 18 | 49 | 36 | 294 | 281 | 472 | 631 | 50.9 | 65.2 | 103.0 | 57.6 | 31.48 |
| Space-Heating Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 339 | 262 | 428 | 470 | 4,409 | 3,292 | 5,014 | 5,986 | 77.0 | 79.4 | 85.3 | 78.5 | 12.26 |
| Natural Gas | 1,175 | 829 | 759 | 655 | 13,789 | 7,092 | 6,563 | 5,573 | 85.2 | 116.8 | 115.6 | 117.5 | 10.20 |
| Fuel Oil | 563 | 246 | 271 | 225 | 5,467 | 2,051 | 1,640 | 1,368 | 103.0 | 120.0 | 165.1 | 164.4 | 18.24 |
| District Heat | 470 | 220 | 201 | 117 | 2,975 | 1,100 | 1,207 | 847 | 157.8 | 199.8 | 166.6 | 138.2 | 29.73 |
| Propane | 10 | Q | 21 | Q | 499 | 390 | 431 | 447 | 20.3 | 97.8 | 48.6 | 108.7 | 31.96 |
| Other | 26 | Q | 9 | Q | 540 | Q | 224 | Q | 48.2 | Q | 41.4 | Q | 42.64 |
| Main Space-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 98 | 148 | 334 | 398 | 1,891 | 2,209 | 4,131 | 5,217 | 51.9 | 67.1 | 80.9 | 76.3 | 11.94 |
| Natural Gas | 1,128 | 810 | 671 | 583 | 13,256 | 6,819 | 5,910 | 5,125 | 85.1 | 118.8 | 113.5 | 113.7 | 10.36 |
| Fuel Oil | 275 | 97 | 92 | Q | 3,574 | 1,002 | 733 | 290 | 77.1 | 97.3 | 125.1 | 113.6 | 22.45 |
| District Heat | 463 | 219 | 191 | 114 | 2,935 | 1,096 | 1,169 | 825 | 157.9 | 200.1 | 163.0 | 138.6 | 30.01 |
| Propane | 6 | 5 | 8 | Q | 397 | 171 | 264 | 398 | 15.8 | 28.3 | 31.4 | 105.4 | 29.76 |
| Other | Q | Q | Q | Q | 449 | Q | Q | Q | 41.2 | Q | Q | Q | 43.82 |
| Air-Conditioning Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 1,460 | 924 | 1,151 | 1,046 | 16,971 | 9,032 | 10,752 | 11,155 | 86.0 | 102.3 | 107.0 | 93.7 | 8.63 |
| Natural Gas | 55 | 67 | 41 | 63 | 545 | 663 | 348 | 420 | 100.5 | 100.9 | 116.9 | 149.5 | 24.95 |
| District Chilled Water | 62 | Q | 116 | 28 | 497 | 470 | 781 | 190 | 124.1 | Q | 148.8 | 148.4 | 33.44 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | 182.2 | Q | Q | Q | 10.04 |

See footnote at end of table.

MAJOR FUELS

Table 20. Consumption and Gross Energy Intensity by Year Constructed for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | | Total Floorspace of Buildings (million square feet) | | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | | RSE Row Factor |
|---|--|-----------|-----------|-----------|---|-----------|-----------|-----------|--|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| RSE Column Factor | 1.204 | 1.204 | 1.120 | 1.200 | 0.641 | 0.782 | 0.865 | 0.900 | 1.097 | 1.080 | 0.924 | 0.952 | |
| Water-Heating Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 459 | 313 | 528 | 461 | 6,122 | 3,408 | 5,661 | 6,302 | 75.0 | 91.7 | 93.3 | 73.2 | 11.23 |
| Natural Gas | 944 | 640 | 567 | 554 | 11,463 | 5,798 | 4,488 | 4,174 | 82.4 | 110.4 | 126.4 | 132.7 | 9.54 |
| Fuel Oil | 101 | 49 | 41 | Q | 1,216 | 532 | 324 | Q | 83.0 | 91.9 | 128.0 | Q | 23.65 |
| District Heat | 414 | 256 | 167 | Q | 2,113 | 985 | 1,062 | Q | 195.7 | 259.6 | 157.7 | 104.3 | 27.36 |
| Propane | 14 | Q | 11 | Q | 292 | Q | 172 | 400 | 48.1 | Q | 63.8 | Q | 87.58 |
| Other | Q | Q | NC | Q | Q | Q | NC | Q | Q | Q | NC | Q | b |
| Cooking Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 440 | 202 | 331 | 184 | 4,099 | 2,274 | 2,753 | 1,724 | 107.2 | 89.0 | 120.3 | 106.9 | 14.70 |
| Natural Gas | 592 | 321 | 422 | 373 | 5,864 | 2,923 | 2,973 | 3,006 | 100.9 | 109.9 | 141.8 | 124.1 | 13.24 |
| Propane | Q | 19 | 24 | Q | 247 | 206 | 255 | 216 | 80.3 | 91.0 | 93.3 | Q | 34.99 |
| Other | Q | Q | Q | Q | 804 | Q | Q | Q | 207.7 | Q | Q | Q | 33.60 |
| Manufacturing Energy Source (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | Q | 43 | 134 | 66 | 2,355 | 409 | 820 | 821 | 106.9 | 104.4 | 163.8 | 80.6 | 32.05 |
| Natural Gas | 72 | 45 | Q | Q | 261 | 255 | Q | Q | 276.0 | 178.2 | Q | Q | 34.77 |
| Other | 35 | Q | Q | Q | 292 | Q | Q | Q | 120.2 | Q | Q | Q | 35.35 |
| HEATING AND COOLING | | | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | | | |
| Not Heated | 22 | 21 | 48 | 35 | 2,081 | 1,018 | 957 | 1,364 | 10.7 | 20.6 | 49.9 | 25.8 | 29.89 |
| 1 to 50 | 126 | 68 | 71 | 106 | 3,926 | 1,556 | 1,910 | 1,922 | 32.0 | 43.9 | 37.4 | 54.9 | 18.01 |
| 51 to 99 | 285 | 167 | 217 | 223 | 3,366 | 1,530 | 1,537 | 2,240 | 84.6 | 109.0 | 141.2 | 99.6 | 17.00 |
| 100 | 1,558 | 1,019 | 1,006 | 816 | 15,135 | 8,064 | 8,925 | 7,653 | 102.9 | 126.4 | 112.7 | 106.7 | 8.84 |
| Percent Cooled | | | | | | | | | | | | | |
| Not Cooled | 335 | 208 | 90 | 54 | 6,080 | 2,111 | 1,713 | 1,508 | 55.1 | 98.4 | 52.6 | 36.1 | 16.52 |
| 1 to 50 | 579 | 297 | 255 | 205 | 8,352 | 3,354 | 3,066 | 3,049 | 69.3 | 88.6 | 83.0 | 67.4 | 14.87 |
| 51 to 99 | 394 | 299 | 364 | 352 | 4,136 | 2,942 | 2,836 | 3,224 | 95.3 | 101.6 | 128.2 | 109.2 | 11.80 |
| 100 | 683 | 471 | 634 | 568 | 5,939 | 3,760 | 5,714 | 5,398 | 114.9 | 125.3 | 110.9 | 105.3 | 11.89 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | | | | |
| Present in Building | 775 | 491 | 490 | 518 | 5,345 | 3,209 | 3,832 | 4,298 | 144.9 | 153.0 | 127.9 | 120.5 | 15.81 |
| Not Present | 1,216 | 784 | 852 | 662 | 19,163 | 8,958 | 9,497 | 8,881 | 63.5 | 87.5 | 89.7 | 74.6 | 6.02 |
| LIGHTING AND REFRIGERATION | | | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | | | |
| Not Lit | 7 | Q | Q | Q | 1,373 | 346 | 276 | 364 | 5.1 | Q | Q | Q | 26.81 |
| 1 to 50 | 248 | 103 | 92 | 90 | 5,806 | 1,554 | 1,331 | 2,179 | 42.8 | 66.1 | 69.3 | 41.3 | 13.43 |
| 51 to 99 | 520 | 370 | 388 | 348 | 6,176 | 3,069 | 3,517 | 4,187 | 84.2 | 120.4 | 110.2 | 83.1 | 13.03 |
| 100 | 1,216 | 798 | 857 | 738 | 11,152 | 7,198 | 8,204 | 6,449 | 109.0 | 110.8 | 104.4 | 114.5 | 9.77 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | | | | | |
| Incandescent Lamps | 1,453 | 847 | 821 | 664 | 16,065 | 7,833 | 7,926 | 6,966 | 90.5 | 108.2 | 103.6 | 95.3 | 9.76 |
| Fluorescent Lamps | 1,943 | 1,265 | 1,313 | 1,162 | 22,291 | 11,537 | 12,716 | 12,348 | 87.2 | 109.7 | 103.2 | 94.1 | 7.82 |
| High-Intensity Discharge Lamps | 667 | 395 | 429 | 489 | 5,608 | 3,306 | 4,258 | 5,016 | 118.9 | 119.5 | 100.8 | 97.5 | 14.11 |
| Other Lamps | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| High-Efficiency Ballasts | 750 | 586 | 687 | 708 | 7,530 | 4,541 | 5,901 | 6,254 | 99.6 | 129.0 | 116.4 | 113.2 | 11.94 |

See footnotes at end of table.

Table 20. Consumption and Gross Energy Intensity by Year Constructed for Sum of Major Fuels (Continued)

| Building Characteristics | Sum of Major Fuel Consumption (trillion Btu) | | | | Total Floorspace of Buildings (million square feet) | | | | Energy Intensity for Sum of Major Fuels (thousand Btu/sq. ft.) | | | | RSE Row Factor |
|---|--|-----------|-----------|-----------|---|-----------|-----------|-----------|--|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| | RSE Column Factor | 1.284 | 1.294 | 1.123 | 1.260 | 0.841 | 0.782 | 0.865 | 0.868 | 1.097 | 1.060 | 0.824 | 0.882 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | | | | | |
| Commercial | | | | | | | | | | | | | |
| Refrigeration Units | 952 | 666 | 720 | 635 | 9,076 | 5,139 | 5,493 | 4,954 | 104.9 | 129.6 | 131.1 | 128.2 | 11.46 |
| Freezers | 845 | 663 | 689 | 605 | 7,004 | 5,032 | 5,054 | 4,585 | 120.6 | 131.7 | 136.2 | 132.0 | 11.81 |
| Residential | | | | | | | | | | | | | |
| Refrigerators | 1,556 | 1,022 | 959 | 874 | 17,188 | 8,693 | 8,964 | 9,419 | 90.5 | 117.5 | 107.0 | 92.8 | 9.24 |
| Freezers | 556 | 325 | 339 | 258 | 4,918 | 2,394 | 2,824 | 2,285 | 113.1 | 135.9 | 120.2 | 112.7 | 17.51 |
| Ice-Making Machines | 920 | 632 | 781 | 655 | 7,502 | 4,811 | 5,815 | 5,315 | 122.6 | 131.3 | 134.3 | 123.3 | 11.49 |
| Refrigerated Vending Machines | 1,391 | 966 | 1,055 | 936 | 12,828 | 8,308 | 8,904 | 8,825 | 108.4 | 116.2 | 118.5 | 106.0 | 8.98 |
| Water Coolers | 1,467 | 1,062 | 1,018 | 908 | 14,976 | 9,049 | 9,515 | 9,324 | 98.0 | 117.3 | 107.0 | 97.4 | 9.40 |
| Other | Q | Q | 76 | Q | 602 | 224 | 355 | 228 | 206.1 | Q | 215.2 | Q | 30.11 |
| ENERGY MANAGEMENT | | | | | | | | | | | | | |
| Occupant Control | | | | | | | | | | | | | |
| Any Control of Heating | 880 | 488 | 488 | 476 | 11,150 | 4,531 | 5,611 | 5,752 | 78.9 | 107.6 | 86.9 | 82.7 | 10.88 |
| With Thermostats | 818 | 442 | 448 | 449 | 10,165 | 3,967 | 5,213 | 5,428 | 80.5 | 111.5 | 85.9 | 82.8 | 11.58 |
| Any Control of Cooling | 873 | 445 | 520 | 481 | 10,692 | 4,386 | 5,595 | 5,642 | 81.7 | 101.6 | 92.9 | 85.3 | 10.04 |
| With Thermostats | 761 | 418 | 482 | 452 | 9,375 | 4,050 | 5,275 | 5,343 | 81.2 | 103.3 | 91.4 | 84.7 | 10.73 |
| Computerized Energy Management and Control System | | | | | | | | | | | | | |
| Present in Building | 508 | 318 | 450 | 439 | 3,787 | 2,946 | 3,512 | 4,101 | 134.1 | 107.9 | 128.0 | 107.0 | 14.39 |
| Controls Heating and Cooling | 507 | 306 | 433 | 422 | 3,630 | 2,805 | 3,388 | 3,970 | 139.7 | 109.1 | 127.9 | 106.2 | 14.64 |
| Controls Lighting | Q | 62 | 108 | 148 | Q | 638 | 975 | 1,439 | 141.7 | 96.6 | 110.8 | 102.8 | 21.66 |
| Controls Other | Q | 76 | 84 | 55 | Q | 611 | 692 | 484 | 230.2 | 124.3 | 120.7 | 113.1 | 23.99 |
| Other Energy Management | | | | | | | | | | | | | |
| Regular HVAC Maintenance | 1,538 | 1,086 | 1,134 | 1,014 | 14,535 | 8,802 | 9,999 | 9,677 | 105.8 | 123.4 | 113.4 | 104.8 | 8.85 |
| Participated in Utility Conservation Program | 351 | 324 | 368 | 162 | 3,632 | 2,538 | 2,923 | 1,734 | 96.7 | 127.9 | 125.9 | 93.5 | 13.59 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

nc No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 21. Electricity Consumption

| Building Characteristics | All Buildings Using Electricity | | | Electricity Consumption | | | | | PSEG Power Factor |
|--|---------------------------------|----------------------------------|--|-------------------------|---------------------|-----------------------------|-----------------------|---------------------------|-------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion kWh) | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | |
| PSEG Column Factor: | 0.935 | 0.979 | 0.773 | 1.232 | 1,298 | 1,259 | 0.939 | 0.902 | |
| All Buildings | 4,294 | 61,563 | 14.3 | 2,773 | 813 | 189 | 13.2 | 11.5 | 4.69 |
| Building Floorspace (Square Feet) | | | | | | | | | |
| 1,001 to 5,000 | 2,360 | 6,409 | 2.7 | 326 | 95 | 40 | 14.9 | 9.5 | 4.73 |
| 5,001 to 10,000 | 855 | 6,297 | 7.4 | 246 | 72 | 84 | 11.5 | 10.1 | 7.34 |
| 10,001 to 25,000 | 622 | 9,989 | 16.1 | 381 | 112 | 180 | 11.2 | 11.1 | 6.37 |
| 25,001 to 50,000 | 243 | 8,671 | 35.7 | 331 | 97 | 399 | 11.2 | 11.1 | 6.63 |
| 50,001 to 100,000 | 125 | 8,918 | 71.6 | 433 | 127 | 1,018 | 14.2 | 13.9 | 9.68 |
| 100,001 to 200,000 | 60 | 8,222 | 136.5 | 387 | 113 | 1,884 | 13.8 | 15.2 | 8.56 |
| 200,001 to 500,000 | 23 | 6,996 | 301.3 | 366 | 107 | 4,617 | 15.3 | 12.9 | 13.00 |
| Over 500,000 | 7 | 6,062 | 865.4 | 303 | 89 | 12,681 | 14.7 | 9.2 | 13.19 |
| Year Constructed | | | | | | | | | |
| 1899 or Before | 162 | 1,568 | 9.7 | 25 | 7 | 45 | 4.7 | 6.1 | 19.82 |
| 1900 to 1919 | 223 | 3,849 | 17.3 | 75 | 22 | 99 | 5.7 | 8.3 | 18.19 |
| 1920 to 1945 | 631 | 7,880 | 12.5 | 211 | 62 | 98 | 7.8 | 8.0 | 10.02 |
| 1946 to 1959 | 823 | 10,185 | 12.4 | 379 | 111 | 135 | 10.9 | 9.5 | 10.05 |
| 1960 to 1969 | 775 | 11,921 | 15.4 | 589 | 173 | 223 | 14.5 | 12.8 | 10.26 |
| 1970 to 1979 | 855 | 13,172 | 15.4 | 730 | 214 | 250 | 16.2 | 13.6 | 8.93 |
| 1980 to 1983 | 309 | 4,209 | 13.6 | 295 | 86 | 279 | 20.5 | 16.6 | 11.79 |
| 1984 to 1986 | 315 | 5,628 | 17.9 | 303 | 89 | 282 | 15.8 | 10.6 | 11.47 |
| 1987 to 1989 | 202 | 3,150 | 15.6 | 167 | 49 | 242 | 15.5 | 10.6 | 15.42 |
| BUILDING USE | | | | | | | | | |
| Principal Building Activity | | | | | | | | | |
| Assembly | 614 | 6,851 | 11.2 | 186 | 55 | 89 | 8.0 | 13.6 | 13.55 |
| Education | 282 | 8,070 | 28.6 | 217 | 64 | 225 | 7.9 | 8.8 | 8.28 |
| Food Sales | 102 | 792 | 7.7 | 105 | 31 | 302 | 39.0 | 36.6 | 17.14 |
| Food Service | 241 | 1,167 | 4.8 | 113 | 33 | 137 | 28.3 | 17.0 | 10.59 |
| Health Care | 80 | 2,054 | 25.7 | 154 | 45 | 565 | 22.0 | 10.7 | 12.21 |
| Lodging | 140 | 3,476 | 24.8 | 138 | 40 | 289 | 11.6 | 13.1 | 12.83 |
| Mercantile and Service | 1,276 | 12,361 | 9.7 | 550 | 161 | 126 | 13.0 | 13.0 | 7.77 |
| Office | 679 | 11,796 | 17.4 | 781 | 229 | 337 | 19.4 | 8.3 | 6.02 |
| Parking Garage | 45 | 983 | 22.0 | 18 | 5 | 118 | 5.3 | 15.8 | 22.04 |
| Public Order and Safety | 50 | 608 | 12.2 | 29 | 8 | 168 | 13.8 | 9.7 | 25.07 |
| Warehouse | 543 | 8,850 | 16.3 | 243 | 71 | 131 | 8.0 | 16.4 | 13.40 |
| Other | 62 | 1,528 | 24.8 | 201 | 59 | 956 | 38.5 | 28.0 | 32.34 |
| Vacant | 182 | 3,027 | 16.6 | 39 | 11 | 63 | 3.8 | 7.8 | 20.24 |
| Weekly Operating Hours | | | | | | | | | |
| 39 or Fewer | 687 | 4,747 | 6.9 | 71 | 21 | 30 | 4.4 | 6.1 | 16.65 |
| 40 to 48 | 1,100 | 13,810 | 12.6 | 440 | 129 | 117 | 9.3 | 8.5 | 7.21 |
| 49 to 60 | 978 | 13,349 | 13.7 | 478 | 140 | 143 | 10.5 | 8.7 | 6.63 |
| 61 to 84 | 621 | 10,751 | 17.3 | 522 | 153 | 246 | 14.2 | 10.8 | 8.53 |
| 85 to 167 | 513 | 9,377 | 18.3 | 485 | 142 | 277 | 15.1 | 16.0 | 9.56 |
| 168 (Open Continuously) | 395 | 9,529 | 24.1 | 779 | 228 | 577 | 23.9 | 17.7 | 10.02 |
| Workers | | | | | | | | | |
| 4 or Fewer | 2,261 | 13,550 | 6.0 | 294 | 86 | 38 | 6.4 | 18.3 | 5.85 |
| 5 to 9 | 903 | 7,926 | 8.8 | 258 | 76 | 84 | 9.5 | 11.9 | 7.63 |
| 10 to 19 | 507 | 6,443 | 12.7 | 238 | 70 | 138 | 10.8 | 10.7 | 9.60 |
| 20 to 49 | 381 | 9,665 | 25.4 | 401 | 117 | 308 | 12.1 | 11.0 | 7.29 |
| 50 to 99 | 132 | 7,389 | 56.1 | 348 | 102 | 774 | 13.8 | 12.4 | 8.58 |
| 100 to 249 | 79 | 6,771 | 85.9 | 478 | 140 | 1,778 | 20.7 | 12.4 | 10.48 |
| 250 or More | 32 | 9,818 | 307.8 | 758 | 222 | 6,963 | 22.6 | 9.8 | 11.66 |

See footnote at end of table.

Table 21. Electricity Consumption (Continued)

| Building Characteristics | All Buildings Using Electricity | | | Electricity Consumption | | | | | RSE Row Factor |
|---|---------------------------------|----------------------------------|--|-------------------------|---------------------|-----------------------------|-----------------------|---------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion kWh) | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | |
| RSE Column Factor: | 0.835 | 0.875 | 0.773 | 1,232 | 1,232 | 1,259 | 0.933 | 0.992 | |
| Ownership and Occupancy | | | | | | | | | |
| Nongovernment Owned | 3,736 | 47,550 | 12.7 | 2,113 | 619 | 166 | 13.0 | 11.4 | 4.53 |
| Owner Occupied | 2,733 | 35,437 | 13.0 | 1,575 | 462 | 169 | 13.0 | 11.5 | 5.44 |
| Single Establishment | 2,366 | 26,590 | 11.2 | 1,182 | 347 | 146 | 13.0 | 13.3 | 6.49 |
| Multiple Establishment | 367 | 8,847 | 24.1 | 393 | 115 | 314 | 13.0 | 8.2 | 7.87 |
| Nonowner Occupied | 1,002 | 12,113 | 12.1 | 537 | 157 | 157 | 13.0 | 11.0 | 7.40 |
| Single Establishment | 658 | 6,179 | 9.4 | 265 | 78 | 118 | 12.6 | 12.0 | 10.41 |
| Multiple Establishment | 256 | 5,227 | 20.4 | 265 | 78 | 303 | 14.8 | 10.5 | 10.25 |
| Vacant | 89 | 707 | 8.0 | 8 | 2 | 26 | 3.3 | 4.8 | 20.88 |
| Government Owned | 559 | 14,013 | 25.1 | 660 | 194 | 347 | 13.8 | 12.1 | 10.83 |
| Federal | 38 | 1,900 | 50.5 | 132 | 39 | 1,028 | 20.4 | 12.1 | 27.59 |
| State | 131 | 3,870 | 29.6 | 240 | 70 | 538 | 18.2 | 14.4 | 21.56 |
| Local | 390 | 8,243 | 21.1 | 288 | 84 | 217 | 10.2 | 10.6 | 10.33 |
| Multibuilding Facility | | | | | | | | | |
| Not on Multibuilding Facility | 2,885 | 36,523 | 12.7 | 1,428 | 418 | 145 | 11.5 | 10.3 | 4.12 |
| Part of Multibuilding Facility | 1,410 | 25,040 | 17.8 | 1,345 | 394 | 280 | 15.7 | 13.2 | 7.54 |
| On Facility with Central Plant | 201 | 8,298 | 41.3 | 635 | 186 | 925 | 22.4 | 15.9 | 16.27 |
| Percent Vacant at Least Three Months | | | | | | | | | |
| 0 | 3,507 | 42,697 | 12.2 | 2,062 | 604 | 172 | 14.2 | 12.7 | 4.98 |
| 1 to 50 | 374 | 12,416 | 33.2 | 583 | 171 | 458 | 13.8 | 9.1 | 7.80 |
| 51 to 99 | 98 | 3,446 | 35.1 | 64 | 19 | 192 | 5.5 | 10.4 | 23.63 |
| 100 | 315 | 3,005 | 9.5 | 63 | 19 | 59 | 6.2 | 8.5 | 9.61 |
| Months in Use Out of Past 12 Months | | | | | | | | | |
| 0 to 8 | 310 | 3,308 | 10.7 | 81 | 24 | 77 | 7.2 | 10.5 | 12.66 |
| 9 to 11 | 270 | 3,775 | 14.0 | 76 | 22 | 83 | 5.9 | 7.0 | 9.20 |
| 12 | 3,715 | 54,480 | 14.7 | 2,616 | 767 | 206 | 14.1 | 11.8 | 4.90 |
| LOCATION | | | | | | | | | |
| Census Region | | | | | | | | | |
| Northeast | 751 | 13,326 | 17.7 | 586 | 172 | 228 | 12.9 | 10.8 | 11.34 |
| Midwest | 1,001 | 15,704 | 15.7 | 609 | 178 | 178 | 11.4 | 11.5 | 7.70 |
| South | 1,723 | 21,215 | 12.3 | 975 | 286 | 166 | 13.5 | 12.3 | 6.65 |
| West | 819 | 11,318 | 13.8 | 604 | 177 | 216 | 15.6 | 11.1 | 10.12 |
| Census Division | | | | | | | | | |
| Northeast | | | | | | | | | |
| New England | 177 | 3,127 | 17.7 | 115 | 34 | 191 | 10.8 | 10.6 | 13.44 |
| Middle Atlantic | 574 | 10,199 | 17.8 | 470 | 138 | 240 | 13.5 | 10.9 | 13.86 |
| Midwest | | | | | | | | | |
| East North Central | 656 | 10,527 | 16.1 | 399 | 117 | 179 | 11.1 | 11.8 | 9.76 |
| West North Central | 345 | 5,177 | 15.0 | 210 | 61 | 178 | 11.9 | 11.0 | 14.42 |
| South | | | | | | | | | |
| South Atlantic | 692 | 9,628 | 13.9 | 416 | 122 | 176 | 12.7 | 11.7 | 10.53 |
| East South Central | 381 | 4,218 | 11.1 | 215 | 63 | 166 | 15.0 | 11.7 | 16.04 |
| West South Central | 651 | 7,369 | 11.3 | 344 | 101 | 155 | 13.7 | 13.5 | 11.32 |
| West | | | | | | | | | |
| Mountain | 300 | 4,172 | 13.9 | 179 | 52 | 175 | 12.6 | 11.6 | 19.67 |
| Pacific | 519 | 7,146 | 13.8 | 425 | 125 | 240 | 17.4 | 10.9 | 12.69 |
| Metropolitan Status | | | | | | | | | |
| Metropolitan | 2,946 | 49,835 | 16.9 | 2,366 | 693 | 235 | 13.9 | 11.6 | 5.36 |
| Nonmetropolitan | 1,349 | 11,728 | 8.7 | 407 | 119 | 88 | 10.2 | 11.3 | 10.37 |

See footnote at end of table.

ELECTRICITY

Table 21. Electricity Consumption (Continued)

| Building Characteristics | All Buildings Using Electricity | | | Electricity Consumption | | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|-------------------------|---------------------|-----------------------------|-----------------------|---------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion kWh) | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | |
| RSE Column Factor | 0.955 | 0.975 | 0.970 | 1.252 | 1.232 | 1.259 | 0.959 | 0.952 | |
| Climate Zone: 45-Year Average | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | |
| Over 7,000 HDD | 333 | 4,983 | 15.0 | 211 | 62 | 186 | 12.4 | 11.1 | 12.24 |
| 5,500-7,000 HDD | 1,074 | 17,496 | 16.3 | 668 | 196 | 182 | 11.2 | 11.3 | 11.16 |
| 4,000-5,499 HDD | 917 | 15,045 | 16.4 | 706 | 207 | 226 | 13.8 | 11.1 | 10.81 |
| Under 4,000 HDD | 982 | 12,573 | 12.8 | 663 | 194 | 198 | 15.5 | 11.1 | 13.80 |
| 2,000 CDD or More and -- | | | | | | | | | |
| Under 4,000 HDD | 989 | 11,466 | 11.6 | 525 | 154 | 155 | 13.4 | 13.4 | 9.76 |
| 1989 Degree-Days | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | |
| Over 7,000 HDD | 501 | 7,497 | 15.0 | 286 | 84 | 167 | 11.2 | 10.2 | 12.75 |
| 5,500-7,000 HDD | 1,231 | 21,549 | 17.5 | 852 | 250 | 203 | 11.6 | 11.6 | 9.71 |
| 4,000-5,499 HDD | 701 | 10,118 | 14.4 | 539 | 158 | 225 | 15.6 | 11.4 | 12.72 |
| Under 4,000 HDD | 929 | 11,722 | 12.6 | 594 | 174 | 187 | 14.8 | 10.8 | 13.97 |
| 2,000 CDD or More and -- | | | | | | | | | |
| Under 4,000 HDD | 932 | 10,677 | 11.5 | 503 | 147 | 158 | 13.8 | 13.6 | 9.89 |
| STRUCTURE | | | | | | | | | |
| Floors | | | | | | | | | |
| 1 | 2,690 | 22,605 | 8.4 | 922 | 270 | 100 | 12.0 | 12.4 | 5.44 |
| 2 | 1,028 | 15,844 | 15.4 | 793 | 233 | 226 | 14.7 | 13.6 | 7.65 |
| 3 | 401 | 8,512 | 21.2 | 320 | 94 | 234 | 11.0 | 10.1 | 16.18 |
| 4 to 6 | 150 | 8,211 | 54.7 | 342 | 100 | 668 | 12.2 | 10.3 | 12.19 |
| 7 or More | 25 | 6,392 | 256.9 | 396 | 116 | 4,664 | 18.2 | 9.1 | 10.59 |
| Wall Materials | | | | | | | | | |
| Masonry | 2,741 | 41,145 | 15.0 | 1,740 | 510 | 186 | 12.4 | 11.3 | 5.28 |
| Siding or Shingles | 743 | 4,524 | 6.1 | 150 | 44 | 59 | 9.7 | 9.6 | 10.61 |
| Metal Panels | 503 | 5,381 | 10.7 | 246 | 72 | 143 | 13.4 | 14.7 | 14.40 |
| Concrete Panels | 231 | 7,117 | 30.8 | 397 | 116 | 503 | 16.3 | 13.1 | 12.91 |
| Window Glass | 31 | 1,915 | 62.1 | 146 | 43 | 1,388 | 22.3 | 9.6 | 21.01 |
| Other | 46 | 1,481 | 32.4 | 94 | 28 | 602 | 18.6 | 10.5 | 16.68 |
| Roof Materials | | | | | | | | | |
| Built-Up | 1,545 | 30,295 | 19.6 | 1,484 | 435 | 281 | 14.4 | 11.2 | 8.44 |
| Shingles (Not Wood) | 1,319 | 10,590 | 8.0 | 341 | 100 | 76 | 9.4 | 9.6 | 7.00 |
| Metal Surfacing | 827 | 7,790 | 9.4 | 314 | 92 | 111 | 11.8 | 14.6 | 12.20 |
| Synthetic or Rubber | 211 | 6,907 | 32.8 | 416 | 122 | 579 | 17.7 | 13.8 | 11.22 |
| Slate or Tile | 187 | 2,556 | 13.7 | 70 | 20 | 109 | 8.0 | 10.0 | 19.22 |
| Concrete | 70 | 1,879 | 26.9 | 71 | 21 | 299 | 11.1 | 7.8 | 27.22 |
| Wooden Materials | 100 | 693 | 6.9 | 29 | 8 | 85 | 12.2 | 12.8 | 16.09 |
| Other | 36 | 854 | 23.4 | 48 | 14 | 390 | 16.6 | 13.6 | 27.41 |
| Building Shell Conservation Features (Solely or In Combination) | | | | | | | | | |
| Roof or Ceiling Insulation | 2,991 | 44,540 | 14.9 | 2,201 | 645 | 216 | 14.5 | 11.6 | 4.67 |
| Wall Insulation | 1,984 | 29,414 | 14.8 | 1,547 | 453 | 228 | 15.4 | 11.6 | 6.72 |
| Storm or Multiple Glazing | 1,423 | 23,991 | 16.9 | 1,225 | 359 | 252 | 15.0 | 11.4 | 5.78 |
| Tinted, Reflective, or Shading Glass | 932 | 21,906 | 23.5 | 1,295 | 380 | 407 | 17.3 | 11.5 | 8.12 |
| Exterior or Interior Shadings or Awnings | | | | | | | | | |
| Weather Stripping or Caulking | 1,452 | 26,032 | 17.9 | 1,381 | 405 | 279 | 15.6 | 11.3 | 6.66 |
| None of the Above | 2,717 | 44,367 | 16.3 | 2,257 | 662 | 243 | 14.9 | 11.7 | 5.24 |

See footnote at end of table.

Table 21. Electricity Consumption (Continued)

| Building Characteristics | All Buildings Using Electricity | | | Electricity Consumption | | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|-------------------------|---------------------|-----------------------------|-----------------------|---------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion kWh) | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | |
| RSE Column Factor: | 0.635 | 0.875 | 0.773 | 1.232 | 1.232 | 1.250 | 0.833 | 0.450 | |
| ENERGY SOURCES AND END USES* | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | |
| Electricity | 4,294 | 61,563 | 14.3 | 2,773 | 813 | 189 | 13.2 | 11.5 | 4.69 |
| Natural Gas | 2,417 | 41,115 | 17.0 | 1,824 | 534 | 221 | 13.0 | 11.1 | 6.42 |
| Fuel Oil | 580 | 12,579 | 21.7 | 662 | 194 | 334 | 15.4 | 11.4 | 14.10 |
| District Heat | 98 | 6,578 | 67.0 | 444 | 130 | 1,325 | 19.8 | 12.6 | 16.80 |
| District Chilled Water | 24 | 1,927 | 79.9 | 162 | 47 | 1,971 | 24.6 | 16.2 | 31.16 |
| Propane | 348 | 4,695 | 13.5 | 200 | 59 | 168 | 12.5 | 12.3 | 14.26 |
| Other | 129 | 1,537 | 11.9 | 45 | 13 | 103 | 8.6 | 10.1 | 21.13 |
| Energy End Uses (Solely or in Combination) | | | | | | | | | |
| Heated Buildings | 3,872 | 57,826 | 14.9 | 2,676 | 784 | 203 | 13.6 | 11.4 | 4.81 |
| Air-Conditioned Buildings | 3,182 | 51,757 | 16.3 | 2,555 | 749 | 235 | 14.5 | 11.6 | 4.81 |
| Buildings with Water Heating | 3,180 | 53,569 | 16.8 | 2,602 | 762 | 240 | 14.2 | 11.7 | 4.80 |
| Buildings with Cooking | 864 | 23,662 | 27.4 | 1,331 | 390 | 452 | 16.5 | 13.0 | 7.89 |
| Buildings with Manufacturing | 205 | 5,595 | 27.3 | 291 | 85 | 417 | 15.3 | 13.6 | 13.22 |
| Energy End-Use Combinations | | | | | | | | | |
| Heated Buildings | | | | | | | | | |
| With Air Conditioning | 660 | 20,781 | 31.5 | 1,222 | 358 | 543 | 17.2 | 13.1 | 6.40 |
| With Water Heating and Cooking | 1,906 | 25,896 | 13.6 | 1,153 | 338 | 177 | 13.0 | 10.4 | 6.82 |
| With Water Heating, Without Cooking | 484 | 3,641 | 7.5 | 96 | 28 | 58 | 7.7 | 8.6 | 10.46 |
| Without Air Conditioning | 138 | 2,079 | 15.0 | 63 | 19 | 134 | 8.9 | 12.5 | 25.01 |
| With Water Heating, Without Cooking | 373 | 3,700 | 9.9 | 102 | 30 | 80 | 8.1 | 10.6 | 18.22 |
| Without Water Heating or Cooking | 291 | 1,509 | 5.2 | 27 | 8 | 27 | 5.2 | 9.0 | 18.62 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 269 | 2,282 | 8.5 | 22 | 7 | 25 | 2.9 | 15.6 | 16.24 |
| All Other Combinations | 174 | 1,675 | 9.7 | 88 | 26 | 149 | 15.4 | 12.6 | 20.55 |
| Space-Heating Energy Source | | | | | | | | | |
| Electricity | 1,283 | 18,702 | 14.6 | 1,039 | 305 | 237 | 16.3 | 13.4 | 5.82 |
| Main | 957 | 13,448 | 14.1 | 800 | 234 | 245 | 17.4 | 13.1 | 6.41 |
| With Secondary | 93 | 1,997 | 21.6 | 118 | 35 | 373 | 17.3 | 13.9 | 17.99 |
| Natural Gas Only | 54 | 1,142 | 21.0 | 57 | 17 | 308 | 14.7 | 10.7 | 24.73 |
| Other Energy Sources or Combinations | 36 | 787 | 21.6 | 54 | 16 | 438 | 20.2 | 18.6 | 24.46 |
| With No Secondary | 864 | 11,451 | 13.2 | 682 | 200 | 231 | 17.5 | 13.0 | 8.95 |
| Secondary | 326 | 5,254 | 16.1 | 239 | 70 | 215 | 13.3 | 14.5 | 11.91 |
| Other Excluding Electricity | 2,589 | 39,124 | 15.1 | 1,637 | 480 | 185 | 12.3 | 10.4 | 6.40 |
| Building Not Heated | 422 | 3,737 | 8.9 | 97 | 29 | 68 | 7.6 | 15.0 | 16.65 |
| Main Space-Heating Energy Source | | | | | | | | | |
| Electricity | 957 | 13,448 | 14.1 | 800 | 234 | 245 | 17.4 | 13.1 | 6.41 |
| Natural Gas | 2,078 | 31,102 | 15.0 | 1,287 | 377 | 181 | 12.1 | 11.0 | 6.66 |
| Fuel Oil | 473 | 5,577 | 11.8 | 182 | 53 | 113 | 9.5 | 9.3 | 16.33 |
| District Heat | 93 | 6,020 | 64.5 | 355 | 104 | 1,115 | 17.3 | 11.0 | 16.11 |
| Propane | 208 | 1,230 | 5.9 | Q | Q | Q | 11.6 | 10.7 | 22.71 |
| Other | 68 | 761 | 11.1 | 14 | 4 | Q | 5.4 | Q | 21.65 |

See footnote at end of table.

ELECTRICITY

Table 21. Electricity Consumption (Continued)

| Building Characteristics | All Buildings Using Electricity | | | Electricity Consumption | | | | | RSE Row Factor |
|---|---------------------------------|----------------------------------|--|-------------------------|---------------------|-----------------------------|-----------------------|---------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion kWh) | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | |
| RSE Column Factor: | 0.831 | 0.853 | 0.885 | 1.227 | 1.227 | 1.141 | 0.923 | 1.004 | |
| Air-Conditioning Energy Source | | | | | | | | | |
| Electricity | 3,072 | 47,905 | 15.6 | 2,373 | 695 | 226 | 14.5 | 11.7 | 4.92 |
| Other Excluding Electricity | 111 | 3,852 | 34.9 | 182 | 53 | 482 | 13.8 | 10.0 | 15.22 |
| Air-Conditioning Not Performed | 1,112 | 9,806 | 8.8 | 218 | 64 | 58 | 6.5 | 10.7 | 11.91 |
| Water-Heating Energy Source | | | | | | | | | |
| Electricity | 1,554 | 21,493 | 13.8 | 1,135 | 333 | 214 | 15.5 | 12.1 | 5.42 |
| Other Excluding Electricity | 1,626 | 32,076 | 19.7 | 1,466 | 430 | 264 | 13.4 | 11.5 | 6.86 |
| Water Heating Not Performed | 1,115 | 7,994 | 7.2 | 171 | 50 | 45 | 6.3 | 9.2 | 7.85 |
| Cooking Energy Source | | | | | | | | | |
| Electricity | 387 | 10,850 | 28.0 | 593 | 174 | 449 | 16.0 | 12.7 | 8.12 |
| Other Excluding Electricity | 477 | 12,812 | 26.9 | 738 | 216 | 454 | 16.9 | 13.2 | 10.79 |
| Cooking Not Performed | 3,431 | 37,901 | 11.0 | 1,442 | 423 | 123 | 11.1 | 10.4 | 5.28 |
| Manufacturing Energy Source | | | | | | | | | |
| Electricity | 163 | 4,406 | 27.1 | 219 | 64 | 394 | 14.5 | 13.3 | 15.28 |
| Other Excluding Electricity | 42 | 1,190 | 28.3 | 73 | 21 | 508 | 18.0 | 14.4 | 23.97 |
| Manufacturing Not Performed | 4,090 | 55,968 | 13.7 | 2,482 | 727 | 178 | 13.0 | 11.3 | 4.88 |
| HEATING AND COOLING | | | | | | | | | |
| Percent Heated | | | | | | | | | |
| Not Heated | 433 | 3,839 | 8.9 | 98 | 29 | 67 | 7.5 | 14.9 | 16.70 |
| 1 to 50 | 630 | 9,314 | 14.8 | 210 | 61 | 97 | 6.6 | 12.7 | 11.05 |
| 51 to 99 | 496 | 8,668 | 17.5 | 496 | 146 | 293 | 16.8 | 12.2 | 9.60 |
| 100 | 2,735 | 39,742 | 14.5 | 1,969 | 577 | 211 | 14.5 | 11.1 | 5.76 |
| Percent Cooled | | | | | | | | | |
| Not Cooled | 1,112 | 9,806 | 8.8 | 218 | 64 | 58 | 6.5 | 10.7 | 11.91 |
| 1 to 50 | 1,037 | 17,821 | 17.2 | 461 | 135 | 130 | 7.6 | 11.0 | 7.46 |
| 51 to 99 | 597 | 13,133 | 22.0 | 783 | 230 | 385 | 17.5 | 12.0 | 8.56 |
| 100 | 1,548 | 20,803 | 13.4 | 1,311 | 384 | 248 | 18.5 | 11.6 | 7.69 |
| Heating Equipment (Solely or in Combination) | | | | | | | | | |
| Furnaces | 1,618 | 15,590 | 9.6 | 608 | 178 | 110 | 11.4 | 10.7 | 6.83 |
| Boilers | 703 | 19,874 | 28.3 | 874 | 256 | 364 | 12.9 | 10.4 | 7.53 |
| Individual Space Heaters | 1,388 | 22,537 | 16.2 | 942 | 276 | 199 | 12.3 | 12.0 | 6.97 |
| Packaged Heating Units | 859 | 15,598 | 18.2 | 878 | 257 | 300 | 16.5 | 13.3 | 8.60 |
| Heat Pumps | 453 | 8,357 | 18.5 | 426 | 125 | 276 | 15.0 | 10.7 | 9.23 |
| Air Ducts | 1,988 | 37,263 | 18.7 | 2,004 | 587 | 296 | 15.8 | 11.9 | 5.91 |
| Heating or Reheating Coils | 243 | 15,682 | 64.5 | 1,040 | 305 | 1,255 | 19.4 | 12.0 | 9.84 |
| Fan-Coil Units | 185 | 11,839 | 63.8 | 682 | 200 | 1,077 | 16.9 | 12.1 | 12.23 |
| Steam or Hot Water Radiators or Baseboards | 498 | 15,789 | 31.7 | 603 | 177 | 355 | 11.2 | 9.2 | 9.77 |
| Other | 57 | 1,476 | 25.7 | 117 | 34 | 599 | 23.3 | 16.3 | 21.13 |
| Cooling Equipment (Solely or in Combination) | | | | | | | | | |
| Central Chillers | 201 | 14,037 | 69.9 | 922 | 270 | 1,345 | 19.2 | 11.4 | 10.86 |
| Individual Air Conditioners | 1,074 | 19,239 | 17.9 | 754 | 221 | 206 | 11.5 | 11.4 | 8.57 |
| Packaged Cooling Units | 1,979 | 34,745 | 17.6 | 1,804 | 529 | 267 | 15.2 | 11.8 | 5.84 |
| Heat Pumps | 437 | 7,827 | 17.9 | 467 | 137 | 313 | 17.5 | 12.6 | 13.23 |
| Air Ducts | 1,710 | 34,212 | 20.0 | 1,877 | 550 | 322 | 16.1 | 12.0 | 6.03 |
| Fan-Coil Units | 110 | 10,787 | 98.1 | 753 | 221 | 2,007 | 20.5 | 11.4 | 12.08 |
| Other | 100 | 1,468 | 14.6 | 63 | 19 | 185 | 12.7 | 11.5 | 27.69 |

See footnotes at end of table.

Table 21. Electricity Consumption (Continued)

| Building Characteristics | All Buildings Using Electricity | | | Electricity Consumption | | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|-------------------------|---------------------|-----------------------------|-----------------------|---------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion kWh) | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | |
| RSE Column Factor: | 0.831 | 0.859 | 0.885 | 1.227 | 1.227 | 1.141 | 0.929 | 1.004 | |
| Year Main Central Chiller Installed | | | | | | | | | |
| 1959 or Before | 26 | 1,477 | 56.0 | 91 | 27 | 1,015 | 18.1 | 10.1 | 19.93 |
| 1960 to 1969 | 52 | 3,713 | 72.0 | 252 | 74 | 1,432 | 19.9 | 14.1 | 24.80 |
| 1970 to 1979 | 50 | 3,536 | 71.3 | 231 | 68 | 1,368 | 19.2 | 11.9 | 14.72 |
| 1980 to 1986 | 47 | 3,515 | 74.4 | 245 | 72 | 1,517 | 20.4 | 10.2 | 19.13 |
| 1987 to 1989 | 26 | 1,798 | 68.9 | 103 | 30 | 1,153 | 16.7 | 10.0 | 20.95 |
| Year Packaged Cooling System Installed | | | | | | | | | |
| 1959 or Before | 76 | 1,736 | 23.0 | 79 | 23 | 306 | 13.3 | 9.6 | 14.66 |
| 1960 to 1969 | 262 | 4,844 | 18.5 | 276 | 81 | 309 | 16.7 | 11.9 | 18.21 |
| 1970 to 1979 | 603 | 10,469 | 17.3 | 547 | 160 | 266 | 15.3 | 12.6 | 7.35 |
| 1980 to 1986 | 657 | 11,339 | 17.2 | 599 | 176 | 267 | 15.5 | 12.1 | 9.28 |
| 1987 to 1989 | 380 | 6,358 | 16.7 | 303 | 89 | 233 | 14.0 | 10.8 | 9.13 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | |
| Present in Building | 264 | 16,678 | 63.1 | 1,194 | 350 | 1,324 | 21.0 | 12.3 | 8.29 |
| Not Present | 4,030 | 44,885 | 11.1 | 1,579 | 463 | 115 | 10.3 | 11.0 | 4.87 |
| LIGHTING AND REFRIGERATION | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | |
| Not Lit | 75 | 757 | 10.1 | 8 | 2 | 31 | 3.1 | 111.1 | 25.82 |
| 1 to 50 | 999 | 10,864 | 10.9 | 192 | 56 | 56 | 5.2 | 10.1 | 8.02 |
| 51 to 99 | 951 | 16,950 | 17.8 | 813 | 238 | 250 | 14.1 | 11.8 | 7.98 |
| 100 | 2,268 | 32,992 | 14.5 | 1,760 | 516 | 227 | 15.6 | 11.5 | 5.90 |
| Percent Lit When Closed | | | | | | | | | |
| Not Lit | 2,459 | 26,439 | 10.8 | 947 | 278 | 113 | 10.5 | 11.1 | 7.19 |
| 1 to 50 | 1,706 | 31,819 | 18.7 | 1,566 | 459 | 269 | 14.4 | 11.1 | 5.60 |
| 51 to 99 | 68 | 2,308 | 34.2 | 203 | 60 | 883 | 25.8 | 16.8 | 18.79 |
| 100 | 62 | 997 | 16.1 | 57 | 17 | 269 | 16.7 | 31.7 | 27.69 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | |
| Incandescent Lamps | 2,403 | 38,774 | 16.1 | 1,747 | 512 | 213 | 13.2 | 10.9 | 5.99 |
| Fluorescent Lamps | 3,918 | 58,879 | 15.0 | 2,735 | 801 | 205 | 13.6 | 11.5 | 4.71 |
| High-Intensity Discharge Lamps | 456 | 18,177 | 39.9 | 982 | 288 | 631 | 15.8 | 13.3 | 8.79 |
| Other Lamps | 24 | 513 | 21.5 | 28 | 8 | 348 | 16.1 | 10.3 | 22.54 |
| High-Efficiency Ballasts | 1,070 | 24,161 | 22.6 | 1,415 | 415 | 388 | 17.2 | 12.9 | 6.99 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | |
| Commercial | | | | | | | | | |
| Refrigeration Units | 908 | 24,605 | 27.1 | 1,495 | 438 | 482 | 17.8 | 13.8 | 7.15 |
| Freezers | 707 | 21,627 | 30.6 | 1,424 | 417 | 591 | 19.3 | 14.2 | 6.90 |
| Residential | | | | | | | | | |
| Refrigerators | 2,471 | 44,179 | 17.9 | 2,054 | 602 | 244 | 13.6 | 10.8 | 5.35 |
| Freezers | 617 | 12,406 | 20.1 | 651 | 191 | 309 | 15.4 | 12.2 | 10.22 |
| Ice-Making Machines | 771 | 23,401 | 30.4 | 1,540 | 451 | 586 | 19.3 | 13.5 | 7.31 |
| Refrigerated Vending Machines | 1,513 | 38,810 | 25.7 | 2,122 | 622 | 411 | 16.0 | 12.1 | 5.04 |
| Water Coolers | 1,745 | 42,781 | 24.5 | 2,147 | 629 | 361 | 14.7 | 11.6 | 5.67 |
| Other | 56 | 1,408 | 25.3 | 186 | 54 | 979 | 38.7 | 21.9 | 25.28 |
| ENERGY MANAGEMENT | | | | | | | | | |
| Occupant Control | | | | | | | | | |
| Any Control of Heating | 2,399 | 27,033 | 11.3 | 1,074 | 315 | 131 | 11.6 | 10.1 | 5.05 |
| With Thermostats | 2,100 | 24,762 | 11.8 | 986 | 289 | 138 | 11.7 | 10.1 | 5.67 |
| Any Control of Cooling | 1,977 | 26,303 | 13.3 | 1,094 | 321 | 162 | 12.2 | 10.3 | 5.26 |
| With Thermostats | 1,756 | 24,032 | 13.7 | 1,010 | 296 | 168 | 12.3 | 10.3 | 5.09 |

See footnotes at end of table.

ELECTRICITY
Table 21. Electricity Consumption (Continued)

| Building Characteristics | All Buildings Using Electricity | | | Electricity Consumption | | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|-------------------------|---------------------|-----------------------------|-----------------------|---------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion kWh) | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | |
| RSE Column Factors: | 0.851 | 0.845 | 0.842 | 1.227 | 1.227 | 1.141 | 0.923 | 1.004 | |
| Reduced Use During Off-Hours | | | | | | | | | |
| Heating Only | 790 | 7,126 | 9.0 | 216 | 63 | 80 | 8.9 | 10.4 | 12.88 |
| Cooling Only | 283 | 4,112 | 14.5 | 202 | 59 | 209 | 14.4 | 14.1 | 14.86 |
| Heating and Cooling | 2,397 | 38,683 | 16.1 | 1,671 | 490 | 204 | 12.7 | 10.4 | 5.63 |
| Computerized Energy Management and Control System | | | | | | | | | |
| Present in Building | 263 | 14,310 | 54.3 | 896 | 263 | 997 | 18.3 | 12.4 | 8.03 |
| Controls Heating and Cooling | 251 | 13,767 | 54.8 | 866 | 254 | 1,010 | 18.4 | 12.2 | 8.26 |
| Controls Lighting | 51 | 3,835 | 75.3 | 223 | 65 | 1,286 | 17.1 | 10.2 | 15.90 |
| Controls Other | 32 | 2,316 | 73.5 | 160 | 47 | 1,491 | 20.3 | 13.4 | 13.97 |
| Other Energy Management | | | | | | | | | |
| Regular HVAC Maintenance | 2,099 | 42,955 | 20.5 | 2,328 | 682 | 325 | 15.9 | 12.0 | 5.22 |
| Participated in Utility Conservation Program | 324 | 10,826 | 33.4 | 584 | 171 | 528 | 15.8 | 10.7 | 7.80 |
| ELECTRICITY DEMAND | | | | | | | | | |
| Annual Consumption (kilowatthours) | | | | | | | | | |
| 10,000 or Less | 1,019 | 4,582 | 4.5 | 17 | 5 | 5 | 1.1 | 1.5 | 6.39 |
| 10,001 to 25,000 | 913 | 5,413 | 5.9 | 52 | 15 | 17 | 2.8 | 3.8 | 4.48 |
| 25,001 to 50,000 | 702 | 5,544 | 7.9 | 86 | 25 | 36 | 4.6 | 5.6 | 5.96 |
| 50,001 to 100,000 | 639 | 7,052 | 11.0 | 156 | 46 | 71 | 6.5 | 7.5 | 6.27 |
| 100,001 to 500,000 | 762 | 14,099 | 18.5 | 547 | 160 | 210 | 11.4 | 11.2 | 4.14 |
| 500,001 to 1,000,000 | 122 | 5,901 | 48.4 | 291 | 85 | 699 | 14.4 | 11.3 | 8.84 |
| 1,000,001 to 2,000,000 | 69 | 5,022 | 72.8 | 324 | 95 | 1,379 | 18.9 | 14.4 | 8.28 |
| 2,000,001 to 5,000,000 | 50 | 6,263 | 124.7 | 531 | 156 | 3,098 | 24.8 | 16.3 | 8.38 |
| Over 5,000,000 | 18 | 7,688 | 416.7 | 769 | 225 | 12,217 | 29.3 | 15.4 | 12.16 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 22. Electricity Expenditures

| Building Characteristics | All Buildings Using Electricity | | | Electricity Expenditures | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-------------------|-------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) | |
| All Buildings | 4,294 | 61,563 | 14.3 | 55,943 | 13.0 | 0.91 | 0.069 | 4.94 |
| Building Floorspace (Square Feet) | | | | | | | | |
| 1,001 to 5,000 | 2,360 | 6,409 | 2.7 | 7,592 | 3.2 | 1.18 | .080 | 3.60 |
| 5,001 to 10,000 | 855 | 6,297 | 7.4 | 6,232 | 7.3 | .99 | .086 | 4.47 |
| 10,001 to 25,000 | 622 | 9,989 | 16.1 | 7,809 | 12.6 | .78 | .070 | 4.84 |
| 25,001 to 50,000 | 243 | 8,671 | 35.7 | 6,919 | 28.5 | .80 | .071 | 5.02 |
| 50,001 to 100,000 | 125 | 8,918 | 71.6 | 8,042 | 64.5 | .90 | .063 | 5.77 |
| 100,001 to 200,000 | 60 | 8,222 | 136.5 | 7,410 | 123.0 | .90 | .065 | 5.97 |
| 200,001 to 500,000 | 23 | 6,996 | 301.3 | 6,326 | 272.4 | .90 | .059 | 10.70 |
| Over 500,000 | 7 | 6,062 | 865.4 | 5,613 | 801.2 | .93 | .063 | 12.65 |
| Year Constructed | | | | | | | | |
| 1899 or Before | 162 | 1,568 | 9.7 | 603 | 3.7 | .38 | .083 | 12.85 |
| 1900 to 1919 | 223 | 3,849 | 17.3 | 1,676 | 7.5 | .44 | .076 | 14.09 |
| 1920 to 1945 | 631 | 7,880 | 12.5 | 4,772 | 7.6 | .61 | .077 | 8.89 |
| 1946 to 1959 | 823 | 10,185 | 12.4 | 7,333 | 8.9 | .72 | .066 | 7.82 |
| 1960 to 1969 | 775 | 11,921 | 15.4 | 11,667 | 15.1 | .98 | .068 | 7.79 |
| 1970 to 1979 | 855 | 13,172 | 15.4 | 14,815 | 17.3 | 1.12 | .069 | 7.75 |
| 1980 to 1983 | 309 | 4,209 | 13.6 | 5,570 | 18.0 | 1.32 | .065 | 4.66 |
| 1984 to 1986 | 315 | 5,628 | 17.9 | 6,363 | 20.2 | 1.13 | .072 | 9.41 |
| 1987 to 1989 | 202 | 3,150 | 15.6 | 3,143 | 15.5 | 1.00 | .064 | 10.05 |
| BUILDING USE | | | | | | | | |
| Principal Building Activity | | | | | | | | |
| Assembly | 614 | 6,851 | 11.2 | 4,648 | 7.6 | .68 | .085 | 15.77 |
| Education | 282 | 8,070 | 28.6 | 4,391 | 15.6 | .54 | .069 | 7.39 |
| Food Sales | 102 | 792 | 7.7 | 1,992 | 19.5 | 2.52 | .065 | 13.76 |
| Food Service | 241 | 1,167 | 4.8 | 2,520 | 10.5 | 2.16 | .076 | 5.72 |
| Health Care | 80 | 2,054 | 25.7 | 2,670 | 33.4 | 1.30 | .059 | 11.94 |
| Lodging | 140 | 3,476 | 24.8 | 2,593 | 18.5 | .75 | .064 | 10.04 |
| Mercantile and Service | 1,276 | 12,361 | 9.7 | 11,116 | 8.7 | .90 | .069 | 5.68 |
| Office | 679 | 11,796 | 17.4 | 15,757 | 23.2 | 1.34 | .069 | 6.14 |
| Parking Garage | 45 | 983 | 22.0 | 357 | 8.0 | .36 | .068 | 10.22 |
| Public Order and Safety | 50 | 608 | 12.2 | 582 | 11.7 | .96 | .069 | 20.79 |
| Warehouse | 543 | 8,850 | 16.3 | 4,836 | 8.9 | .55 | .068 | 10.14 |
| Other | 62 | 1,528 | 24.8 | 3,558 | 57.8 | 2.33 | .060 | 23.44 |
| Vacant | 182 | 3,027 | 16.6 | 924 | 5.1 | .31 | .080 | 15.80 |
| Weekly Operating Hours | | | | | | | | |
| 39 or Fewer | 687 | 4,747 | 6.9 | 1,718 | 2.5 | .36 | .083 | 7.04 |
| 40 to 48 | 1,100 | 13,810 | 12.6 | 9,871 | 9.0 | .71 | .077 | 9.05 |
| 49 to 60 | 978 | 13,349 | 13.7 | 10,146 | 10.4 | .76 | .072 | 8.46 |
| 61 to 84 | 621 | 10,751 | 17.3 | 10,899 | 17.6 | 1.01 | .071 | 7.19 |
| 85 to 167 | 513 | 9,377 | 18.3 | 9,480 | 18.5 | 1.01 | .067 | 8.52 |
| 168 (Open Continuously) | 395 | 9,529 | 24.1 | 13,829 | 35.0 | 1.45 | .061 | 7.89 |
| Workers | | | | | | | | |
| 4 or Fewer | 2,261 | 13,550 | 6.0 | 6,835 | 3.0 | .50 | .079 | 4.94 |
| 5 to 9 | 903 | 7,926 | 8.8 | 5,464 | 6.0 | .69 | .072 | 5.80 |
| 10 to 19 | 507 | 6,443 | 12.7 | 4,993 | 9.9 | .77 | .072 | 6.86 |
| 20 to 49 | 381 | 9,665 | 25.4 | 8,968 | 23.5 | .93 | .076 | 9.47 |
| 50 to 99 | 132 | 7,389 | 56.1 | 7,018 | 53.3 | .95 | .069 | 7.46 |
| 100 to 249 | 79 | 6,771 | 85.9 | 8,910 | 113.1 | 1.32 | .064 | 8.17 |
| 250 or More | 32 | 9,818 | 307.8 | 13,754 | 431.2 | 1.40 | .062 | 9.29 |

See footnote at end of table.

ELECTRICITY

Table 22. Electricity Expenditures (Continued)

| Building Characteristics | All Buildings Using Electricity | | | Electricity Expenditures | | | | RSE Flow Factor |
|---|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-------------------|-----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) | |
| RSE Column Factor: | 0.979 | 1.026 | 0.906 | 1,384 | 1.305 | 1.000 | 0.597 | |
| Ownership and Occupancy | | | | | | | | |
| Nongovernment Owned | 3,736 | 47,550 | 12.7 | 43,117 | 11.5 | 0.91 | 0.070 | 3.74 |
| Owner Occupied | 2,733 | 35,437 | 13.0 | 31,565 | 11.5 | .89 | .068 | 4.39 |
| Single Establishment | 2,366 | 26,590 | 11.2 | 23,444 | 9.9 | .88 | .068 | 5.21 |
| Multiple Establishment | 367 | 8,847 | 24.1 | 8,122 | 22.1 | .92 | .071 | 7.35 |
| Nonowner Occupied | 1,002 | 12,113 | 12.1 | 11,552 | 11.5 | .95 | .073 | 5.66 |
| Single Establishment | 658 | 6,179 | 9.4 | 5,594 | 8.5 | .91 | .072 | 6.07 |
| Multiple Establishment | 256 | 5,227 | 20.4 | 5,765 | 22.6 | 1.10 | .074 | 6.38 |
| Vacant | 89 | 707 | 8.0 | 193 | 2.2 | .27 | .083 | 15.53 |
| Government Owned | 559 | 14,013 | 25.1 | 12,826 | 23.0 | .92 | .066 | 10.12 |
| Federal | 38 | 1,900 | 50.5 | 2,172 | 57.8 | 1.14 | .056 | 25.96 |
| State | 131 | 3,870 | 29.6 | 4,112 | 31.4 | 1.06 | .058 | 14.65 |
| Local | 390 | 8,243 | 21.1 | 6,542 | 16.8 | .79 | .077 | 12.40 |
| Multibuilding Facility | | | | | | | | |
| Not on Multibuilding Facility | 2,885 | 36,523 | 12.7 | 29,810 | 10.3 | .82 | .071 | 3.76 |
| Part of Multibuilding Facility | 1,410 | 25,040 | 17.8 | 26,133 | 18.5 | 1.04 | .066 | 6.82 |
| On Facility with Central Plant | 201 | 8,298 | 41.3 | 11,397 | 56.7 | 1.37 | .061 | 15.21 |
| Percent Vacant at Least Three Months | | | | | | | | |
| 0 | 3,507 | 42,697 | 12.2 | 41,630 | 11.9 | .98 | .069 | 4.43 |
| 1 to 50 | 374 | 12,416 | 33.2 | 11,792 | 31.6 | .95 | .069 | 7.13 |
| 51 to 99 | 98 | 3,446 | 35.1 | 1,175 | 12.0 | .34 | .062 | 20.74 |
| 100 | 315 | 3,005 | 9.5 | 1,346 | 4.3 | .45 | .072 | 8.07 |
| Months in Use Out of Past 12 Months | | | | | | | | |
| 0 to 8 | 310 | 3,308 | 10.7 | 1,721 | 5.6 | .52 | .073 | 10.16 |
| 9 to 11 | 270 | 3,775 | 14.0 | 1,730 | 6.4 | .46 | .077 | 7.94 |
| 12 | 3,715 | 54,480 | 14.7 | 52,492 | 14.1 | .96 | .068 | 4.24 |
| LOCATION | | | | | | | | |
| Census Region | | | | | | | | |
| Northeast | 751 | 13,326 | 17.7 | 13,188 | 17.6 | .99 | .077 | 6.99 |
| Midwest | 1,001 | 15,704 | 15.7 | 11,697 | 11.7 | .74 | .066 | 7.11 |
| South | 1,723 | 21,215 | 12.3 | 18,409 | 10.7 | .87 | .064 | 7.37 |
| West | 819 | 11,318 | 13.8 | 12,649 | 15.4 | 1.12 | .071 | 7.85 |
| Census Division | | | | | | | | |
| Northeast | | | | | | | | |
| New England | 177 | 3,127 | 17.7 | 2,662 | 15.0 | .85 | .079 | 10.60 |
| Middle Atlantic | 574 | 10,199 | 17.8 | 10,527 | 18.3 | 1.03 | .076 | 11.01 |
| Midwest | | | | | | | | |
| East North Central | 656 | 10,527 | 16.1 | 7,964 | 12.1 | .76 | .068 | 9.26 |
| West North Central | 345 | 5,177 | 15.0 | 3,733 | 10.8 | .72 | .061 | 11.71 |
| South | | | | | | | | |
| South Atlantic | 692 | 9,628 | 13.9 | 8,817 | 12.7 | .92 | .072 | 13.38 |
| East South Central | 381 | 4,218 | 11.1 | 3,558 | 9.3 | .84 | .056 | 11.59 |
| West South Central | 651 | 7,369 | 11.3 | 6,034 | 9.3 | .82 | .060 | 9.36 |
| West | | | | | | | | |
| Mountain | 300 | 4,172 | 13.9 | 3,344 | 11.2 | .80 | .064 | 16.27 |
| Pacific | 519 | 7,146 | 13.8 | 9,305 | 17.9 | 1.30 | .075 | 9.52 |
| Metropolitan Status | | | | | | | | |
| Metropolitan | 2,946 | 49,835 | 16.9 | 48,494 | 16.5 | .97 | .070 | 4.71 |
| Nonmetropolitan | 1,349 | 11,728 | 8.7 | 7,449 | 5.5 | .64 | .062 | 7.29 |

See footnote at end of table.

Table 22. Electricity Expenditures (Continued)

| Building Characteristics | All Buildings Using Electricity | | | Electricity Expenditures | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) | |
| RSE Column Factor: | 0.979 | 1.026 | 0.906 | 1,384 | 1.385 | 1.068 | 0.537 | |
| Climate Zone: 45-Year Average | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | |
| Over 7,000 HDD | 333 | 4,983 | 15.0 | 3,669 | 11.0 | .74 | .059 | 9.79 |
| 5,500-7,000 HDD | 1,074 | 17,496 | 16.3 | 13,671 | 12.7 | .78 | .070 | 8.77 |
| 4,000-5,499 HDD | 917 | 15,045 | 16.4 | 14,043 | 15.3 | .93 | .068 | 10.61 |
| Under 4,000 HDD | 982 | 12,573 | 12.8 | 13,271 | 13.5 | 1.06 | .068 | 10.67 |
| 2,000 CDD or More and -- | | | | | | | | |
| Under 4,000 HDD | 989 | 11,466 | 11.6 | 11,289 | 11.4 | .98 | .073 | 11.17 |
| 1989 Degree-Days | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | |
| Over 7,000 HDD | 501 | 7,497 | 15.0 | 5,424 | 10.8 | .72 | .065 | 10.31 |
| 5,500-7,000 HDD | 1,231 | 21,549 | 17.5 | 17,111 | 13.9 | .79 | .069 | 8.18 |
| 4,000-5,499 HDD | 701 | 10,118 | 14.4 | 10,277 | 14.7 | 1.02 | .065 | 11.99 |
| Under 4,000 HDD | 929 | 11,722 | 12.6 | 12,407 | 13.4 | 1.06 | .071 | 10.97 |
| 2,000 CDD or More and -- | | | | | | | | |
| Under 4,000 HDD | 932 | 10,677 | 11.5 | 10,724 | 11.5 | 1.00 | .073 | 11.47 |
| STRUCTURE | | | | | | | | |
| Floors | | | | | | | | |
| 1 | 2,690 | 22,605 | 8.4 | 20,426 | 7.6 | .90 | .076 | 5.83 |
| 2 | 1,028 | 15,844 | 15.4 | 15,188 | 14.8 | .96 | .065 | 5.86 |
| 3 | 401 | 8,512 | 21.2 | 6,240 | 15.5 | .73 | .067 | 12.62 |
| 4 to 6 | 150 | 8,211 | 54.7 | 6,270 | 41.8 | .76 | .063 | 9.72 |
| 7 or More | 25 | 6,392 | 256.9 | 7,819 | 314.3 | 1.22 | .067 | 10.17 |
| Wall Materials | | | | | | | | |
| Masonry | 2,741 | 41,145 | 15.0 | 35,242 | 12.9 | .86 | .069 | 4.27 |
| Siding or Shingles | 743 | 4,524 | 6.1 | 3,211 | 4.3 | .71 | .073 | 8.33 |
| Metal Panels | 503 | 5,381 | 10.7 | 4,640 | 9.2 | .86 | .064 | 10.77 |
| Concrete Panels | 231 | 7,117 | 30.8 | 8,253 | 35.7 | 1.16 | .071 | 14.27 |
| Window Glass | 31 | 1,915 | 62.1 | 3,032 | 98.4 | 1.58 | .071 | 18.89 |
| Other | 46 | 1,481 | 32.4 | 1,565 | 34.2 | 1.06 | .057 | 17.14 |
| Roof Materials | | | | | | | | |
| Built-Up | 1,545 | 30,295 | 19.6 | 30,350 | 19.6 | 1.00 | .070 | 5.80 |
| Shingles (Not Wood) | 1,319 | 10,590 | 8.0 | 7,617 | 5.8 | .72 | .076 | 6.20 |
| Metal Surfacing | 827 | 7,790 | 9.4 | 5,975 | 7.2 | .77 | .065 | 8.89 |
| Synthetic or Rubber | 211 | 6,907 | 32.8 | 7,549 | 35.9 | 1.09 | .062 | 8.85 |
| Shingle or Tile | 187 | 2,556 | 13.7 | 1,420 | 7.6 | .56 | .069 | 14.80 |
| Concrete | 70 | 1,879 | 26.9 | 1,655 | 23.6 | .88 | .079 | 26.50 |
| Wooden Materials | 100 | 693 | 6.9 | 695 | 7.0 | 1.00 | .082 | 13.23 |
| Other | 36 | 854 | 23.4 | 682 | 18.7 | .80 | .048 | 24.48 |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | |
| Roof or Ceiling Insulation | 2,991 | 44,540 | 14.9 | 43,841 | 14.7 | .98 | .068 | 4.40 |
| Wall Insulation | 1,984 | 29,414 | 14.8 | 30,482 | 15.4 | 1.04 | .067 | 5.45 |
| Storm or Multiple Glazing | 1,423 | 23,991 | 16.9 | 23,489 | 16.5 | .98 | .065 | 4.79 |
| Tinted, Reflective, or Shading Glass | 932 | 21,906 | 23.5 | 25,819 | 27.7 | 1.18 | .068 | 5.92 |
| Exterior or Interior Shadings or Awnings | 1,452 | 26,032 | 17.9 | 26,840 | 18.5 | 1.03 | .066 | 5.20 |
| Weather Stripping or Caulking | 2,717 | 44,367 | 16.3 | 44,930 | 16.5 | 1.01 | .068 | 4.65 |
| None of the Above | 605 | 6,870 | 11.4 | 2,926 | 4.8 | .43 | .074 | 9.82 |

See footnote at end of table.

ELECTRICITY

Table 22. Electricity Expenditures (Continued)

| Building Characteristics | All Buildings Using Electricity | | | Electricity Expenditures | | | | Base Year Factor |
|---|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-------------------|------------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) | |
| PER-COmm. Factor | 0.070 | 1.026 | 0.991 | 1.004 | 1.005 | 1.005 | 1.007 | |
| ENERGY SOURCES AND END USES* | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | |
| Electricity | 4,294 | 61,563 | 14.3 | 55,943 | 13.0 | 0.91 | 0.069 | 4.04 |
| Natural Gas | 2,417 | 41,115 | 17.0 | 36,376 | 15.1 | .88 | .068 | 3.47 |
| Fuel Oil | 580 | 12,579 | 21.7 | 12,980 | 22.4 | 1.03 | .067 | 14.01 |
| District Heat | 98 | 6,578 | 67.0 | 8,192 | 83.5 | 1.25 | .063 | 2.71 |
| District Chilled Water | 24 | 1,927 | 79.9 | 2,791 | 115.8 | 1.45 | .059 | 26.93 |
| Propane | 348 | 4,695 | 13.5 | 4,051 | 11.6 | .86 | .069 | 12.21 |
| Other | 129 | 1,537 | 11.9 | 814 | 6.3 | .53 | .062 | 17.48 |
| Energy End Uses (Solely or in Combination) | | | | | | | | |
| Heated Buildings | 3,872 | 57,826 | 14.9 | 52,965 | 13.7 | .92 | .068 | 3.83 |
| Air-Conditioned Buildings | 3,182 | 51,757 | 16.3 | 51,497 | 16.2 | .99 | .069 | 4.32 |
| Buildings with Water Heating | 3,180 | 53,569 | 16.8 | 52,097 | 16.4 | .97 | .068 | 4.32 |
| Buildings with Cooking | 864 | 23,662 | 27.4 | 25,083 | 29.0 | 1.06 | .064 | 4.33 |
| Buildings with Manufacturing | 205 | 5,595 | 27.3 | 5,464 | 26.7 | .98 | .064 | 10.37 |
| Energy End-Use Combinations | | | | | | | | |
| Heated Buildings | | | | | | | | |
| With Air Conditioning | 660 | 20,781 | 31.5 | 22,847 | 34.6 | 1.10 | .064 | 6.84 |
| With Water Heating and Cooking | 1,906 | 25,896 | 13.6 | 23,807 | 12.5 | .92 | .070 | 4.61 |
| With Water Heating, Without Cooking | 484 | 3,641 | 7.5 | 2,137 | 4.4 | .59 | .076 | 8.22 |
| Without Water Heating or Cooking | 291 | 1,509 | 5.2 | 604 | 2.1 | .40 | .077 | 14.20 |
| Without Air Conditioning | | | | | | | | |
| With Water Heating and Cooking | 138 | 2,079 | 15.0 | 1,118 | 8.1 | .54 | .060 | 17.26 |
| With Water Heating, Without Cooking | 373 | 3,700 | 9.9 | 2,143 | 5.7 | .58 | .072 | 12.09 |
| Without Water Heating or Cooking | 269 | 2,282 | 8.5 | 483 | 1.8 | .21 | .073 | 11.51 |
| All Other Combinations | 174 | 1,675 | 9.7 | 2,804 | Q | 1.67 | .109 | 10.50 |
| Space-Heating Energy Source | | | | | | | | |
| Electricity | 1,283 | 18,702 | 14.6 | 20,037 | 15.6 | 1.07 | .066 | 5.44 |
| Main | 957 | 13,448 | 14.1 | 15,183 | 15.9 | 1.13 | .065 | 5.70 |
| With Secondary | 93 | 1,997 | 21.6 | 2,141 | 23.1 | 1.07 | .062 | 12.81 |
| Natural Gas Only | 54 | 1,142 | 21.0 | 1,089 | 20.0 | .95 | .065 | 10.28 |
| Other Energy Sources or Combinations | 36 | 787 | 21.6 | 937 | 25.8 | 1.19 | .059 | 18.17 |
| With No Secondary | 864 | 11,451 | 13.2 | 13,041 | 15.1 | 1.14 | .065 | 8.81 |
| Secondary | 326 | 5,254 | 16.1 | 4,855 | 14.9 | .92 | .069 | 9.97 |
| Other Excluding Electricity | 2,589 | 39,124 | 15.1 | 32,928 | 12.7 | .84 | .069 | 10.00 |
| Building Not Heated | 422 | 3,737 | 8.9 | 2,978 | 7.1 | .80 | .104 | 10.00 |
| Main Space-Heating Energy Source | | | | | | | | |
| Electricity | 957 | 13,448 | 14.1 | 15,183 | 15.9 | 1.13 | .065 | 5.70 |
| Natural Gas | 2,078 | 31,102 | 15.0 | 25,959 | 12.5 | .83 | .069 | 8.17 |
| Fuel Oil | 473 | 5,577 | 11.8 | 4,176 | 8.8 | .75 | .078 | 11.01 |
| District Heat | 93 | 6,020 | 64.5 | 6,720 | 72.0 | 1.12 | .065 | 14.45 |
| Propane | 208 | 1,230 | 5.9 | 918 | 4.4 | .75 | .064 | 20.85 |
| Other | 68 | 761 | 11.1 | 217 | 3.2 | .29 | .053 | 22.17 |

See footnote at end of table.

Table 22. Electricity Expenditures (Continued)

| Building Characteristics | All Buildings Using Electricity | | | Electricity Expenditures | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-------------------|----------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) | |
| Air-Conditioning Energy Source | | | | | | | | |
| Electricity | 3,072 | 47,905 | 15.6 | 47,887 | 15.6 | 1.00 | .069 | .439 |
| Other Excluding Electricity | 111 | 3,852 | 34.9 | 3,610 | 32.7 | .94 | .068 | .0246 |
| Air-Conditioning Not Performed | 1,112 | 9,806 | 8.8 | 4,446 | 4.0 | .45 | .069 | .049 |
| Water-Heating Energy Source | | | | | | | | |
| Electricity | 1,554 | 21,493 | 13.8 | 22,779 | 14.7 | 1.06 | .068 | .0257 |
| Other Excluding Electricity | 1,626 | 32,076 | 19.7 | 29,318 | 18.0 | .91 | .068 | .0220 |
| Water Heating Not Performed | 1,115 | 7,994 | 7.2 | 3,846 | 3.5 | .48 | .077 | .0107 |
| Cooking Energy Source | | | | | | | | |
| Electricity | 387 | 10,850 | 28.0 | 10,762 | 27.8 | .99 | .062 | .711 |
| Other Excluding Electricity | 477 | 12,812 | 26.9 | 14,321 | 30.1 | 1.12 | .066 | .0360 |
| Cooking Not Performed | 3,431 | 37,901 | 11.0 | 30,860 | 9.0 | .81 | .073 | .431 |
| Manufacturing Energy Source | | | | | | | | |
| Electricity | 163 | 4,406 | 27.1 | 4,174 | 25.7 | .95 | .065 | .0274 |
| Other Excluding Electricity | 42 | 1,190 | 28.3 | 1,289 | 30.7 | 1.08 | .060 | .0130 |
| Manufacturing Not Performed | 4,090 | 55,968 | 13.7 | 50,479 | 12.3 | .90 | .069 | .416 |
| HEATING AND COOLING | | | | | | | | |
| Percent Heated | | | | | | | | |
| Not Heated | 433 | 3,839 | 8.9 | 3,004 | 6.9 | .78 | .104 | .1046 |
| 1 to 50 | 630 | 9,314 | 14.8 | 4,551 | 7.2 | .49 | .074 | .0745 |
| 51 to 99 | 496 | 8,668 | 17.5 | 9,476 | 19.1 | 1.09 | .065 | .0650 |
| 100 | 2,735 | 39,742 | 14.5 | 38,912 | 14.2 | .98 | .067 | .0673 |
| Percent Cooled | | | | | | | | |
| Not Cooled | 1,112 | 9,806 | 8.8 | 4,446 | 4.0 | .45 | .069 | .0690 |
| 1 to 50 | 1,037 | 17,821 | 17.2 | 10,013 | 9.7 | .56 | .074 | .0741 |
| 51 to 99 | 597 | 13,133 | 22.0 | 14,698 | 24.6 | 1.12 | .064 | .0641 |
| 100 | 1,548 | 20,803 | 13.4 | 26,785 | 17.3 | 1.29 | .070 | .0702 |
| Heating Equipment (Solely or in Combination) | | | | | | | | |
| Furnaces | 1,618 | 15,590 | 9.6 | 12,750 | 7.9 | .82 | .072 | .0720 |
| Boilers | 703 | 19,874 | 28.3 | 17,399 | 24.7 | .88 | .068 | .0680 |
| Individual Space Heaters | 1,388 | 22,537 | 16.2 | 18,116 | 13.1 | .80 | .066 | .0660 |
| Packaged Heating Units | 859 | 15,598 | 18.2 | 17,625 | 20.5 | 1.13 | .068 | .0680 |
| Heat Pumps | 453 | 8,357 | 18.5 | 8,338 | 18.4 | 1.00 | .067 | .0670 |
| Air Ducts | 1,988 | 37,263 | 18.7 | 38,855 | 19.5 | 1.04 | .066 | .0660 |
| Heating or Reheating Coils | 243 | 15,682 | 64.5 | 19,240 | 79.2 | 1.23 | .063 | .0630 |
| Fan-Coil Units | 185 | 11,839 | 63.8 | 12,509 | 67.4 | 1.06 | .063 | .0630 |
| Steam or Hot Water Radiators or Baseboards | 498 | 15,789 | 31.7 | 12,068 | 24.2 | .76 | .068 | .0680 |
| Other | 57 | 1,476 | 25.7 | 2,172 | 37.8 | 1.47 | .063 | .0630 |
| Cooling Equipment (Solely or in Combination) | | | | | | | | |
| Central Chillers | 201 | 14,037 | 69.9 | 17,935 | 89.3 | 1.28 | .066 | .0660 |
| Individual Air Conditioners | 1,074 | 19,239 | 17.9 | 15,127 | 14.1 | .79 | .068 | .0680 |
| Packaged Cooling Units | 1,979 | 34,745 | 17.6 | 36,119 | 18.3 | 1.04 | .068 | .0680 |
| Heat Pumps | 437 | 7,827 | 17.9 | 8,941 | 20.5 | 1.14 | .065 | .0650 |
| Air Ducts | 1,710 | 34,212 | 20.0 | 36,720 | 21.5 | 1.07 | .067 | .0670 |
| Fan-Coil Units | 110 | 10,787 | 98.1 | 14,109 | 128.4 | 1.31 | .064 | .0640 |
| Other | 100 | 1,468 | 14.6 | 1,220 | 12.2 | .83 | .066 | .0660 |

See footnotes at end of table.

ELECTRICITY

Table 22. Electricity Expenditures (Continued)

| Building Characteristics | All Buildings Using Electricity | | | Electricity Expenditures | | | | Total Expenditure (millions of dollars) |
|--|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-------------------|---|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) | |
| Year Main Central Chiller Installed | | | | | | | | |
| 1959 or Before | 26 | 1,477 | 56.0 | 1,805 | 68.5 | 1.22 | 0.067 | 20.7 |
| 1960 to 1969 | 52 | 3,713 | 72.0 | 4,563 | 88.5 | 1.23 | .062 | 44.7 |
| 1970 to 1979 | 50 | 3,536 | 71.3 | 4,982 | 100.5 | 1.41 | .073 | 49.0 |
| 1980 to 1986 | 47 | 3,515 | 74.4 | 4,714 | 99.7 | 1.34 | .066 | 44.2 |
| 1987 to 1989 | 26 | 1,798 | 68.9 | 1,872 | 71.8 | 1.04 | .062 | 40.0 |
| Year Packaged Cooling System Installed | | | | | | | | |
| 1959 or Before | 76 | 1,736 | 23.0 | 1,605 | 21.2 | .92 | .069 | 19.1 |
| 1960 to 1969 | 262 | 4,844 | 18.5 | 5,334 | 20.4 | 1.10 | .066 | 44.7 |
| 1970 to 1979 | 603 | 10,469 | 17.3 | 10,706 | 17.7 | 1.02 | .067 | 50.0 |
| 1980 to 1986 | 657 | 11,339 | 17.2 | 12,326 | 18.7 | 1.09 | .070 | 54.0 |
| 1987 to 1989 | 380 | 6,358 | 16.7 | 6,148 | 16.2 | .97 | .069 | 33.0 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | |
| Present in Building | 264 | 16,678 | 63.1 | 22,153 | 83.8 | 1.33 | .063 | 33.0 |
| Not Present | 4,030 | 44,885 | 11.1 | 33,790 | 8.4 | .75 | .073 | 11.0 |
| LIGHTING AND REFRIGERATION | | | | | | | | |
| Percent Lit When Open | | | | | | | | |
| Not Lit | 75 | 757 | 10.1 | 194 | 2.6 | .26 | .083 | 19.1 |
| 1 to 50 | 999 | 10,864 | 10.9 | 4,399 | 4.4 | .40 | .078 | 44.7 |
| 51 to 99 | 951 | 16,950 | 17.8 | 16,071 | 16.9 | .95 | .067 | 50.0 |
| 100 | 2,268 | 32,992 | 14.5 | 35,279 | 15.6 | 1.07 | .068 | 54.0 |
| Percent Lit When Closed | | | | | | | | |
| Not Lit | 2,459 | 26,439 | 10.8 | 19,499 | 7.9 | .74 | .070 | 5.7 |
| 1 to 50 | 1,706 | 31,819 | 18.7 | 30,817 | 18.1 | .97 | .067 | 44.7 |
| 51 to 99 | 68 | 2,308 | 34.2 | 4,547 | 67.4 | 1.97 | .076 | 20.5 |
| 100 | 62 | 997 | 16.1 | 1,079 | 17.4 | 1.08 | .065 | 22.0 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | |
| Incandescent Lamps | 2,403 | 38,774 | 16.1 | 34,173 | 14.2 | .88 | .067 | 44.7 |
| Fluorescent Lamps | 3,918 | 58,879 | 15.0 | 55,091 | 14.1 | .94 | .069 | 44.7 |
| High-Intensity Discharge Lamps | 456 | 18,177 | 39.9 | 17,752 | 38.9 | .98 | .062 | 7.4 |
| Other Lamps | 24 | 513 | 21.5 | 515 | 21.6 | 1.00 | .062 | 19.3 |
| High-Efficiency Ballasts | 1,070 | 24,161 | 22.6 | 27,603 | 25.8 | 1.14 | .067 | 44.7 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | |
| Commercial | | | | | | | | |
| Refrigeration Units | 908 | 24,605 | 27.1 | 28,475 | 31.4 | 1.16 | .065 | 5.85 |
| Freezers | 707 | 21,627 | 30.6 | 26,809 | 37.9 | 1.24 | .064 | 5.87 |
| Residential | | | | | | | | |
| Refrigerators | 2,471 | 44,179 | 17.9 | 40,310 | 16.3 | .91 | .067 | 44.7 |
| Freezers | 617 | 12,406 | 20.1 | 12,487 | 20.2 | 1.01 | .065 | 7.05 |
| Ice-Making Machines | 771 | 23,401 | 30.4 | 28,829 | 37.4 | 1.23 | .064 | 5.85 |
| Refrigerated Vending Machines | 1,513 | 38,810 | 25.7 | 41,893 | 27.7 | 1.08 | .067 | 44.2 |
| Water Coolers | 1,745 | 42,781 | 24.5 | 42,198 | 24.2 | .99 | .067 | 4.97 |
| Other | 56 | 1,408 | 25.3 | 3,164 | 56.9 | 2.25 | .058 | 19.53 |
| ENERGY MANAGEMENT | | | | | | | | |
| Occupant Control | | | | | | | | |
| Any Control of Heating | 2,399 | 27,033 | 11.3 | 22,127 | 9.2 | .82 | .070 | 4.20 |
| With Thermostats | 2,100 | 24,762 | 11.8 | 20,314 | 9.7 | .82 | .070 | 4.05 |
| Any Control of Cooling | 1,977 | 26,303 | 13.3 | 22,388 | 11.3 | .85 | .070 | 4.42 |
| With Thermostats | 1,756 | 24,032 | 13.7 | 20,626 | 11.7 | .86 | .070 | 4.03 |

See footnotes at end of table.

Table 22. Electricity Expenditures (Continued)

| Building Characteristics | All Buildings Using Electricity | | | Electricity Expenditures | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) | |
| RSE Column Factor: | 0.076 | 1.001 | 1.039 | 1.372 | 1.322 | 1.050 | 0.517 | |
| Reduced Use During Off-Hours | | | | | | | | |
| Heating Only | 790 | 7,126 | 9.0 | 4,326 | 5.5 | 0.61 | 0.068 | 9.12 |
| Cooling Only | 283 | 4,112 | 14.5 | 4,718 | 16.6 | 1.15 | .080 | 18.81 |
| Heating and Cooling | 2,397 | 38,683 | 16.1 | 34,156 | 14.3 | .88 | .070 | 4.45 |
| Computerized Energy Management and Control System | | | | | | | | |
| Present in Building | 263 | 14,310 | 54.3 | 16,984 | 64.5 | 1.19 | .065 | 6.64 |
| Controls Heating and Cooling | 251 | 13,767 | 54.8 | 16,402 | 65.3 | 1.19 | .065 | 6.51 |
| Controls Lighting | 51 | 3,835 | 75.3 | 4,200 | 82.5 | 1.10 | .064 | 12.83 |
| Controls Other | 32 | 2,316 | 73.5 | 3,131 | 99.4 | 1.35 | .067 | 12.36 |
| Other Energy Management | | | | | | | | |
| Regular HVAC Maintenance | 2,099 | 42,955 | 20.5 | 45,993 | 21.9 | 1.07 | .067 | 4.60 |
| Participated in Utility Conservation Program | 324 | 10,826 | 33.4 | 11,619 | 35.9 | 1.07 | .068 | 6.85 |
| ELECTRICITY DEMAND | | | | | | | | |
| Annual Consumption (kilowatthours) | | | | | | | | |
| 10,000 or Less | 1,019 | 4,582 | 4.5 | 546 | .5 | .12 | .109 | 5.43 |
| 10,001 to 25,000 | 913 | 5,413 | 5.9 | 1,460 | 1.6 | .27 | .096 | 4.32 |
| 25,001 to 50,000 | 702 | 5,544 | 7.9 | 2,281 | 3.3 | .41 | .090 | 6.25 |
| 50,001 to 100,000 | 639 | 7,052 | 11.0 | 3,854 | 6.0 | .55 | .084 | 4.80 |
| 100,001 to 500,000 | 762 | 14,099 | 18.5 | 11,895 | 15.6 | .84 | .074 | 3.85 |
| 500,001 to 1,000,000 | 122 | 5,901 | 48.4 | 6,205 | 50.9 | 1.05 | .073 | 5.86 |
| 1,000,001 to 2,000,000 | 69 | 5,022 | 72.8 | 5,935 | 86.1 | 1.18 | .062 | 7.43 |
| 2,000,001 to 5,000,000 | 50 | 6,263 | 124.7 | 10,479 | 208.6 | 1.67 | .067 | 10.64 |
| Over 5,000,000 | 18 | 7,688 | 416.7 | 13,289 | 720.4 | 1.73 | .059 | 10.04 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

a Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

ELECTRICITY

Table 23. Electricity Consumption and Conditional Energy Intensity by Census Region

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Row Factor |
|--|---|----------|-------|-------|---|----------|--------|--------|--|----------|-------|-------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor | 1.443 | 1.194 | 1.026 | 1.340 | 1.036 | 0.893 | 0.930 | 0.955 | 1.155 | 0.822 | 0.692 | 0.964 | |
| All Buildings | 172 | 178 | 286 | 177 | 13,326 | 15,704 | 21,215 | 11,318 | 12.9 | 11.4 | 13.5 | 15.6 | 8.36 |
| Building Floorspace (Square Feet) | | | | | | | | | | | | | |
| 1,001 to 5,000 | 14 | 20 | 44 | 18 | 985 | 1,531 | 2,681 | 1,212 | 13.7 | 13.0 | 16.3 | 15.1 | 10.78 |
| 5,001 to 10,000 | 11 | 13 | 35 | 13 | 1,239 | 1,414 | 2,403 | 1,240 | 8.9 | 8.9 | 14.6 | 10.8 | 15.98 |
| 10,001 to 25,000 | 22 | 24 | 41 | 25 | 1,966 | 2,206 | 3,796 | 2,021 | 11.2 | 10.7 | 10.8 | 12.5 | 15.91 |
| 25,001 to 50,000 | 22 | 21 | 33 | 21 | 1,711 | 2,018 | 3,241 | 1,701 | 12.9 | 10.3 | 10.2 | 12.5 | 16.93 |
| 50,001 to 100,000 | 15 | 29 | 44 | 38 | 1,403 | 2,334 | 3,556 | 1,624 | 11.0 | 12.5 | 12.3 | 23.6 | 19.71 |
| 100,001 to 200,000 | 30 | 29 | 30 | 25 | 2,059 | 2,232 | 2,211 | 1,719 | 14.4 | 13.0 | 13.4 | 14.7 | 16.74 |
| 200,001 to 500,000 | 29 | 23 | 36 | 20 | 1,508 | 2,585 | 2,071 | 832 | 19.0 | 9.0 | 17.3 | 23.6 | 27.10 |
| Over 500,000 | 29 | 20 | 24 | 15 | 2,454 | 1,384 | 1,256 | Q | 12.0 | 14.8 | 18.9 | 15.8 | 25.50 |
| Year Constructed | | | | | | | | | | | | | |
| 1899 or Before | 3 | 2 | 1 | Q | 701 | 401 | 308 | Q | 4.3 | 5.9 | 3.8 | Q | 24.63 |
| 1900 to 1919 | 9 | 4 | 4 | 5 | 1,326 | 1,577 | 501 | 446 | 7.0 | 2.7 | 7.3 | 10.8 | 26.01 |
| 1920 to 1945 | 24 | 21 | 9 | 8 | 2,557 | 2,370 | 2,103 | 850 | 9.2 | 8.8 | 4.5 | 9.3 | 16.22 |
| 1946 to 1959 | 27 | 19 | 45 | 19 | 2,178 | 2,223 | 3,835 | 1,950 | 12.5 | 8.5 | 11.8 | 9.9 | 16.03 |
| 1960 to 1969 | 46 | 37 | 51 | 39 | 2,735 | 3,229 | 3,918 | 2,039 | 16.9 | 11.4 | 13.0 | 19.0 | 15.42 |
| 1970 to 1979 | 29 | 48 | 83 | 54 | 1,998 | 3,112 | 5,153 | 2,909 | 14.5 | 15.3 | 16.2 | 18.6 | 13.78 |
| 1980 to 1983 | 12 | 16 | 41 | 18 | 439 | 890 | 1,865 | 1,015 | 28.1 | 17.5 | 21.9 | 17.4 | 20.82 |
| 1984 to 1986 | 15 | 18 | 31 | 25 | 831 | 1,217 | 2,424 | 1,156 | 18.4 | 14.5 | 12.8 | 21.5 | 19.46 |
| 1987 to 1989 | 6 | Q | 20 | 9 | 561 | 685 | 1,110 | 794 | 9.8 | 20.9 | 18.2 | 11.3 | 26.18 |
| BUILDING USE | | | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | | | |
| Assembly | 10 | 10 | 26 | 9 | 1,501 | 1,408 | 2,768 | 1,174 | Q | 7.1 | 9.5 | 7.3 | 21.41 |
| Education | 14 | 16 | 20 | 13 | 1,888 | 2,215 | 2,332 | 1,634 | 7.3 | 7.4 | 8.7 | 7.9 | 14.79 |
| Food Sales | Q | Q | 11 | Q | Q | Q | 278 | Q | Q | Q | 39.6 | Q | 21.48 |
| Food Service | 6 | 6 | 15 | 6 | 284 | 339 | 370 | 173 | 21.7 | 19.1 | 39.4 | 33.2 | 24.40 |
| Health Care | 8 | 21 | 11 | 6 | 378 | 912 | 472 | 292 | 20.1 | 22.6 | 23.4 | 20.1 | 18.88 |
| Lodging | 6 | 12 | 15 | 8 | 549 | 982 | 1,215 | 730 | 10.7 | 11.9 | 12.4 | 10.7 | 20.63 |
| Mercantile and Service | 40 | 38 | 58 | 25 | 2,647 | 3,057 | 4,775 | 1,882 | 15.1 | 12.5 | 12.1 | 13.4 | 12.58 |
| Office | 44 | 38 | 80 | 67 | 2,703 | 2,275 | 3,817 | 3,001 | 16.3 | 16.7 | 20.9 | 22.4 | 12.70 |
| Parking Garage | 1 | 2 | Q | Q | 160 | 384 | Q | Q | 5.9 | 4.3 | Q | Q | 31.48 |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Warehouse | 23 | 22 | 17 | 9 | 1,738 | 2,570 | 3,183 | 1,358 | 13.2 | 8.6 | 5.4 | 6.6 | 26.56 |
| Other | Q | Q | Q | Q | Q | Q | 820 | 369 | Q | Q | 30.0 | Q | 41.67 |
| Vacant | 5 | 2 | 3 | 1 | 740 | Q | 805 | 301 | 7.0 | 1.7 | 3.6 | 4.6 | 31.15 |
| Weekly Operating Hours | | | | | | | | | | | | | |
| 39 or Fewer | 3 | 4 | 9 | 4 | 793 | 1,081 | 2,189 | 684 | 4.3 | 3.6 | 4.2 | 6.2 | 16.25 |
| 40 to 48 | 20 | 22 | 67 | 20 | 2,575 | 2,761 | 6,383 | 2,091 | 7.8 | 7.9 | 10.5 | 9.5 | 13.07 |
| 49 to 60 | 32 | 29 | 48 | 31 | 2,785 | 3,207 | 4,422 | 2,936 | 11.4 | 9.2 | 10.9 | 10.4 | 14.01 |
| 61 to 84 | 35 | 35 | 56 | 27 | 2,983 | 2,801 | 3,150 | 1,817 | 11.7 | 12.6 | 17.7 | 14.8 | 15.01 |
| 85 to 167 | 34 | 41 | 41 | 27 | 2,368 | 3,082 | 2,244 | 1,683 | 14.2 | 13.3 | 18.2 | 15.8 | 16.26 |
| 168 (Open Continuously) | 48 | 47 | 65 | 69 | 1,823 | 2,773 | 2,826 | 2,107 | 26.2 | 16.9 | 22.9 | 32.6 | 15.88 |
| Workers | | | | | | | | | | | | | |
| 4 or Fewer | 15 | 16 | 39 | 16 | 2,381 | 3,735 | 5,194 | 2,240 | 6.1 | 4.4 | 7.6 | 7.0 | 12.10 |
| 5 to 9 | 11 | 16 | 35 | 13 | 1,371 | 1,811 | 3,449 | 1,296 | 8.2 | 8.6 | 10.2 | 10.4 | 16.51 |
| 10 to 19 | 16 | 17 | 22 | 15 | 1,252 | 1,433 | 2,290 | 1,468 | 12.6 | 11.6 | 9.7 | 10.2 | 18.44 |
| 20 to 49 | 20 | 28 | 48 | 22 | 2,265 | 2,196 | 3,538 | 1,666 | 8.7 | 12.9 | 13.5 | 13.1 | 15.32 |
| 50 to 99 | 22 | 20 | 38 | 22 | 1,781 | 2,188 | 2,261 | 1,160 | 12.3 | 8.9 | 16.9 | 19.1 | 18.03 |
| 100 to 249 | 41 | 35 | 38 | 26 | 1,656 | 2,050 | 1,623 | 1,441 | 25.0 | 17.2 | 23.2 | 17.9 | 18.09 |
| 250 or More | 47 | 47 | 65 | 63 | 2,619 | 2,292 | 2,860 | 2,047 | 17.9 | 20.4 | 22.8 | 30.8 | 18.73 |

See footnotes at end of table.

Table 23. Electricity Consumption and Conditional Energy Intensity by Census Region (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Row Factor |
|---|---|----------|-------|-------|---|----------|--------|--------|--|----------|-------|-------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.043 | 1.104 | 1.028 | 1.240 | 1.094 | 0.893 | 0.930 | 0.955 | 1.155 | 0.822 | 0.697 | 0.664 | |
| Ownership and Occupancy | | | | | | | | | | | | | |
| Nongovernment Owned | 130 | 148 | 211 | 130 | 10,178 | 12,394 | 16,325 | 8,653 | 12.8 | 11.9 | 12.9 | 15.0 | 8.92 |
| Owner Occupied | 102 | 118 | 152 | 90 | 8,177 | 9,904 | 11,602 | 5,754 | 12.5 | 11.9 | 13.1 | 15.6 | 10.11 |
| Single Establishment | 72 | 91 | 117 | 67 | 5,630 | 7,595 | 9,093 | 4,272 | 12.8 | 11.9 | 12.9 | 15.6 | 12.12 |
| Multiple Establishment | 30 | 27 | 35 | 23 | 2,547 | 2,309 | 2,509 | 1,482 | 11.7 | 11.8 | 14.0 | 15.5 | 15.16 |
| Nonowner Occupied | 28 | 30 | 59 | 40 | 2,001 | 2,490 | 4,723 | 2,899 | 14.1 | 12.0 | 12.5 | 13.8 | 14.31 |
| Single Establishment | 13 | 12 | 33 | 19 | 874 | 1,166 | 2,824 | 1,314 | 15.3 | 10.3 | 11.7 | 14.6 | 21.00 |
| Multiple Establishment | 15 | 17 | 25 | 20 | 991 | 1,165 | 1,575 | 1,496 | 14.8 | 14.8 | 16.1 | 13.5 | 16.12 |
| Vacant | Q | 1 | 1 | Q | 159 | 323 | Q | Q | 3.8 | 2.6 | Q | Q | 35.55 |
| Government Owned | 41 | 31 | 74 | 47 | 3,147 | 3,310 | 4,891 | 2,665 | 13.1 | 9.3 | 15.2 | 17.7 | 18.33 |
| Federal | Q | Q | 23 | Q | Q | Q | 913 | Q | Q | Q | 25.5 | 17.2 | 28.06 |
| State | 20 | 11 | 17 | Q | 910 | 887 | 1,325 | 748 | 22.3 | 12.1 | 12.7 | Q | 29.50 |
| Local | 19 | 19 | 34 | 12 | 2,055 | 2,341 | 2,652 | 1,196 | 9.4 | 8.0 | 12.9 | 10.3 | 17.39 |
| Multibuilding Facility | | | | | | | | | | | | | |
| Not on Multibuilding Facility | 93 | 98 | 147 | 81 | 8,756 | 10,269 | 11,997 | 5,502 | 10.6 | 9.6 | 12.2 | 14.7 | 9.19 |
| Part of Multibuilding Facility | 79 | 80 | 139 | 96 | 4,570 | 5,436 | 9,218 | 5,816 | 17.3 | 14.8 | 15.1 | 16.5 | 14.46 |
| On Facility with Central Plant | 36 | 41 | 61 | 48 | 1,717 | 2,066 | 2,566 | 1,949 | 20.8 | 19.8 | 23.7 | 24.8 | 27.61 |
| Percent Vacant at Least Three Months | | | | | | | | | | | | | |
| 0 | 123 | 128 | 216 | 137 | 8,845 | 10,605 | 15,495 | 7,752 | 13.9 | 12.1 | 13.9 | 17.7 | 9.41 |
| 1 to 50 | 40 | 44 | 57 | 30 | 3,074 | 3,395 | 3,693 | 2,254 | 12.9 | 13.0 | 15.4 | 13.4 | 13.45 |
| 51 to 99 | Q | 3 | 3 | Q | 673 | 1,203 | 758 | Q | 9.0 | Q | 4.2 | 7.7 | 30.47 |
| 100 | 3 | 3 | 10 | 3 | 733 | 501 | 1,271 | 500 | 4.1 | 5.6 | 7.7 | 6.1 | 22.86 |
| Months in Use Out of Past 12 Months | | | | | | | | | | | | | |
| 0 to 8 | 3 | 6 | 10 | 5 | 584 | 749 | 1,414 | 560 | 5.4 | 7.7 | 7.2 | 8.2 | 25.91 |
| 9 to 11 | 5 | 4 | 8 | 5 | 1,130 | 704 | 1,180 | 760 | 4.2 | 5.9 | 7.0 | 6.8 | 17.00 |
| 12 | 164 | 169 | 267 | 167 | 11,611 | 14,251 | 18,621 | 9,997 | 14.1 | 11.8 | 14.4 | 16.7 | 6.97 |
| LOCATION | | | | | | | | | | | | | |
| Metropolitan Status | | | | | | | | | | | | | |
| Metropolitan | 147 | 145 | 235 | 167 | 11,370 | 12,491 | 15,847 | 10,127 | 12.9 | 11.6 | 14.8 | 16.5 | 6.39 |
| Nonmetropolitan | Q | 34 | 51 | 9 | 1,956 | 3,213 | 5,368 | 1,191 | 12.8 | 10.5 | 9.5 | 7.9 | 14.47 |
| Climate Zone: 45-Year Average | | | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | | | |
| Over 7,000 HDD | 11 | 42 | NC | Q | 953 | 3,360 | NC | 669 | 11.5 | 12.6 | NC | 12.7 | 19.06 |
| 5,500-7,000 HDD | 72 | 95 | NC | 29 | 6,215 | 9,006 | NC | 2,275 | 11.6 | 10.6 | NC | 12.6 | 16.44 |
| 4,000-5,499 HDD | 89 | 41 | 59 | 19 | 6,157 | 3,338 | 4,343 | 1,207 | 14.4 | 12.2 | 13.5 | 15.6 | 16.74 |
| Under 4,000 HDD | NC | NC | 97 | 97 | NC | NC | 6,997 | 5,575 | NC | NC | 13.9 | 17.4 | 17.28 |
| 2,000 CDD or More and -- | | | | | | | | | | | | | |
| Under 4,000 HDD | NC | NC | 130 | 24 | NC | NC | 9,875 | 1,591 | NC | NC | 13.2 | 15.0 | 16.44 |
| STRUCTURE | | | | | | | | | | | | | |
| Floors | | | | | | | | | | | | | |
| 1 | 43 | 54 | 123 | 50 | 3,566 | 4,718 | 10,193 | 4,128 | 11.9 | 11.5 | 12.1 | 12.1 | 12.06 |
| 2 | 49 | 50 | 77 | 56 | 3,081 | 3,793 | 5,805 | 3,166 | 16.0 | 13.2 | 13.3 | 17.7 | 13.43 |
| 3 | 24 | 17 | 27 | Q | 2,246 | 2,825 | 2,160 | 1,281 | 10.6 | 6.0 | 12.4 | Q | 18.10 |
| 4 to 6 | 20 | 29 | 27 | 24 | 2,389 | 2,530 | 1,601 | 1,690 | 8.3 | 11.4 | 17.1 | 14.3 | 20.01 |
| 7 or More | 36 | 28 | 31 | 21 | 2,044 | 1,838 | 1,456 | 1,053 | 17.8 | 15.5 | 21.0 | 19.5 | 18.40 |
| Wall Materials | | | | | | | | | | | | | |
| Masonry | 110 | 130 | 176 | 94 | 8,596 | 11,717 | 13,947 | 5,885 | 11.4 | 11.1 | 12.7 | 15.9 | 9.78 |
| Siding or Shingles | 8 | 8 | 14 | 14 | 1,249 | 965 | 1,247 | 1,061 | 6.4 | 8.2 | 11.4 | 13.0 | 21.52 |
| Metal Panels | Q | 16 | 26 | 11 | 643 | 1,373 | 2,577 | 788 | 30.5 | 11.5 | 10.0 | 13.9 | 26.59 |
| Concrete Panels | 14 | 14 | 48 | 40 | 880 | 1,053 | 2,492 | 2,692 | 15.3 | 13.6 | 19.2 | 15.0 | 21.85 |
| Window Glass | Q | 7 | 10 | 13 | Q | 310 | 352 | 589 | 21.2 | 21.0 | 27.0 | 21.5 | 28.18 |
| Other | 7 | Q | 12 | 5 | 294 | Q | 599 | 302 | 23.2 | Q | 19.6 | 17.4 | 26.65 |

See footnotes at end of table.

ELECTRICITY

Table 23. Electricity Consumption and Conditional Energy Intensity by Census Region (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Row Factor |
|--|---|----------|-------|-------|---|----------|--------|--------|--|----------|-------|-------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor | 1.443 | 1.104 | 1.029 | 1.040 | 1.034 | 0.893 | 0.830 | 0.825 | 1.105 | 0.900 | 0.882 | 0.804 | |
| Roof Materials | | | | | | | | | | | | | |
| Built-Up | 70 | 88 | 161 | 116 | 5,643 | 7,945 | 10,574 | 6,132 | 12.4 | 11.0 | 15.2 | 18.9 | 10.84 |
| Shingles (Not Wood) | 23 | 20 | 32 | 25 | 2,814 | 2,237 | 3,268 | 2,271 | 8.2 | 8.7 | 9.7 | 11.2 | 14.66 |
| Metal Surfacing | 28 | 16 | 35 | 12 | 1,484 | 1,648 | 3,581 | 1,077 | 18.9 | 9.8 | 9.9 | 11.4 | 19.47 |
| Synthetic or Rubber | 31 | 39 | 42 | 11 | 1,789 | 2,402 | 2,148 | 568 | 17.2 | 16.2 | 19.4 | 18.6 | 20.80 |
| Slate or Tile | Q | 2 | 6 | 6 | 665 | 493 | 806 | 592 | Q | 7.5 | 11.0 | 11.0 | 20.14 |
| Concrete | Q | 5 | 6 | 2 | Q | 407 | 587 | 265 | 12.9 | 11.2 | 10.0 | 9.3 | 29.55 |
| Wooden Materials | Q | 2 | Q | 2 | Q | 206 | Q | 241 | Q | 10.3 | Q | 9.7 | 29.67 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | | | | | |
| Roof or Ceiling Insulation | 122 | 151 | 241 | 131 | 8,810 | 11,489 | 15,804 | 8,437 | 13.9 | 13.2 | 15.2 | 15.5 | 8.76 |
| Wall Insulation | 93 | 117 | 158 | 85 | 5,970 | 8,107 | 9,954 | 5,383 | 15.6 | 14.5 | 15.9 | 15.8 | 10.63 |
| Storm or Multiple Glazing | 84 | 122 | 101 | 52 | 6,107 | 8,803 | 6,350 | 2,731 | 13.8 | 13.8 | 15.9 | 19.0 | 11.52 |
| Tinted, Reflective, or Shading Glass | 70 | 82 | 136 | 92 | 3,713 | 4,955 | 7,878 | 5,360 | 18.8 | 16.5 | 17.2 | 17.2 | 11.36 |
| Exterior or Interior Shadings or Awnings | 80 | 85 | 148 | 92 | 5,761 | 6,320 | 9,234 | 4,718 | 13.8 | 13.4 | 16.0 | 19.5 | 11.34 |
| Weather Stripping or Caulking | 140 | 157 | 236 | 128 | 9,831 | 11,955 | 14,887 | 7,693 | 14.3 | 13.1 | 15.9 | 16.7 | 9.13 |
| None of the Above | 10 | 6 | 15 | 9 | 1,411 | 2,002 | 2,365 | 1,092 | 6.8 | 2.9 | 6.3 | 8.2 | 22.72 |
| ENERGY SOURCES AND END USES * | | | | | | | | | | | | | |
| Energy Sources | | | | | | | | | | | | | |
| (Solely or In Combination) | | | | | | | | | | | | | |
| Electricity | 172 | 178 | 286 | 177 | 13,326 | 15,704 | 21,215 | 11,318 | 12.9 | 11.4 | 13.5 | 15.6 | 8.35 |
| Natural Gas | 109 | 141 | 152 | 133 | 8,515 | 12,801 | 11,648 | 8,151 | 12.7 | 11.0 | 13.1 | 16.3 | 11.04 |
| Fuel Oil | 65 | 51 | 41 | 37 | 5,105 | 3,197 | 2,844 | 1,432 | 12.7 | 16.0 | 14.5 | 25.8 | 22.82 |
| District Heat | 38 | 24 | Q | Q | 2,236 | 1,509 | 1,583 | Q | 17.0 | 15.7 | 23.2 | 25.3 | 26.45 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | 14 | 16 | 18 | Q | 1,073 | 1,061 | 1,738 | Q | 13.3 | 15.3 | 10.3 | 12.3 | 21.86 |
| Other | 3 | 4 | 4 | Q | 365 | 552 | 456 | Q | Q | Q | 7.8 | Q | 33.11 |
| Energy End Uses | | | | | | | | | | | | | |
| (Solely or In Combination) | | | | | | | | | | | | | |
| Heated Buildings | 170 | 176 | 266 | 172 | 12,940 | 15,056 | 19,168 | 10,662 | 13.2 | 11.7 | 13.9 | 16.1 | 8.55 |
| Air-Conditioned Buildings | 141 | 167 | 277 | 164 | 10,334 | 13,147 | 18,955 | 9,320 | 13.7 | 12.7 | 14.6 | 17.6 | 8.91 |
| Buildings with Water Heating | 166 | 170 | 260 | 166 | 12,447 | 14,198 | 16,923 | 10,002 | 13.4 | 12.0 | 15.4 | 16.6 | 8.72 |
| Buildings with Cooking | 88 | 84 | 133 | 85 | 5,870 | 6,485 | 7,194 | 4,114 | 15.0 | 12.9 | 18.5 | 20.7 | 12.51 |
| Buildings with Manufacturing | 12 | 21 | 31 | 21 | 1,026 | 1,532 | 1,732 | 1,304 | 11.8 | 14.0 | 17.7 | 16.3 | 24.53 |
| Energy End-Use Combinations | | | | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | 76 | 81 | 123 | 78 | 4,965 | 5,902 | 6,543 | 3,371 | 15.3 | 13.8 | 18.8 | 23.1 | 13.28 |
| With Water Heating, | | | | | | | | | | | | | |
| Without Cooking | 64 | 80 | 118 | 75 | 5,163 | 6,695 | 8,997 | 5,041 | 12.5 | 11.9 | 13.2 | 14.9 | 12.23 |
| Without Water Heating or Cooking | 1 | 6 | 17 | 5 | 176 | 519 | 2,328 | 618 | 4.2 | 10.9 | 7.2 | 8.0 | 22.97 |
| Without Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | Q | 2 | Q | 4 | 849 | 568 | Q | 604 | Q | 4.2 | Q | 7.2 | 26.42 |
| With Water Heating, | | | | | | | | | | | | | |
| Without Cooking | 14 | 6 | 3 | 6 | 1,423 | 909 | 582 | 786 | 10.1 | 6.5 | 5.6 | 7.9 | 25.94 |
| Without Water Heating or Cooking | Q | 2 | 2 | 1 | 336 | 453 | 556 | 165 | 9.5 | 3.4 | 3.6 | 6.6 | 27.68 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 1 | 2 | 3 | 1 | 338 | 525 | 1,025 | 394 | 2.9 | 2.9 | 2.6 | 3.6 | 27.98 |
| All Other Combinations | Q | Q | 19 | 6 | Q | Q | 1,125 | 340 | Q | 16.8 | 17.2 | 28.74 | |

See footnotes at end of table.

Table 23. Electricity Consumption and Conditional Energy Intensity by Census Region (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Row Factor |
|--|---|----------|-------|-------|---|----------|--------|--------|--|----------|-------|-------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 0.989 | 0.989 | 0.989 | 1.165 | 0.922 | 0.989 | 0.989 | |
| Space-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 43 | 43 | 147 | 70 | 2,558 | 2,808 | 8,956 | 4,379 | 16.9 | 15.5 | 16.5 | 16.1 | 10.99 |
| Main | 25 | 34 | 117 | 59 | 1,351 | 1,746 | 6,911 | 3,441 | 18.6 | 19.4 | 16.9 | 17.2 | 12.71 |
| With Secondary | Q | 7 | 15 | Q | Q | 332 | 871 | Q | Q | 22.1 | 17.7 | Q | 26.60 |
| Natural Gas Only | Q | Q | 6 | Q | Q | Q | 419 | Q | Q | Q | 15.5 | Q | 31.16 |
| Other Energy Sources or Combinations | Q | Q | Q | Q | Q | Q | 385 | Q | Q | Q | 18.4 | Q | 41.83 |
| With No Secondary | 20 | 26 | 101 | 52 | 948 | 1,414 | 6,039 | 3,050 | 21.4 | 18.7 | 16.8 | 17.1 | 12.81 |
| Secondary | 18 | 10 | 31 | 11 | 1,207 | 1,062 | 2,045 | 938 | 15.1 | 9.1 | 15.1 | 12.1 | 22.40 |
| Other Excluding Electricity | 127 | 133 | 118 | 101 | 10,382 | 12,248 | 10,212 | 6,282 | 12.3 | 10.9 | 11.6 | 16.1 | 11.44 |
| Building Not Heated | 1 | 2 | 20 | 5 | 385 | 649 | 2,047 | 656 | 3.1 | 3.2 | 9.8 | 8.0 | 23.82 |
| Main Space-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 25 | 34 | 117 | 59 | 1,351 | 1,746 | 6,911 | 3,441 | 18.6 | 19.4 | 16.9 | 17.2 | 12.71 |
| Natural Gas | 66 | 118 | 97 | 96 | 5,317 | 11,346 | 8,609 | 5,830 | 12.5 | 10.4 | 11.3 | 16.5 | 12.37 |
| Fuel Oil | 42 | 4 | 6 | Q | 3,839 | 518 | 1,117 | Q | 10.8 | 8.5 | 5.8 | Q | 20.31 |
| District Heat | 37 | 16 | 36 | 16 | 2,180 | 1,120 | 1,557 | 1,163 | 16.8 | 14.1 | 23.3 | 13.4 | 26.12 |
| Propane | Q | Q | 4 | Q | 370 | 608 | Q | Q | Q | Q | 6.1 | Q | 30.94 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | 3.2 | Q | 36.00 |
| Air-Conditioning Energy Source | | | | | | | | | | | | | |
| Electricity | 127 | 155 | 264 | 151 | 9,308 | 12,292 | 18,062 | 8,243 | 13.6 | 12.6 | 14.6 | 18.3 | 9.42 |
| Other Excluding Electricity | 15 | 12 | 13 | 13 | 1,027 | 855 | 893 | 1,077 | 14.5 | 14.4 | 14.4 | 12.3 | 23.77 |
| Air-Conditioning Not Performed | 30 | 11 | 9 | 13 | 2,991 | 2,557 | 2,260 | 1,998 | 10.1 | 4.5 | 4.0 | 6.6 | 15.49 |
| Water-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 62 | 57 | 149 | 65 | 4,029 | 4,384 | 9,136 | 3,945 | 15.5 | 13.0 | 16.3 | 16.4 | 11.05 |
| Other Excluding Electricity | 104 | 113 | 111 | 102 | 8,418 | 9,814 | 7,787 | 6,057 | 12.4 | 11.5 | 14.3 | 16.8 | 12.03 |
| Water Heating Not Performed | 5 | 9 | 25 | 11 | 879 | 1,507 | 4,292 | 1,316 | 6.0 | 5.8 | 5.9 | 8.2 | 17.31 |
| Cooking Energy Source | | | | | | | | | | | | | |
| Electricity | 31 | 44 | 74 | 25 | 2,705 | 2,923 | 3,666 | 1,555 | 11.6 | 14.9 | 20.2 | 16.1 | 14.15 |
| Other Excluding Electricity | 57 | 40 | 59 | 60 | 3,164 | 3,561 | 3,528 | 2,559 | 17.9 | 11.2 | 16.8 | 23.5 | 17.42 |
| Cooking Not Performed | 84 | 95 | 152 | 92 | 7,456 | 9,220 | 14,021 | 7,204 | 11.2 | 10.3 | 10.9 | 12.7 | 10.99 |
| Manufacturing Energy Source | | | | | | | | | | | | | |
| Electricity | 8 | 10 | 27 | 19 | 682 | 1,047 | 1,560 | 1,116 | 11.7 | 9.8 | 17.4 | 16.7 | 27.68 |
| Other Excluding Electricity | 4 | Q | Q | 3 | 344 | 485 | Q | 188 | 11.9 | 23.1 | Q | 13.6 | 28.27 |
| Manufacturing Not Performed | 160 | 157 | 255 | 156 | 12,299 | 14,172 | 19,483 | 10,013 | 13.0 | 11.1 | 13.1 | 15.5 | 8.43 |
| HEATING AND COOLING | | | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | | | |
| Not Heated | 1 | 2 | 20 | 5 | 413 | 667 | 2,080 | 679 | 3.3 | 3.1 | 9.6 | 7.8 | 22.00 |
| 1 to 50 | 10 | Q | 20 | 15 | 1,766 | 2,396 | 3,338 | 1,814 | 5.8 | 6.7 | 5.9 | 8.4 | 19.47 |
| 51 to 99 | 19 | 20 | 66 | 41 | 1,215 | 1,796 | 3,549 | 2,108 | 15.3 | 11.3 | 18.5 | 19.5 | 17.11 |
| 100 | 141 | 140 | 180 | 115 | 9,933 | 10,845 | 12,248 | 6,716 | 14.2 | 12.9 | 14.7 | 17.2 | 9.38 |
| Percent Cooled | | | | | | | | | | | | | |
| Not Cooled | 30 | 11 | 9 | 13 | 2,991 | 2,557 | 2,260 | 1,998 | 10.1 | 4.5 | 4.0 | 6.6 | 15.49 |
| 1 to 50 | 44 | 34 | 40 | 16 | 4,866 | 5,302 | 5,288 | 2,364 | 9.1 | 6.5 | 7.5 | 7.0 | 14.47 |
| 51 to 99 | 41 | 61 | 79 | 48 | 2,462 | 3,489 | 4,834 | 2,347 | 16.6 | 17.6 | 16.3 | 20.6 | 13.07 |
| 100 | 56 | 71 | 158 | 99 | 3,006 | 4,356 | 8,834 | 4,608 | 18.7 | 16.3 | 17.9 | 21.5 | 12.71 |

See footnotes at end of table.

ELECTRICITY

Table 23. Electricity Consumption and Conditional Energy Intensity by Census Region (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Row Factor |
|--------------------------|---|----------|-------|-------|---|----------|--------|-------|--|----------|-------|-------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.443 | 1.104 | 1.026 | 1.340 | 1.054 | 0.993 | 0.990 | 0.955 | 1.155 | 0.922 | 0.692 | 0.664 | |
| LIGHTING | | | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | | | |
| Not Lit | Q | Q | 1 | Q | Q | 190 | 268 | Q | Q | 3.7 | 1.9 | Q | 41.22 |
| 1 to 50 | 10 | 13 | 19 | 13 | 1,765 | 3,175 | 4,080 | 1,843 | 5.8 | 4.2 | 4.8 | 7.2 | 15.61 |
| 51 to 99 | 39 | 55 | 83 | 61 | 3,806 | 4,529 | 5,520 | 3,096 | 10.3 | 12.1 | 15.0 | 19.7 | 18.81 |
| 100 | 121 | 109 | 183 | 102 | 7,590 | 7,810 | 11,347 | 6,245 | 16.0 | 14.0 | 16.1 | 16.3 | 10.63 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

nc No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 24. Electricity Expenditures by Census Region

| Building Characteristics | Total Electricity Expenditures (million dollars) | | | | Electricity Expenditures (dollars) | | | | | | | | Percent Change from Previous Year |
|--|---|----------|--------|--------|---------------------------------------|----------|-------|------|-----------------|----------|-------|------|---|
| | | | | | per kWh | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| All Buildings | 13,188 | 11,697 | 18,409 | 12,649 | .08 | .07 | .06 | .07 | .99 | .74 | .87 | 1.12 | -7.2% |
| Building Floorspace (Square Feet) | | | | | | | | | | | | | |
| 1,001 to 5,000 | 1,368 | 1,589 | 3,105 | 1,530 | .10 | .08 | .07 | .08 | 1.39 | 1.04 | 1.16 | 1.26 | +7.0% |
| 5,001 to 10,000 | 1,035 | 854 | 3,209 | 1,134 | .09 | .07 | .09 | .08 | .84 | .60 | 1.34 | .91 | +6.0% |
| 10,001 to 25,000 | 1,557 | 1,596 | 2,665 | 1,992 | .07 | .07 | .07 | .08 | .79 | .72 | .70 | .99 | +11.1% |
| 25,001 to 50,000 | 1,928 | 1,460 | 2,040 | 1,491 | .09 | .07 | .06 | .07 | 1.13 | .72 | .63 | .88 | +11.5% |
| 50,001 to 100,000 | 1,078 | 1,829 | 2,713 | 2,421 | .07 | .06 | .06 | .06 | .77 | .78 | .76 | 1.49 | +6.7% |
| 100,001 to 200,000 | 2,074 | 1,772 | 1,674 | 1,890 | .07 | .06 | .06 | .07 | 1.01 | .79 | .76 | 1.10 | +6.2% |
| 200,001 to 500,000 | 1,693 | 1,435 | 1,867 | 1,331 | .06 | .06 | .05 | .07 | 1.12 | .56 | .90 | 1.60 | +6.7% |
| Over 500,000 | 2,455 | 1,160 | 1,136 | 861 | .08 | .06 | .05 | .06 | 1.00 | .84 | .91 | .89 | +5.4% |
| Year Constructed | | | | | | | | | | | | | |
| 1899 or Before | 305 | 170 | 86 | Q | .10 | .07 | .07 | Q | .44 | .42 | .28 | Q | +4.0% |
| 1900 to 1919 | 882 | 337 | 206 | 250 | .09 | .08 | .06 | .05 | .67 | .21 | .41 | .56 | +21.3% |
| 1920 to 1945 | 2,021 | 1,451 | 683 | 618 | .09 | .07 | .07 | .08 | .79 | .61 | .32 | .73 | +3.2% |
| 1946 to 1959 | 1,926 | 1,278 | 2,863 | 1,266 | .07 | .07 | .06 | .07 | .88 | .58 | .75 | .65 | +13.5% |
| 1960 to 1969 | 3,211 | 2,497 | 3,236 | 2,723 | .07 | .07 | .06 | .07 | 1.17 | .77 | .83 | 1.33 | +11.2% |
| 1970 to 1979 | 2,149 | 3,041 | 5,681 | 3,944 | .07 | .06 | .07 | .07 | 1.08 | .98 | 1.10 | 1.36 | +11.3% |
| 1980 to 1983 | 865 | 910 | 2,466 | 1,329 | .07 | .06 | .06 | .08 | 1.97 | 1.02 | 1.32 | 1.31 | +6.6% |
| 1984 to 1986 | 1,363 | 1,170 | 2,009 | 1,821 | .09 | .07 | .06 | .07 | 1.64 | .96 | .83 | 1.57 | +14.0% |
| 1987 to 1989 | 465 | 842 | 1,179 | 657 | .08 | .06 | .06 | .07 | .83 | 1.23 | 1.06 | .83 | +16.0% |
| BUILDING USE | | | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | | | |
| Assembly | Q | 688 | 2,469 | 603 | .09 | .07 | .09 | .07 | Q | .49 | Q | .51 | +4.0% |
| Education | 1,129 | 1,147 | 1,309 | 805 | .08 | .07 | .06 | .06 | .60 | .52 | .56 | .49 | +10.4% |
| Food Sales | Q | Q | 653 | Q | Q | Q | Q | Q | Q | Q | 2.35 | Q | +12.0% |
| Food Service | 579 | 465 | 979 | 497 | .09 | .07 | .07 | .09 | 2.04 | 1.37 | 2.64 | 2.88 | +2.7% |
| Health Care | 508 | 1,040 | 661 | 461 | .07 | .05 | .06 | .08 | 1.35 | 1.14 | 1.40 | 1.58 | +14.1% |
| Lodging | 333 | 772 | 894 | 594 | .06 | .07 | .06 | .08 | .61 | .79 | .74 | .81 | +17.0% |
| Mercantile and Service | 2,836 | 2,673 | 3,685 | 1,921 | .07 | .07 | .06 | .08 | 1.07 | .87 | .77 | 1.02 | +6.0% |
| Office | 3,694 | 2,444 | 4,747 | 4,872 | .08 | .06 | .06 | .07 | 1.37 | 1.07 | 1.24 | 1.62 | +1.5% |
| Parking Garage | 90 | 117 | Q | Q | .10 | .07 | Q | Q | .56 | .31 | Q | Q | +18.7% |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | +6% |
| Warehouse | 1,524 | 1,417 | 1,136 | 759 | .07 | .06 | .07 | .09 | .88 | .55 | .36 | .56 | +18.2% |
| Other | Q | Q | Q | Q | Q | Q | Q | .06 | Q | Q | 1.70 | Q | +2.1% |
| Vacant | 424 | 159 | 228 | 113 | .08 | .08 | .08 | .08 | .57 | .13 | .28 | .37 | +20.0% |
| Weekly Operating Hours | | | | | | | | | | | | | |
| 39 or Fewer | 308 | 328 | 731 | 351 | .09 | .08 | .08 | .08 | .39 | .30 | .33 | .51 | +12.1% |
| 40 to 48 | 1,767 | 1,538 | 5,047 | 1,519 | .09 | .07 | .08 | .08 | .69 | .56 | .79 | .73 | +11.4% |
| 49 to 60 | 2,666 | 2,094 | 3,113 | 2,272 | .08 | .07 | .06 | .07 | .96 | .65 | .70 | .77 | +11.4% |
| 61 to 84 | 2,999 | 2,552 | 3,293 | 2,055 | .09 | .07 | .06 | .08 | 1.01 | .91 | 1.05 | 1.13 | +10.7% |
| 85 to 167 | 2,650 | 2,482 | 2,497 | 1,851 | .08 | .06 | .06 | .07 | 1.12 | .81 | 1.11 | 1.10 | +10.1% |
| 168 (Open Continuously) | 2,798 | 2,702 | 3,728 | 4,600 | .06 | .06 | .06 | .07 | 1.54 | .97 | 1.32 | 2.18 | +12.0% |
| Workers | | | | | | | | | | | | | |
| 4 or Fewer | 1,413 | 1,322 | 2,790 | 1,310 | .10 | .08 | .07 | .08 | .59 | .35 | .54 | .58 | +6.0% |
| 5 to 9 | 889 | 1,097 | 2,310 | 1,169 | .08 | .07 | .07 | .09 | .65 | .61 | .67 | .90 | +10.5% |
| 10 to 19 | 1,098 | 1,122 | 1,559 | 1,214 | .07 | .07 | .07 | .08 | .88 | .78 | .68 | .83 | +12.1% |
| 20 to 49 | 1,647 | 1,900 | 3,814 | 1,607 | .08 | .07 | .08 | .07 | .73 | .87 | 1.08 | .96 | +11.4% |
| 50 to 99 | 1,797 | 1,357 | 2,361 | 1,503 | .08 | .07 | .06 | .07 | 1.01 | .62 | 1.04 | 1.30 | +11.3% |
| 100 to 249 | 2,665 | 2,166 | 2,209 | 1,870 | .06 | .06 | .06 | .07 | 1.61 | 1.06 | 1.36 | 1.30 | +12.4% |
| 250 or More | 3,680 | 2,733 | 3,365 | 3,976 | .08 | .06 | .05 | .06 | 1.40 | 1.19 | 1.18 | 1.94 | +12.0% |

See footnotes at end of table.

ELECTRICITY

Table 24. Electricity Expenditures by Census Region (Continued)

| Building Characteristics | Total Electricity Expenditures (million dollars) | | | | Electricity Expenditures (dollars) | | | | | | | | RSE Row Factor | |
|---|--|----------|--------|--------|------------------------------------|----------|-------|-------|-----------------|----------|-------|-------|----------------|-------|
| | | | | | per kWh | | | | per Square Foot | | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | | |
| RSE Column Factor: | 1.839 | 1.449 | 1.427 | 1.743 | 0.739 | 0.476 | 0.469 | 0.483 | 1.349 | 1.106 | 1.009 | 1.261 | | |
| Ownership and Occupancy | | | | | | | | | | | | | | |
| Nongovernment Owned | 10,307 | 9,824 | 13,288 | 9,698 | .08 | .07 | .06 | .07 | 1.01 | .79 | .81 | 1.12 | 6.35 | |
| Owner Occupied | 8,019 | 7,652 | 9,452 | 6,442 | .08 | .06 | .06 | .07 | .98 | .77 | .81 | 1.12 | 7.25 | |
| Single Establishment | 5,329 | 5,821 | 7,454 | 4,839 | .07 | .06 | .06 | .07 | .95 | .77 | .82 | 1.13 | 8.24 | |
| Multiple Establishment | 2,690 | 1,831 | 1,998 | 1,603 | .09 | .07 | .06 | .07 | 1.06 | .79 | .80 | 1.08 | 10.72 | |
| Nonowner Occupied | 2,288 | 2,172 | 3,836 | 3,256 | .08 | .07 | .06 | .08 | 1.14 | .87 | .81 | 1.12 | 9.40 | |
| Single Establishment | 1,076 | 838 | 2,083 | 1,597 | .08 | .07 | .06 | .08 | 1.23 | .72 | .74 | 1.22 | 12.42 | |
| Multiple Establishment | 1,188 | 1,290 | 1,682 | 1,605 | .08 | .07 | .07 | .08 | 1.20 | 1.11 | 1.07 | 1.07 | 11.72 | |
| Vacant | Q | 45 | 70 | Q | Q | .07 | .08 | Q | Q | .28 | .22 | Q | | 22.01 |
| Government Owned | 2,882 | 1,872 | 5,121 | 2,951 | .07 | .06 | .07 | .06 | .92 | .57 | 1.05 | 1.11 | 16.27 | |
| Federal | Q | Q | 1,265 | Q | Q | Q | .05 | .05 | Q | Q | 1.39 | .95 | | 19.00 |
| State | 1,249 | 578 | 913 | Q | .06 | .05 | .05 | .06 | 1.37 | .65 | .69 | Q | | 19.11 |
| Local | 1,501 | 1,201 | 2,943 | 896 | .08 | .06 | .09 | .07 | .73 | .51 | 1.11 | .75 | | 15.70 |
| Multibuilding Facility | | | | | | | | | | | | | | |
| Not on Multibuilding Facility | 7,752 | 6,872 | 9,316 | 5,870 | .08 | .07 | .06 | .07 | .89 | .67 | .78 | 1.07 | 6.85 | |
| Part of Multibuilding Facility | 5,436 | 4,825 | 9,093 | 6,778 | .07 | .06 | .07 | .07 | 1.19 | .89 | .99 | 1.17 | 12.26 | |
| On Facility with Central Plant | 2,118 | 2,221 | 4,171 | 2,887 | .06 | .05 | .07 | .06 | 1.23 | 1.08 | 1.63 | 1.48 | | 19.09 |
| Percent Vacant at Least Three Months | | | | | | | | | | | | | | |
| 0 | 9,096 | 8,379 | 14,259 | 9,895 | .07 | .07 | .07 | .07 | 1.03 | .79 | .92 | 1.28 | | 8.22 |
| 1 to 50 | 3,487 | 2,851 | 3,238 | 2,216 | .09 | .06 | .06 | .07 | 1.13 | .84 | .88 | .98 | | 9.25 |
| 51 to 99 | 373 | 258 | 233 | Q | .06 | .08 | .07 | .05 | .55 | Q | .31 | .38 | | 18.61 |
| 100 | 233 | 208 | 679 | 226 | .08 | .07 | .07 | .07 | .32 | .42 | .53 | .45 | | 15.79 |
| Months in Use Out of Past 12 Months | | | | | | | | | | | | | | |
| 0 to 8 | 250 | 398 | 729 | 345 | .08 | .07 | .07 | .08 | .43 | .53 | .52 | .62 | | 17.12 |
| 9 to 11 | 356 | 343 | 608 | 423 | .07 | .08 | .07 | .08 | .32 | .49 | .52 | .56 | | 11.92 |
| 12 | 12,582 | 10,956 | 17,073 | 11,881 | .08 | .07 | .06 | .07 | 1.08 | .77 | .92 | 1.19 | | 7.60 |
| LOCATION | | | | | | | | | | | | | | |
| Metropolitan Status | | | | | | | | | | | | | | |
| Metropolitan | 11,661 | 9,644 | 15,155 | 12,034 | .08 | .07 | .06 | .07 | 1.03 | .77 | .96 | 1.19 | | 7.98 |
| Nonmetropolitan | 1,528 | 2,053 | 3,254 | 615 | .06 | .06 | .06 | .07 | .78 | .64 | .61 | .52 | | 12.22 |
| Climate Zone: 45-Year Average | | | | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | | | | |
| Over 7,000 HDD | 822 | 2,314 | NC | Q | .08 | .05 | NC | .06 | .86 | .69 | NC | Q | | 10.95 |
| 5,500-7,000 HDD | 5,286 | 6,707 | NC | 1,678 | .07 | .07 | NC | .06 | .85 | .74 | NC | .74 | | 11.59 |
| 4,000-5,499 HDD | 7,081 | 2,675 | 3,440 | 848 | .08 | .07 | .06 | .05 | 1.15 | .80 | .79 | .70 | | 9.74 |
| Under 4,000 HDD | NC | NC | 5,668 | 7,603 | NC | NC | .06 | .08 | NC | NC | .81 | 1.36 | | 10.93 |
| 2,000 CDD or More and -- | | | | | | | | | | | | | | |
| Under 4,000 HDD | NC | NC | 9,302 | 1,987 | NC | NC | .07 | .08 | NC | NC | .94 | 1.25 | | 13.38 |
| STRUCTURE | | | | | | | | | | | | | | |
| Floors | | | | | | | | | | | | | | |
| 1 | 3,310 | 3,935 | 9,046 | 4,135 | .08 | .07 | .07 | .08 | .93 | .83 | .89 | 1.00 | | 9.62 |
| 2 | 3,390 | 3,170 | 4,678 | 3,949 | .07 | .06 | .06 | .07 | 1.10 | .84 | .81 | 1.25 | | 9.57 |
| 3 | 1,889 | 1,147 | 1,571 | Q | .08 | .07 | .06 | .06 | .84 | .41 | .73 | Q | | 15.89 |
| 4 to 6 | 1,451 | 1,774 | 1,466 | 1,579 | .07 | .06 | .05 | .07 | .61 | .70 | .92 | .93 | | 13.93 |
| 7 or More | 3,148 | 1,671 | 1,647 | 1,353 | .09 | .06 | .05 | .07 | 1.54 | .91 | 1.13 | 1.28 | | 11.92 |
| Wall Materials | | | | | | | | | | | | | | |
| Masonry | 8,751 | 8,571 | 11,101 | 6,819 | .08 | .07 | .06 | .07 | .91 | .73 | .80 | 1.16 | | 7.10 |
| Siding or Shingles | 723 | 583 | 945 | 960 | .09 | .07 | .07 | .07 | .58 | .60 | .76 | .90 | | 14.09 |
| Metal Panels | 1,181 | 1,010 | 1,651 | 798 | .06 | .06 | .06 | .07 | 1.84 | .74 | .64 | 1.01 | | 16.57 |
| Concrete Panels | 1,007 | 847 | 3,567 | 2,832 | .07 | .06 | .07 | .07 | 1.14 | .80 | 1.43 | 1.05 | | 19.37 |
| Window Glass | Q | Q | 518 | 862 | .09 | .07 | .05 | .07 | 1.82 | 1.44 | 1.47 | 1.46 | | 18.86 |
| Other | 321 | Q | 627 | 378 | .05 | Q | .05 | .07 | 1.09 | Q | 1.05 | 1.25 | | 20.26 |

See footnotes at end of table.

Table 24. Electricity Expenditures by Census Region (Continued)

| Building Characteristics | Total Electricity Expenditures (million dollars) | | | | Electricity Expenditures (dollars) | | | | | | | | RSE Row Factor |
|---|--|----------|--------|--------|------------------------------------|----------|-------|-------|-----------------|----------|-------|-------|----------------|
| | | | | | per kWh | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.839 | 1.449 | 1.427 | 1.743 | 0.739 | 0.476 | 0.469 | 0.483 | 1.349 | 1.106 | 1.009 | 1.261 | b |
| Roof Materials | | | | | | | | | | | | | |
| Built-Up | 5,831 | 5,938 | 10,564 | 8,017 | .08 | .07 | .07 | .07 | 1.03 | .75 | 1.00 | 1.31 | 9.48 |
| Shingles (Not Wood) | 1,971 | 1,487 | 2,198 | 1,961 | .08 | .08 | .07 | .08 | .70 | .66 | .67 | .86 | 10.64 |
| Metal Surfacing | 1,712 | 981 | 2,331 | 952 | .06 | .06 | .07 | .08 | 1.15 | .60 | .65 | .88 | 12.14 |
| Synthetic or Rubber | 2,320 | 2,293 | 2,260 | 676 | .08 | .06 | .05 | .06 | 1.30 | .95 | 1.05 | 1.19 | 12.89 |
| Slate or Tile | 307 | 182 | 388 | 544 | .05 | .08 | .06 | .08 | .46 | Q | .48 | .92 | 18.66 |
| Concrete | Q | 292 | 416 | 176 | .10 | .06 | .07 | .07 | 1.24 | .72 | .71 | .66 | 22.77 |
| Wooden Materials | Q | 160 | Q | 226 | Q | .08 | Q | .10 | Q | .77 | Q | .94 | 10.48 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | | | | | |
| Roof or Ceiling Insulation | 9,307 | 9,717 | 15,448 | 9,369 | .08 | .06 | .06 | .07 | 1.06 | .85 | .98 | 1.11 | 7.50 |
| Wall Insulation | 6,714 | 7,370 | 10,476 | 5,924 | .07 | .06 | .07 | .07 | 1.12 | .91 | 1.05 | 1.10 | 8.97 |
| Storm or Multiple Glazing | 6,395 | 7,622 | 5,978 | 3,494 | .08 | .06 | .06 | .07 | 1.05 | .87 | .94 | 1.28 | 8.08 |
| Tinted, Reflective, or Shading Glass | 5,229 | 5,073 | 8,837 | 6,681 | .08 | .06 | .07 | .07 | 1.41 | 1.02 | 1.12 | 1.25 | 9.75 |
| Exterior or Interior Shadings or Awnings | 6,222 | 5,403 | 8,992 | 6,223 | .08 | .06 | .06 | .07 | 1.08 | .85 | .97 | 1.32 | 7.72 |
| Weather Stripping or Caulking | 10,781 | 10,157 | 15,065 | 8,927 | .08 | .06 | .06 | .07 | 1.10 | .85 | 1.01 | 1.16 | 8.04 |
| None of the Above | 734 | 457 | 989 | 746 | .08 | .08 | .07 | .08 | .52 | .23 | .42 | .68 | 14.42 |
| ENERGY SOURCES AND END USES * | | | | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 13,188 | 11,697 | 18,409 | 12,649 | .08 | .07 | .06 | .07 | .99 | .74 | .87 | 1.12 | 7.25 |
| Natural Gas | 8,193 | 9,462 | 9,305 | 9,417 | .08 | .07 | .06 | .07 | .96 | .74 | .80 | 1.16 | 8.16 |
| Fuel Oil | 5,150 | 2,814 | 2,369 | 2,647 | .08 | .06 | .06 | .07 | 1.01 | .88 | .83 | 1.85 | 14.14 |
| District Heat | 3,145 | 1,324 | Q | 1,829 | .08 | .06 | .05 | .06 | 1.41 | .88 | 1.20 | 1.46 | 16.23 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | 1,195 | 989 | 1,232 | 635 | .08 | .06 | .07 | .06 | 1.11 | .93 | .71 | .77 | 16.75 |
| Other | 167 | 289 | 226 | Q | .05 | .06 | .06 | Q | .46 | Q | .50 | Q | 16.53 |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | | | | |
| Heated Buildings | 13,083 | 11,549 | 16,183 | 12,150 | .08 | .07 | .06 | .07 | 1.01 | .77 | .84 | 1.14 | 6.24 |
| Air-Conditioned Buildings | 11,183 | 10,807 | 17,803 | 11,703 | .08 | .06 | .06 | .07 | 1.08 | .82 | .94 | 1.26 | 7.50 |
| Buildings with Water Heating | 12,734 | 11,092 | 16,524 | 11,747 | .08 | .07 | .06 | .07 | 1.02 | .78 | .98 | 1.17 | 7.66 |
| Buildings with Cooking | 6,395 | 5,245 | 7,936 | 5,507 | .07 | .06 | .06 | .06 | 1.09 | .81 | 1.10 | 1.34 | 9.01 |
| Buildings with Manufacturing | 1,004 | 1,330 | 1,722 | 1,408 | .08 | .06 | .06 | .07 | .98 | .87 | .99 | 1.08 | 14.93 |
| Energy End-Use Combinations | | | | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | 5,729 | 5,030 | 7,119 | 4,969 | .08 | .06 | .06 | .06 | 1.15 | .85 | 1.09 | 1.47 | 9.31 |
| With Water Heating, Without Cooking | 5,360 | 5,349 | 7,321 | 5,778 | .08 | .07 | .06 | .08 | 1.04 | .80 | .81 | 1.15 | 7.61 |
| Without Water Heating or Cooking | 73 | 389 | 1,238 | 436 | .10 | .07 | .07 | .09 | .42 | .75 | .53 | .71 | 13.41 |
| Without Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | 612 | 195 | Q | 266 | .05 | .08 | Q | .06 | .72 | .34 | Q | .44 | 22.10 |
| With Water Heating, Without Cooking | 1,009 | 473 | 197 | 464 | .07 | .08 | .06 | .07 | .71 | .52 | .34 | .59 | 19.17 |
| Without Water Heating or Cooking | Q | 110 | 140 | 87 | .08 | .07 | .07 | .08 | .80 | .24 | .25 | .53 | 20.26 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 82 | 104 | 191 | 106 | .08 | .07 | .07 | .08 | .24 | .20 | .19 | .27 | 20.20 |
| All Other Combinations | Q | Q | Q | 543 | Q | Q | .11 | .09 | Q | Q | Q | 1.60 | 18.35 |

See footnotes at end of table.

ELECTRICITY

Table 24. Electricity Expenditures by Census Region (Continued)

| Building Characteristics | Total Electricity Expenditures (million dollars) | | | | Electricity Expenditures (dollars) | | | | | | | | RSE Row Factor |
|--|--|----------|--------|--------|------------------------------------|----------|-------|-------|-----------------|----------|-------|-------|----------------|
| | | | | | per kWh | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.839 | 1.449 | 1.427 | 1.743 | 0.739 | 0.476 | 0.460 | 0.463 | 1.349 | 1.100 | 1.009 | 1.201 | 1.201 |
| Space-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 3,193 | 2,846 | 8,966 | 5,032 | .07 | .07 | .06 | .07 | 1.25 | 1.01 | 1.00 | 1.15 | 9.30 |
| Main | 1,697 | 2,140 | 7,096 | 4,249 | .07 | .06 | .06 | .07 | 1.26 | 1.23 | 1.03 | 1.23 | 9.84 |
| With Secondary | Q | 494 | 892 | Q | Q | .07 | .06 | Q | Q | 1.49 | 1.02 | Q | 15.13 |
| Natural Gas Only | Q | Q | 408 | Q | Q | Q | .06 | Q | Q | Q | .97 | Q | 14.24 |
| Other Energy Sources or Combinations | Q | Q | Q | Q | Q | Q | .05 | Q | Q | Q | .96 | Q | 16.16 |
| With No Secondary | 1,340 | 1,647 | 6,204 | 3,851 | .07 | .06 | .06 | .07 | 1.41 | 1.16 | 1.03 | 1.26 | 9.76 |
| Secondary | 1,496 | 705 | 1,870 | 784 | .08 | .07 | .06 | .07 | 1.24 | .66 | .91 | .83 | 15.24 |
| Other Excluding Electricity | 9,890 | 8,703 | 7,217 | 7,117 | .08 | .07 | .06 | .07 | .95 | .71 | .71 | 1.13 | 7.93 |
| Building Not Heated | 105 | 148 | Q | 499 | .09 | .07 | .11 | .09 | .27 | .23 | Q | .76 | 17.72 |
| Main Space-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 1,697 | 2,140 | 7,096 | 4,249 | .07 | .06 | .06 | .07 | 1.26 | 1.23 | 1.03 | 1.23 | 9.34 |
| Natural Gas | 4,882 | 8,021 | 6,132 | 6,924 | .07 | .07 | .06 | .07 | .92 | .71 | .71 | 1.19 | 9.16 |
| Fuel Oil | 3,394 | 283 | 446 | Q | .08 | .06 | .07 | Q | .88 | .55 | .40 | Q | 13.64 |
| District Heat | 3,004 | 909 | 1,901 | 906 | .08 | .06 | .05 | .06 | 1.38 | .81 | 1.22 | .78 | 17.16 |
| Propane | Q | Q | 266 | Q | Q | .05 | .07 | Q | Q | 1.19 | .44 | Q | 16.76 |
| Other | Q | Q | Q | Q | Q | Q | .07 | Q | Q | Q | .22 | Q | 14.19 |
| Air-Conditioning Energy Source | | | | | | | | | | | | | |
| Electricity | 9,980 | 9,950 | 17,078 | 10,878 | .08 | .06 | .06 | .07 | 1.07 | .81 | .95 | 1.32 | 7.59 |
| Other Excluding Electricity | 1,203 | 857 | 725 | 825 | .08 | .07 | .06 | .06 | 1.17 | 1.00 | .81 | .77 | 15.93 |
| Air-Conditioning Not Performed | 2,005 | 889 | 606 | 946 | .07 | .08 | .07 | .07 | .67 | .35 | .27 | .47 | 12.21 |
| Water-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 4,770 | 3,786 | 9,831 | 4,393 | .08 | .07 | .07 | .07 | 1.18 | .86 | 1.08 | 1.11 | 9.81 |
| Other Excluding Electricity | 7,965 | 7,306 | 6,693 | 7,354 | .08 | .06 | .06 | .07 | .95 | .74 | .86 | 1.21 | 9.77 |
| Water Heating Not Performed | 454 | 605 | 1,885 | 902 | .09 | .07 | .07 | .08 | .52 | .40 | .44 | .69 | 10.96 |
| Cooking Energy Source | | | | | | | | | | | | | |
| Electricity | 2,221 | 2,593 | 4,324 | 1,625 | .07 | .06 | .06 | .06 | .82 | .89 | 1.18 | 1.05 | 10.22 |
| Other Excluding Electricity | 4,174 | 2,653 | 3,612 | 3,882 | .07 | .07 | .06 | .06 | 1.32 | .74 | 1.02 | 1.52 | 12.03 |
| Cooking Not Performed | 6,793 | 6,451 | 10,473 | 7,142 | .08 | .07 | .07 | .08 | .91 | .70 | .75 | .99 | 8.59 |
| Manufacturing Energy Source | | | | | | | | | | | | | |
| Electricity | 679 | 736 | 1,532 | 1,227 | .08 | .07 | .06 | .07 | .99 | .70 | .98 | 1.10 | 16.65 |
| Other Excluding Electricity | 325 | Q | Q | 181 | .08 | .05 | Q | .07 | .94 | 1.22 | Q | .96 | 15.00 |
| Manufacturing Not Performed | 12,185 | 10,367 | 16,687 | 11,241 | .08 | .07 | .07 | .07 | .99 | .73 | .86 | 1.12 | 7.55 |
| HEATING AND COOLING | | | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | | | |
| Not Heated | 124 | 150 | Q | 501 | .09 | .07 | .11 | .09 | .30 | .23 | Q | .74 | 16.99 |
| 1 to 50 | 847 | 1,021 | 1,375 | 1,308 | .08 | .06 | .07 | .09 | .48 | .43 | .41 | .72 | 12.46 |
| 51 to 99 | 1,385 | 1,337 | 3,855 | 2,899 | .07 | .07 | .06 | .07 | 1.14 | .74 | 1.09 | 1.38 | 10.71 |
| 100 | 10,833 | 9,189 | 10,949 | 7,941 | .08 | .07 | .06 | .07 | 1.09 | .85 | .89 | 1.18 | 6.96 |
| Percent Cooled | | | | | | | | | | | | | |
| Not Cooled | 2,005 | 889 | 606 | 946 | .07 | .08 | .07 | .07 | .67 | .35 | .27 | .47 | 12.21 |
| 1 to 50 | 3,524 | 2,525 | 2,665 | 1,299 | .08 | .07 | .07 | .08 | .72 | .48 | .50 | .55 | 8.40 |
| 51 to 99 | 2,955 | 3,654 | 4,778 | 3,311 | .07 | .06 | .06 | .07 | 1.20 | 1.05 | .99 | 1.41 | 8.80 |
| 100 | 4,705 | 4,628 | 10,360 | 7,093 | .08 | .07 | .07 | .07 | 1.57 | 1.06 | 1.17 | 1.54 | 10.69 |

See footnotes at end of table.

Table 24. Electricity Expenditures by Census Region (Continued)

| Building Characteristics | Total Electricity Expenditures (million dollars) | | | | Electricity Expenditures (dollars) | | | | | | | | RSE Row Factor |
|--------------------------|--|----------|-------|-------|------------------------------------|----------|-------|-------|-----------------|----------|-------|-------|----------------|
| | | | | | per kWh | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.839 | 1.449 | 1.427 | 1.743 | 0.739 | 0.476 | 0.469 | 0.463 | 1.349 | 1.100 | 1.000 | 1.001 | RSE Row Factor |

LIGHTING**Percent Lit When Open**

| | | | | | | | | | | | | | |
|----------------|-------|-------|--------|-------|------|------|------|------|------|------|------|------|-------|
| Not Lit | Q | 45 | 44 | Q | Q | 0.06 | 0.09 | Q | Q | 0.24 | 0.16 | Q | 28.70 |
| 1 to 50 | 979 | 905 | 1,417 | 1,099 | 0.09 | .07 | .07 | 0.08 | 0.55 | .28 | .35 | 0.60 | 10.79 |
| 51 to 99 | 3,227 | 3,612 | 4,984 | 4,247 | .08 | .07 | .06 | .07 | .85 | .80 | .90 | 1.37 | 5.44 |
| 100 | 8,932 | 7,134 | 11,964 | 7,248 | .07 | .07 | .07 | .07 | 1.18 | .91 | 1.05 | 1.16 | 5.86 |

▪ Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

▪ No applicable RSE row factor.

NC No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

ELECTRICITY

Table 25. Electricity Consumption and Conditional Energy Intensity by Building Size

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | Ratio from Row Header |
|------------------------------------|---|-------------------------------|--------------------------|---|-------------------------------|--------------------------|--|-------------------------------|--------------------------|--------------------------------|
| | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | |
| GENERAL CHARACTERISTICS | 1,001 | 10,001 | Over 100,000 | 0.717 | 0.720 | 1,001 | 0.000 | 0.000 | 0.019 | |
| All Buildings | 168 | 336 | 310 | 12,706 | 27,577 | 21,280 | 13.2 | 12.2 | 14.5 | 0.64 |
| YEAR CONSTRUCTED | | | | | | | | | | |
| 1899 or Before | 3 | 4 | Q | 540 | 979 | Q | 5.4 | 4.3 | Q | 21.75 |
| 1900 to 1919 | 5 | 9 | 8 | 685 | 1,587 | Q | 7.6 | 5.5 | Q | 21.88 |
| 1920 to 1945 | 17 | 24 | 21 | 1,986 | 3,383 | 2,511 | 8.3 | 7.2 | 8.3 | 15.23 |
| 1946 to 1959 | 26 | 38 | 47 | 2,477 | 4,430 | 3,277 | 10.5 | 8.5 | 14.4 | 12.85 |
| 1960 to 1969 | 27 | 77 | 69 | 2,118 | 5,511 | 4,293 | 12.6 | 14.0 | 16.1 | 10.24 |
| 1970 to 1979 | 48 | 83 | 83 | 2,518 | 5,628 | 5,025 | 19.0 | 14.8 | 16.5 | 10.39 |
| 1980 to 1983 | 18 | 41 | 28 | 893 | 1,932 | 1,384 | 19.7 | 21.0 | 20.4 | 10.47 |
| 1984 to 1986 | 14 | 36 | 39 | 923 | 2,631 | 2,074 | 15.3 | 13.6 | 18.8 | 10.12 |
| 1987 to 1989 | 11 | 24 | 14 | 565 | 1,496 | 1,088 | 18.8 | 16.2 | 13.0 | 22.17 |
| BUILDING USE | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | |
| Assembly | 20 | 22 | 13 | 2,183 | 3,274 | 1,394 | 9.1 | 6.8 | 9.0 | 04.77 |
| Education | 7 | 30 | 27 | 680 | 4,063 | 3,327 | 10.0 | 7.4 | 8.0 | 10.00 |
| Food Sales | 11 | 16 | Q | 256 | 378 | Q | 41.2 | 41.5 | Q | 21.38 |
| Food Service | 27 | 6 | NC | 680 | 486 | NC | 39.5 | 12.6 | NC | 18.23 |
| Health Care | 3 | 6 | 36 | 198 | 345 | 1,511 | 16.0 | 17.5 | 23.7 | 17.70 |
| Lodging | 4 | 23 | 13 | 401 | 1,795 | 1,279 | 11.1 | 13.0 | 9.8 | 17.68 |
| Mercantile and Service | 47 | 61 | 54 | 3,868 | 5,412 | 3,080 | 12.0 | 11.2 | 17.5 | 11.05 |
| Office | 32 | 86 | 111 | 1,781 | 4,755 | 5,260 | 17.8 | 18.2 | 21.1 | 10.75 |
| Parking Garage | 2 | Q | 3 | 145 | Q | 657 | 11.0 | Q | 4.6 | 27.89 |
| Public Order and Safety | 2 | Q | Q | 164 | Q | Q | 9.1 | Q | Q | 26.05 |
| Warehouse | 9 | 37 | 25 | 1,615 | 4,770 | 2,465 | 5.4 | 7.8 | 10.3 | 19.79 |
| Other | 3 | Q | Q | 149 | 989 | Q | 23.1 | 41.9 | Q | 49.13 |
| Vacant | 2 | 3 | 6 | 585 | 931 | Q | 4.2 | 2.8 | 4.3 | 27.55 |
| Weekly Operating Hours | | | | | | | | | | |
| 39 or Fewer | 11 | 8 | 2 | 2,252 | 2,077 | 419 | 4.8 | 3.9 | 4.4 | 19.34 |
| 40 to 48 | 37 | 61 | 31 | 3,405 | 7,135 | 3,270 | 10.9 | 8.6 | 9.3 | 13.31 |
| 49 to 60 | 27 | 53 | 60 | 2,842 | 6,512 | 3,995 | 9.5 | 8.1 | 15.1 | 11.05 |
| 61 to 84 | 29 | 60 | 64 | 1,693 | 4,366 | 4,691 | 17.0 | 13.8 | 13.7 | 11.67 |
| 85 to 167 | 35 | 57 | 50 | 1,446 | 3,727 | 4,204 | 24.2 | 15.4 | 11.8 | 14.15 |
| 168 (Open Continuously) | 29 | 96 | 103 | 1,068 | 3,760 | 4,701 | 27.1 | 25.6 | 21.9 | 12.00 |
| Workers | | | | | | | | | | |
| 4 or Fewer | 63 | 21 | 2 | 6,949 | 5,089 | Q | 9.1 | 4.1 | 1.4 | 12.63 |
| 5 to 9 | 44 | 30 | 2 | 3,064 | 3,986 | 877 | 14.2 | 7.6 | Q | 16.10 |
| 10 to 19 | 32 | 36 | 2 | 1,770 | 4,066 | 607 | 18.0 | 8.8 | 3.5 | 18.38 |
| 20 to 49 | 27 | 75 | 15 | 861 | 6,946 | 1,858 | 31.5 | 10.8 | 8.1 | 16.71 |
| 50 to 99 | Q | 76 | 25 | Q | 4,186 | 3,173 | Q | 18.1 | 7.8 | 12.43 |
| 100 to 249 | Q | 69 | 71 | Q | 2,815 | 3,924 | Q | 24.4 | 18.1 | 12.71 |
| 250 or More | NC | Q | 193 | NC | 489 | 9,329 | NC | Q | 20.7 | 11.35 |
| Ownership and Occupancy | | | | | | | | | | |
| Nongovernment Owned | 142 | 257 | 220 | 11,211 | 21,576 | 14,763 | 12.7 | 11.9 | 14.9 | 0.71 |
| Owner Occupied | 108 | 180 | 174 | 8,354 | 15,606 | 11,476 | 12.9 | 11.5 | 15.2 | 7.00 |
| Single Establishment | 98 | 147 | 102 | 7,162 | 12,457 | 6,970 | 13.6 | 11.8 | 14.6 | 0.54 |
| Multiple Establishment | 10 | 33 | 72 | 1,192 | 3,149 | 4,506 | 8.6 | 10.4 | 16.0 | 10.60 |
| Nonowner Occupied | 34 | 77 | 46 | 2,856 | 5,970 | 3,287 | 12.0 | 12.9 | 14.0 | 10.04 |
| Single Establishment | 24 | 39 | 15 | 1,855 | 3,044 | 1,280 | 13.0 | 12.7 | 11.7 | 16.95 |
| Multiple Establishment | 9 | 38 | 31 | 684 | 2,658 | 1,885 | 13.2 | 14.2 | 16.4 | 15.03 |
| Vacant | 1 | 1 | Q | 318 | 267 | Q | 3.5 | 3.5 | Q | 04.57 |
| Government Owned | 25 | 79 | 89 | 1,495 | 6,001 | 6,517 | 17.0 | 13.1 | 13.7 | 10.00 |
| Federal | Q | 12 | 25 | Q | 534 | Q | Q | 22.8 | 19.4 | 31.12 |
| State | 4 | 33 | 33 | 308 | 1,645 | 1,917 | 12.7 | 20.4 | 17.2 | 20.00 |
| Local | 20 | 33 | 31 | 1,112 | 3,822 | 3,309 | 18.0 | 8.6 | 9.5 | 15.51 |

See footnotes at end of table.

Table 25. Electricity Consumption and Conditional Energy Intensity by Building Size (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor |
|--------------------------------------|---|-------------------------------|--------------------------|---|-------------------------------|--------------------------|--|-------------------------------|--------------------------|----------------|
| | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | |
| RSE Column Factor: | 1.021 | 1.151 | 1.495 | 0.717 | 0.720 | 1.316 | 0.660 | 0.987 | 1.019 | |
| Multibuilding Facility | | | | | | | | | | |
| Not on Multibuilding Facility | 107 | 170 | 142 | 8,498 | 16,579 | 11,447 | 12.6 | 10.2 | 12.4 | 7.01 |
| Part of Multibuilding Facility | 61 | 166 | 168 | 4,208 | 10,999 | 9,833 | 14.5 | 15.1 | 17.1 | 10.98 |
| On Facility with Central Plant | 16 | 79 | 91 | 405 | 3,209 | 4,683 | 39.6 | 24.5 | 19.5 | 23.27 |
| LOCATION | | | | | | | | | | |
| Census Region | | | | | | | | | | |
| Northeast | 25 | 59 | 88 | 2,224 | 5,080 | 6,021 | 11.1 | 11.7 | 14.6 | 14.16 |
| Midwest | 32 | 73 | 73 | 2,945 | 6,558 | 6,201 | 11.0 | 11.2 | 11.7 | 12.01 |
| South | 79 | 118 | 89 | 5,084 | 10,592 | 5,538 | 15.5 | 11.1 | 16.1 | 11.07 |
| West | 32 | 85 | 60 | 2,452 | 5,347 | 3,519 | 12.9 | 15.9 | 17.1 | 12.97 |
| Census Division | | | | | | | | | | |
| Northeast | | | | | | | | | | |
| New England | 6 | 14 | 14 | 510 | 1,405 | 1,212 | 10.9 | 9.9 | 11.9 | 18.73 |
| Middle Atlantic | 19 | 46 | 73 | 1,714 | 3,675 | 4,810 | 11.1 | 12.4 | 15.2 | 17.19 |
| Midwest | | | | | | | | | | |
| East North Central | 20 | 50 | 48 | 1,868 | 4,475 | 4,184 | 10.6 | 11.1 | 11.4 | 16.07 |
| West North Central | 13 | 24 | 25 | 1,078 | 2,083 | 2,017 | 11.7 | 11.4 | 12.4 | 17.12 |
| South | | | | | | | | | | |
| South Atlantic | 31 | 54 | 37 | 2,074 | 5,048 | 2,506 | 15.1 | 10.7 | 14.6 | 15.69 |
| East South Central | 19 | 27 | 17 | 1,057 | 2,131 | 1,030 | 18.1 | 12.7 | 16.4 | 23.09 |
| West South Central | 28 | 37 | 36 | 1,954 | 3,413 | 2,002 | 14.5 | 10.8 | 17.7 | 16.88 |
| West | | | | | | | | | | |
| Mountain | 11 | 18 | Q | 851 | 2,075 | Q | 13.3 | 8.9 | 18.2 | 16.20 |
| Pacific | 20 | 67 | 38 | 1,601 | 3,272 | 2,272 | 12.8 | 20.3 | 16.5 | 15.23 |
| Metropolitan Status | | | | | | | | | | |
| Metropolitan | 126 | 282 | 286 | 8,504 | 21,788 | 19,543 | 14.8 | 12.9 | 14.6 | 7.47 |
| Nonmetropolitan | 42 | 54 | 24 | 4,202 | 5,789 | 1,737 | 10.0 | 9.3 | 13.6 | 15.02 |
| Climate Zone: 45-Year Average | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | |
| Over 7,000 HDD | 10 | 36 | 16 | 915 | 2,902 | 1,165 | 11.3 | 12.3 | 13.8 | 16.87 |
| 5,500-7,000 HDD | 37 | 74 | 85 | 3,157 | 7,292 | 7,048 | 11.7 | 10.1 | 12.1 | 14.35 |
| 4,000-5,499 HDD | 30 | 78 | 99 | 2,705 | 6,044 | 6,297 | 11.0 | 12.9 | 15.7 | 15.08 |
| Under 4,000 HDD | 41 | 84 | 69 | 2,893 | 5,365 | 4,314 | 14.3 | 15.6 | 16.0 | 16.00 |
| 2,000 CDD or More and -- | | | | | | | | | | |
| Under 4,000 HDD | 49 | 65 | 40 | 3,036 | 5,974 | 2,456 | 16.2 | 10.8 | 16.2 | 15.38 |
| ENERGY SOURCES AND END USES * | | | | | | | | | | |
| Energy Sources | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Electricity | 168 | 336 | 310 | 12,706 | 27,577 | 21,280 | 13.2 | 12.2 | 14.5 | 6.64 |
| Natural Gas | 95 | 200 | 239 | 7,373 | 17,397 | 16,345 | 12.9 | 11.5 | 14.6 | 8.45 |
| Fuel Oil | 16 | 53 | 125 | 1,519 | 4,467 | 6,592 | 10.6 | 11.9 | 18.9 | 17.61 |
| District Heat | Q | 50 | 75 | Q | 1,877 | 4,553 | Q | 26.7 | 16.4 | 21.99 |
| District Chilled Water | Q | Q | Q | Q | Q | 1,372 | Q | Q | 17.6 | 24.72 |
| Propane | 11 | 27 | 20 | 1,040 | 1,946 | 1,708 | 10.8 | 13.8 | 11.9 | 20.06 |
| Other | 3 | 5 | Q | 385 | 619 | Q | 8.8 | 7.7 | Q | 30.83 |

See footnotes at end of table.

Table 25. Electricity Consumption and Conditional Energy Intensity by Building Size (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor |
|---|---|-------------------------------|--------------------------|---|-------------------------------|--------------------------|--|-------------------------------|--------------------------|----------------|
| | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | |
| RSE Column Factor: | 1.021 | 1.151 | 1.495 | 0.717 | 0.720 | 1.316 | 0.860 | 0.997 | 1.019 | |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | |
| Heated Buildings | 152 | 326 | 306 | 11,369 | 25,827 | 20,630 | 13.4 | 12.6 | 14.8 | 6.64 |
| Air-Conditioned Buildings | 146 | 315 | 288 | 9,372 | 23,045 | 19,340 | 15.5 | 13.7 | 14.9 | 6.89 |
| Buildings with Water Heating | 146 | 315 | 302 | 9,273 | 24,101 | 20,195 | 15.7 | 13.0 | 15.0 | 7.10 |
| Buildings with Cooking | 53 | 129 | 209 | 2,307 | 8,263 | 13,092 | 22.8 | 15.6 | 15.9 | 9.90 |
| Buildings with Manufacturing | 8 | 39 | 39 | 489 | 2,593 | 2,514 | 15.8 | 15.0 | 15.4 | 22.41 |
| Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 60 | 149 | 95 | 3,514 | 9,596 | 5,592 | 17.2 | 15.5 | 17.1 | 8.80 |
| Main | 51 | 106 | 78 | 2,561 | 6,449 | 4,437 | 19.9 | 16.4 | 17.6 | 9.89 |
| With Secondary | 4 | 15 | 16 | 250 | 898 | 850 | 15.0 | 16.3 | 19.0 | 23.16 |
| Natural Gas Only | 3 | 11 | Q | 171 | 629 | Q | 16.2 | 17.2 | Q | 32.79 |
| Other Energy Sources or Combinations | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| With No Secondary | 47 | 91 | 62 | 2,311 | 5,551 | 3,588 | 20.4 | 16.4 | 17.2 | 10.86 |
| Secondary | 9 | 43 | 17 | 953 | 3,146 | 1,155 | 9.9 | 13.7 | 15.1 | 17.27 |
| Other Excluding Electricity | 92 | 178 | 210 | 7,855 | 16,231 | 15,038 | 11.7 | 10.9 | 14.0 | 8.45 |
| Building Not Heated | 15 | 9 | 4 | 1,337 | 1,750 | 650 | 11.5 | 5.3 | 6.0 | 23.53 |
| Main Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 51 | 106 | 78 | 2,561 | 6,449 | 4,437 | 19.9 | 16.4 | 17.6 | 9.89 |
| Natural Gas | 77 | 152 | 148 | 6,485 | 14,108 | 10,508 | 11.8 | 10.8 | 14.1 | 9.58 |
| Fuel Oil | 14 | 20 | 19 | 1,306 | 2,735 | 1,536 | 10.5 | 7.4 | 12.7 | 22.64 |
| District Heat | Q | 33 | 66 | 147 | 1,721 | 4,151 | 35.3 | 18.9 | 16.0 | 23.11 |
| Propane | 5 | Q | Q | 652 | 539 | Q | 7.0 | 17.8 | Q | 26.88 |
| Other | 1 | Q | Q | 216 | Q | Q | 4.1 | Q | Q | 29.40 |
| Air-Conditioning Energy Source | | | | | | | | | | |
| Electricity | 141 | 300 | 255 | 9,058 | 21,868 | 16,979 | 15.5 | 13.7 | 15.0 | 7.08 |
| Other Excluding Electricity | 5 | 15 | 33 | 314 | 1,177 | 2,361 | 15.8 | 12.9 | 14.0 | 19.07 |
| Air-Conditioning Not Performed | 22 | 21 | 21 | 3,334 | 4,532 | 1,940 | 6.6 | 4.6 | 11.0 | 15.78 |
| Water-Heating Energy Source | | | | | | | | | | |
| Electricity | 76 | 138 | 118 | 4,623 | 9,892 | 6,979 | 16.4 | 14.0 | 17.0 | 9.14 |
| Other Excluding Electricity | 70 | 176 | 184 | 4,650 | 14,210 | 13,216 | 15.0 | 12.4 | 13.9 | 9.04 |
| Water Heating Not Performed | 22 | 21 | 7 | 3,433 | 3,476 | 1,085 | 6.4 | 6.1 | 6.6 | 14.44 |
| Cooking Energy Source | | | | | | | | | | |
| Electricity | 25 | 57 | 92 | 956 | 3,999 | 5,895 | 26.4 | 14.2 | 15.6 | 11.30 |
| Other Excluding Electricity | 27 | 72 | 117 | 1,351 | 4,264 | 7,197 | 20.3 | 17.0 | 16.2 | 13.61 |
| Cooking Not Performed | 115 | 207 | 101 | 10,399 | 19,315 | 8,187 | 11.1 | 10.7 | 12.3 | 9.60 |
| Manufacturing Energy Source | | | | | | | | | | |
| Electricity | 6 | 25 | 33 | 390 | 1,898 | 2,117 | 16.6 | 12.9 | 15.6 | 25.23 |
| Other Excluding Electricity | Q | Q | 6 | Q | 695 | 397 | Q | 20.7 | 14.5 | 26.69 |
| Manufacturing Not Performed | 160 | 297 | 271 | 12,218 | 24,984 | 18,766 | 13.1 | 11.9 | 14.4 | 6.81 |
| HEATING AND COOLING | | | | | | | | | | |
| Percent Heated | | | | | | | | | | |
| Not Heated | 15 | 9 | 4 | 1,376 | 1,802 | 661 | 11.3 | 5.2 | 5.9 | 23.27 |
| 1 to 50 | 17 | 31 | 13 | 1,837 | 4,633 | 2,843 | 9.3 | 6.7 | 4.6 | 16.04 |
| 51 to 99 | 26 | 51 | 69 | 1,521 | 3,382 | 3,766 | 17.1 | 14.9 | 18.3 | 13.53 |
| 100 | 109 | 244 | 223 | 7,972 | 17,760 | 14,010 | 13.7 | 13.8 | 15.9 | 7.51 |

See footnotes at end of table.

Table 25. Electricity Consumption and Conditional Energy Intensity by Building Size (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor |
|--|---|-------------------------------|--------------------------|---|-------------------------------|--------------------------|--|-------------------------------|--------------------------|----------------|
| | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | |
| RSE Column Factor: | 1.021 | 1.151 | 1.495 | 0.717 | 0.720 | 1.316 | 0.850 | 0.967 | 1.019 | |
| Percent Cooled | | | | | | | | | | |
| Not Cooled | 22 | 21 | 21 | 3,334 | 4,532 | 1,940 | 6.6 | 4.6 | 11.0 | 15.78 |
| 1 to 50 | 30 | 65 | 41 | 3,174 | 8,964 | 5,683 | 9.4 | 7.2 | 7.2 | 12.42 |
| 51 to 99 | 33 | 79 | 118 | 1,664 | 5,071 | 6,399 | 19.6 | 15.6 | 18.4 | 10.55 |
| 100 | 83 | 171 | 130 | 4,535 | 9,011 | 7,258 | 18.4 | 19.0 | 17.9 | 10.33 |
| LIGHTING | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | |
| Not Lit | 1 | 1 | Q | 248 | 297 | Q | 2.6 | 4.9 | Q | 37.18 |
| 1 to 50 | 20 | 23 | 13 | 3,082 | 5,559 | 2,223 | 6.6 | 4.2 | 5.7 | 13.97 |
| 51 to 99 | 40 | 104 | 95 | 2,836 | 7,446 | 6,668 | 14.0 | 13.9 | 14.2 | 11.17 |
| 100 | 107 | 207 | 202 | 6,539 | 14,275 | 12,178 | 16.4 | 14.5 | 16.6 | 8.15 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | | |
| Incandescent Lamps | 86 | 205 | 221 | 7,010 | 16,759 | 15,005 | 12.2 | 12.2 | 14.7 | 7.50 |
| Fluorescent Lamps | 162 | 331 | 308 | 11,473 | 26,372 | 21,034 | 14.1 | 12.6 | 14.7 | 6.75 |
| High-Intensity Discharge Lamps | 16 | 97 | 176 | 1,108 | 5,849 | 11,220 | 14.1 | 16.5 | 15.7 | 11.78 |
| Other Lamps | Q | Q | 5 | Q | Q | 280 | Q | Q | 19.2 | 19.05 |
| High-Efficiency Ballasts | 58 | 173 | 184 | 2,710 | 11,039 | 10,412 | 21.5 | 15.7 | 17.6 | 9.97 |
| ENERGY MANAGEMENT | | | | | | | | | | |
| Occupant Control | | | | | | | | | | |
| Any Control of Heating | 94 | 123 | 98 | 7,249 | 12,144 | 7,639 | 12.9 | 10.1 | 12.9 | 8.82 |
| With Thermostats | 81 | 115 | 93 | 6,339 | 11,196 | 7,228 | 12.8 | 10.2 | 12.9 | 9.54 |
| Any Control of Cooling | 85 | 127 | 109 | 5,911 | 12,023 | 8,370 | 14.3 | 10.6 | 13.0 | 8.57 |
| With Thermostats | 72 | 119 | 105 | 5,269 | 10,747 | 8,016 | 13.7 | 11.1 | 13.1 | 8.03 |
| Reduced Use During Off-Hours | | | | | | | | | | |
| Heating Only | 20 | 22 | 21 | 2,289 | 3,239 | 1,598 | 8.9 | 6.6 | 13.3 | 16.31 |
| Cooling Only | 18 | 24 | 17 | 859 | 1,932 | 1,321 | 21.1 | 12.3 | 13.1 | 25.41 |
| Heating and Cooling | 86 | 186 | 218 | 7,189 | 16,421 | 15,073 | 12.0 | 11.3 | 14.5 | 7.88 |
| Computerized Energy Management and Control System | | | | | | | | | | |
| Present in Building | 13 | 80 | 170 | 516 | 4,309 | 9,485 | 24.5 | 18.5 | 17.9 | 11.00 |
| Controls Heating and Cooling | 12 | 76 | 166 | 492 | 4,176 | 9,098 | 24.5 | 18.2 | 18.2 | 11.24 |
| Controls Lighting | Q | 19 | 44 | Q | 882 | 2,887 | Q | 21.2 | 15.2 | 16.00 |
| Controls Other | Q | 12 | 34 | Q | 576 | 1,716 | Q | 21.7 | 19.8 | 15.21 |
| Other Energy Management | | | | | | | | | | |
| Regular HVAC Maintenance | 103 | 287 | 292 | 5,869 | 19,483 | 17,603 | 17.5 | 14.7 | 16.6 | 7.51 |
| Participated in Utility Conservation Program | 12 | 65 | 94 | 839 | 4,319 | 5,668 | 14.1 | 15.0 | 16.7 | 11.32 |

a Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

c No cases in responding sample.

d Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 26. Electricity Consumption and Conditional Energy Intensity for Selected Principal Building Activities

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor |
|--|---|--------|-----------|---|--------|-----------|--|--------|-----------|----------------|
| | Mercantile | Office | All Other | Mercantile | Office | All Other | Mercantile | Office | All Other | |
| | RSE Column Factor: | 1.347 | 1.248 | 1.000 | 1.007 | 1.034 | 0.995 | 0.855 | 0.943 | 0.929 |
| All Buildings | 161 | 229 | 423 | 12,361 | 11,796 | 37,406 | 13.0 | 19.4 | 11.3 | 8.52 |
| Building Floorspace (Square Feet) | | | | | | | | | | |
| 1,001 to 5,000 | 29 | 16 | 50 | 2,116 | 961 | 3,333 | 13.5 | 17.2 | 15.1 | 8.60 |
| 5,001 to 10,000 | 18 | 15 | 39 | 1,753 | 821 | 3,724 | 10.2 | 18.5 | 10.5 | 14.88 |
| 10,001 to 25,000 | 25 | 31 | 56 | 2,639 | 1,721 | 5,628 | 9.5 | 18.0 | 9.9 | 13.10 |
| 25,001 to 50,000 | 18 | 29 | 50 | 1,395 | 1,459 | 5,817 | 12.9 | 20.0 | 8.6 | 16.06 |
| 50,001 to 100,000 | 18 | 26 | 83 | 1,378 | 1,575 | 5,965 | 12.8 | 16.6 | 13.9 | 16.77 |
| 100,001 to 200,000 | 24 | 28 | 61 | 1,417 | 1,465 | 5,340 | 17.1 | 19.2 | 11.5 | 16.88 |
| 200,001 to 500,000 | Q | 42 | 48 | 692 | 1,695 | 4,610 | 24.9 | 24.6 | 10.5 | 22.88 |
| Over 500,000 | 12 | 41 | 35 | 972 | 2,101 | 2,989 | 12.8 | 19.6 | 11.8 | 24.88 |
| Year Constructed | | | | | | | | | | |
| 1899 or Before | 2 | 2 | 4 | 428 | 289 | 851 | 3.7 | 6.1 | 4.6 | 26.03 |
| 1900 to 1919 | 4 | 4 | 14 | 514 | 552 | 2,784 | 6.9 | 7.9 | 5.1 | 26.22 |
| 1920 to 1945 | 8 | 17 | 37 | 1,322 | 1,166 | 5,392 | 5.9 | 14.4 | 6.9 | 15.00 |
| 1946 to 1959 | 17 | 31 | 63 | 1,694 | 1,849 | 6,642 | 9.8 | 17.0 | 9.5 | 15.23 |
| 1960 to 1969 | 45 | 36 | 92 | 2,455 | 1,731 | 7,735 | 18.5 | 20.6 | 11.8 | 15.88 |
| 1970 to 1979 | 50 | 56 | 108 | 3,462 | 2,425 | 7,284 | 14.4 | 23.3 | 14.8 | 11.84 |
| 1980 to 1983 | 15 | 29 | 43 | 873 | 1,174 | 2,162 | 17.2 | 24.3 | 19.8 | 16.28 |
| 1984 to 1986 | 10 | 41 | 38 | 896 | 1,860 | 2,872 | 10.9 | 22.1 | 13.2 | 14.81 |
| 1987 to 1989 | 12 | 13 | 24 | 717 | 750 | 1,683 | 16.1 | 17.4 | 14.5 | 22.31 |
| BUILDING USE | | | | | | | | | | |
| Weekly Operating Hours | | | | | | | | | | |
| 39 or Fewer | 2 | Q | 17 | 286 | Q | 4,345 | 6.7 | Q | 4.0 | 17.98 |
| 40 to 48 | 13 | 50 | 67 | 2,105 | 3,366 | 8,339 | 6.0 | 14.7 | 8.0 | 10.68 |
| 49 to 60 | 24 | 72 | 45 | 3,368 | 4,022 | 5,960 | 7.0 | 17.9 | 7.5 | 11.15 |
| 61 to 84 | 56 | 44 | 53 | 3,900 | 2,385 | 4,466 | 14.4 | 18.4 | 11.8 | 13.42 |
| 85 to 167 | 37 | 14 | 91 | 1,934 | 780 | 6,663 | 19.3 | 17.7 | 13.7 | 14.05 |
| 168 (Open Continuously) | 29 | 48 | 151 | 768 | 1,127 | 7,633 | 38.0 | 42.9 | 19.7 | 18.65 |
| Workers | | | | | | | | | | |
| 4 or Fewer | 24 | 6 | 56 | 3,003 | 502 | 10,045 | 8.0 | 11.8 | 5.6 | 11.36 |
| 5 to 9 | 22 | 13 | 41 | 2,127 | 759 | 5,041 | 10.1 | 17.5 | 8.1 | 14.85 |
| 10 to 19 | 15 | 15 | 40 | 1,417 | 1,114 | 3,913 | 10.7 | 13.1 | 10.2 | 16.06 |
| 20 to 49 | 24 | 22 | 71 | 1,943 | 1,492 | 6,230 | 12.4 | 15.1 | 11.4 | 14.29 |
| 50 to 99 | 28 | 24 | 49 | 1,393 | 1,338 | 4,657 | 20.4 | 18.0 | 10.6 | 16.82 |
| 100 to 249 | 30 | 34 | 75 | 1,321 | 1,728 | 3,721 | 22.8 | 20.0 | 20.3 | 17.01 |
| 250 or More | 18 | 114 | 90 | 1,157 | 4,862 | 3,799 | 15.4 | 23.5 | 23.7 | 18.98 |
| Ownership and Occupancy | | | | | | | | | | |
| Nongovernment Owned | 156 | 185 | 279 | 11,962 | 9,444 | 26,145 | 13.0 | 19.5 | 10.7 | 7.09 |
| Owner Occupied | 95 | 128 | 239 | 7,983 | 6,638 | 20,816 | 11.8 | 19.4 | 11.5 | 8.72 |
| Single Establishment | 57 | 68 | 221 | 4,943 | 3,046 | 18,602 | 11.6 | 22.4 | 11.9 | 10.66 |
| Multiple Establishment | 37 | 60 | 18 | 3,040 | 3,593 | 2,215 | 12.2 | 16.8 | 8.0 | 11.76 |
| Nonowner Occupied | 61 | 56 | 40 | 3,979 | 2,805 | 5,329 | 15.4 | 20.0 | 7.5 | 12.01 |
| Single Establishment | 20 | 30 | 28 | 1,740 | 1,216 | 3,222 | 11.5 | 24.3 | 8.7 | 15.57 |
| Multiple Establishment | 41 | 27 | 10 | 2,238 | 1,589 | 1,399 | 18.5 | 16.7 | 6.9 | 19.06 |
| Vacant | -- | -- | 2 | -- | -- | 707 | -- | -- | 3.3 | 24.16 |
| Government Owned | 5 | 44 | 144 | 399 | 2,353 | 11,261 | 13.2 | 18.9 | 12.8 | 16.68 |
| Federal | Q | 19 | Q | Q | 803 | Q | Q | 23.8 | 18.5 | 24.52 |
| State | Q | 11 | 59 | Q | 618 | 3,181 | Q | 17.3 | 18.5 | 32.98 |
| Local | Q | 15 | 67 | Q | 932 | 7,102 | Q | 15.8 | 9.4 | 17.08 |
| LOCATION | | | | | | | | | | |
| Census Region | | | | | | | | | | |
| Northeast | 40 | 44 | 88 | 2,647 | 2,703 | 7,976 | 15.1 | 16.3 | 11.0 | 15.80 |
| Midwest | 38 | 38 | 102 | 3,057 | 2,275 | 10,372 | 12.5 | 16.7 | 9.9 | 11.26 |
| South | 58 | 80 | 148 | 4,775 | 3,817 | 12,623 | 12.1 | 20.9 | 11.7 | 9.83 |
| West | 25 | 67 | 85 | 1,882 | 3,001 | 6,435 | 13.4 | 22.4 | 13.2 | 12.92 |

See footnotes at end of table.

Table 26. Electricity Consumption and Conditional Energy Intensity for Selected Principal Building Activities (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | FSE Row Factor |
|--------------------------------------|---|--------|-----------|---|--------|-----------|--|--------|-----------|----------------|
| | Mercantile | Office | All Other | Mercantile | Office | All Other | Mercantile | Office | All Other | |
| Residential | 1,047 | 1,234 | 1,034 | 1,007 | 1,034 | 0,898 | 0.666 | 0.649 | 0.629 | |
| Census Division | | | | | | | | | | |
| Northeast | | | | | | | | | | |
| New England | 9 | 10 | 15 | 608 | 693 | 1,827 | 15.0 | 13.7 | 8.3 | 18.73 |
| Middle Atlantic | 31 | 35 | 72 | 2,039 | 2,011 | 6,149 | 15.2 | 17.2 | 11.8 | 19.56 |
| Midwest | | | | | | | | | | |
| East North Central | 23 | 26 | 68 | 1,850 | 1,615 | 7,063 | 12.4 | 16.0 | 9.7 | 12.79 |
| West North Central | 15 | 12 | 34 | 1,207 | 661 | 3,310 | 12.6 | 18.4 | 10.3 | 16.81 |
| South | | | | | | | | | | |
| South Atlantic | 24 | 36 | 62 | 2,048 | 1,767 | 5,813 | 11.7 | 20.2 | 10.7 | 16.56 |
| East South Central | 9 | 21 | 33 | 897 | 977 | 2,344 | 10.1 | 21.9 | 13.9 | 24.52 |
| West South Central | 25 | 23 | 53 | 1,830 | 1,073 | 4,466 | 13.5 | 21.2 | 11.9 | 16.46 |
| West | | | | | | | | | | |
| Mountain | 7 | 19 | 26 | 797 | 707 | 2,667 | 9.1 | 27.1 | 9.7 | 24.13 |
| Pacific | 18 | 48 | 59 | 1,084 | 2,293 | 3,768 | 16.6 | 20.9 | 15.6 | 17.45 |
| Metropolitan Status | | | | | | | | | | |
| Metropolitan | 125 | 209 | 359 | 8,987 | 10,693 | 30,156 | 14.0 | 19.6 | 11.9 | 16.80 |
| Nonmetropolitan | 36 | 20 | 64 | 3,374 | 1,104 | 7,250 | 10.6 | 17.8 | 8.8 | 15.41 |
| Climate Zone: 45-Year Average | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | |
| Over 7,000 HDD | 16 | 11 | 35 | 1,322 | 662 | 2,999 | 12.0 | 17.2 | 11.6 | 19.56 |
| 5,500-7,000 HDD | 42 | 53 | 100 | 3,327 | 2,873 | 11,296 | 12.7 | 18.5 | 8.9 | 14.30 |
| 4,000-5,499 HDD | 36 | 59 | 112 | 2,637 | 3,100 | 9,308 | 13.7 | 18.9 | 12.0 | 12.75 |
| Under 4,000 HDD | 32 | 71 | 91 | 2,515 | 3,513 | 6,545 | 12.7 | 20.3 | 13.9 | 14.00 |
| 2,000 CDD or More and -- | | | | | | | | | | |
| Under 4,000 HDD | 35 | 34 | 84 | 2,559 | 1,649 | 7,257 | 13.6 | 20.9 | 11.6 | 19.02 |
| ENERGY SOURCES AND END USES * | | | | | | | | | | |
| Energy Sources | | | | | | | | | | |
| (Solely or In Combination) | | | | | | | | | | |
| Electricity | 161 | 229 | 423 | 12,361 | 11,796 | 37,406 | 13.0 | 19.4 | 11.3 | 6.62 |
| Natural Gas | 115 | 131 | 288 | 8,788 | 7,214 | 25,112 | 13.1 | 18.2 | 11.5 | 9.28 |
| Fuel Oil | 18 | 60 | 116 | 1,616 | 2,909 | 8,054 | 10.9 | 20.7 | 14.4 | 16.37 |
| District Heat | Q | 46 | 83 | Q | 2,316 | 4,148 | Q | 19.8 | 20.0 | 27.89 |
| District Chilled Water | Q | Q | Q | Q | Q | 1,221 | Q | Q | 30.9 | 37.01 |
| Propane | 11 | Q | 46 | 910 | Q | 3,660 | 12.4 | Q | 12.6 | 20.82 |
| Other | Q | Q | 8 | 516 | Q | 899 | 7.0 | Q | 8.8 | 36.18 |
| Energy End Uses | | | | | | | | | | |
| (Solely or In Combination) | | | | | | | | | | |
| Heated Buildings | 158 | 226 | 400 | 12,040 | 11,677 | 34,109 | 13.1 | 19.4 | 11.7 | 6.68 |
| Air-Conditioned Buildings | 143 | 227 | 379 | 10,803 | 11,629 | 29,325 | 13.2 | 19.5 | 12.9 | 6.44 |
| Buildings with Water Heating | 144 | 218 | 400 | 10,161 | 11,190 | 32,218 | 14.2 | 19.5 | 12.4 | 7.09 |
| Buildings with Cooking | 81 | 90 | 219 | 4,035 | 3,912 | 15,715 | 20.1 | 23.0 | 14.0 | 12.00 |
| Buildings with Manufacturing | 10 | 21 | 55 | 853 | 968 | 3,774 | 11.1 | 21.5 | 14.6 | 19.54 |

See footnotes at end of table.

ELECTRICITY

Table 26. Electricity Consumption and Conditional Energy Intensity for Selected Principal Building Activities (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor |
|--|---|--------|-----------|---|--------|-----------|--|--------|-----------|----------------|
| | Mercantile | Office | All Other | Mercantile | Office | All Other | Mercantile | Office | All Other | |
| | 1.247 | 1.248 | 1.096 | 1.007 | 1.034 | 0.895 | 0.855 | 0.943 | 0.920 | |
| RSE Column Factor: | | | | | | | | | | |
| Energy End-Use Combinations | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | 72 | 87 | 199 | 3,865 | 3,746 | 13,170 | 18.7 | 23.3 | 15.1 | 11.60 |
| With Water Heating, Without Cooking | 57 | 128 | 154 | 5,281 | 7,241 | 13,374 | 10.7 | 17.6 | 11.5 | 8.13 |
| Without Water Heating or Cooking | 10 | 8 | 10 | 1,393 | 472 | 1,776 | 7.4 | 16.9 | 5.5 | 17.68 |
| Without Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | Q | Q | 11 | Q | Q | 1,961 | Q | Q | 5.8 | 16.83 |
| With Water Heating, Without Cooking | 7 | Q | 21 | 843 | Q | 2,761 | 8.6 | Q | 7.5 | 22.60 |
| Without Water Heating or Cooking | 4 | Q | 4 | 529 | Q | 970 | 7.0 | Q | 4.2 | 25.52 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | Q | Q | 6 | Q | Q | 2,188 | Q | Q | 2.7 | 18.42 |
| All Other Combinations | 4 | 4 | 18 | 299 | 170 | 1,205 | 12.5 | 22.1 | 15.2 | 29.56 |
| Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 69 | 103 | 133 | 4,530 | 4,545 | 9,627 | 15.3 | 22.6 | 13.8 | 8.88 |
| Main | 55 | 94 | 86 | 3,330 | 3,908 | 6,210 | 16.4 | 24.0 | 13.8 | 10.02 |
| With Secondary | 9 | Q | 17 | 599 | 418 | 981 | 14.4 | 21.9 | 17.1 | 27.30 |
| Natural Gas Only | 5 | Q | 10 | 393 | Q | 639 | 12.4 | Q | 15.6 | 36.78 |
| Other Energy Sources or Combinations | Q | Q | Q | Q | Q | 342 | Q | Q | 19.9 | 32.65 |
| With No Secondary | 46 | 85 | 69 | 2,731 | 3,490 | 5,230 | 16.9 | 24.3 | 13.2 | 9.05 |
| Secondary | 14 | 9 | 47 | 1,200 | 638 | 3,416 | 12.0 | 13.8 | 13.7 | 17.76 |
| Other Excluding Electricity | 89 | 124 | 267 | 7,510 | 7,132 | 24,482 | 11.8 | 17.4 | 10.9 | 9.38 |
| Building Not Heated | 3 | Q | 23 | 321 | Q | 3,297 | 9.6 | Q | 6.9 | 22.26 |
| Main Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 55 | 94 | 86 | 3,330 | 3,908 | 6,210 | 16.4 | 24.0 | 13.8 | 10.02 |
| Natural Gas | 89 | 83 | 205 | 6,961 | 4,809 | 19,332 | 12.8 | 17.2 | 10.6 | 10.25 |
| Fuel Oil | 10 | 8 | 36 | 1,099 | 723 | 3,756 | 8.8 | 10.5 | 9.6 | 19.66 |
| District Heat | Q | 44 | 59 | Q | 2,254 | 3,653 | Q | 19.6 | 16.0 | 21.64 |
| Propane | 3 | Q | Q | 362 | Q | 842 | 8.2 | Q | 13.1 | 30.88 |
| Other | 1 | Q | 3 | 290 | Q | 429 | 2.9 | Q | 7.5 | 26.84 |
| Air-Conditioning Energy Source | | | | | | | | | | |
| Electricity | 139 | 211 | 346 | 10,448 | 10,595 | 26,861 | 13.3 | 20.0 | 12.9 | 6.84 |
| Other Excluding Electricity | 4 | 15 | 34 | 355 | 1,034 | 2,463 | 12.0 | 14.6 | 13.8 | 20.50 |
| Air-Conditioning Not Performed | 18 | 2 | 43 | 1,557 | 167 | 8,081 | 11.8 | 14.9 | 5.3 | 22.18 |
| Water-Heating Energy Source | | | | | | | | | | |
| Electricity | 77 | 123 | 133 | 5,785 | 5,522 | 10,187 | 13.2 | 22.3 | 13.1 | 8.40 |
| Other Excluding Electricity | 68 | 95 | 267 | 4,376 | 5,668 | 22,032 | 15.5 | 16.7 | 12.1 | 10.71 |
| Water Heating Not Performed | 17 | 11 | 22 | 2,199 | 607 | 5,188 | 7.6 | 18.3 | 4.3 | 13.20 |
| Cooking Energy Source | | | | | | | | | | |
| Electricity | 30 | 40 | 104 | 1,537 | 1,690 | 7,623 | 19.5 | 23.5 | 13.7 | 11.66 |
| Other Excluding Electricity | 51 | 50 | 115 | 2,498 | 2,222 | 8,093 | 20.4 | 22.5 | 14.2 | 17.66 |
| Cooking Not Performed | 80 | 139 | 203 | 8,326 | 7,884 | 21,691 | 9.6 | 17.7 | 9.4 | 7.26 |
| Manufacturing Energy Source | | | | | | | | | | |
| Electricity | 6 | 20 | 38 | 575 | 871 | 2,960 | 10.7 | 23.0 | 12.8 | 24.05 |
| Other Excluding Electricity | 3 | Q | 17 | 278 | Q | 814 | 12.0 | Q | 21.2 | 28.27 |
| Manufacturing Not Performed | 152 | 208 | 368 | 11,508 | 10,828 | 33,632 | 13.2 | 19.2 | 10.9 | 8.84 |

See footnotes at end of table.

Table 26. Electricity Consumption and Conditional Energy Intensity for Selected Principal Building Activities (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor |
|--|---|--------|-----------|---|--------|-----------|--|--------|-----------|----------------|
| | Mercantile | Office | All Other | Mercantile | Office | All Other | Mercantile | Office | All Other | |
| HEATING AND COOLING | | | | 1,607 | 1,094 | 0,896 | 0.866 | 0.943 | 0.929 | |
| Percent Heated | | | | | | | | | | |
| Not Heated | 3 | Q | 23 | 324 | Q | 3,390 | 9.5 | Q | 6.8 | 22.09 |
| 1 to 50 | 13 | 6 | 43 | 1,905 | 495 | 6,914 | 6.8 | 11.4 | 6.2 | 18.85 |
| 51 to 99 | 27 | 61 | 58 | 2,011 | 3,039 | 3,618 | 13.5 | 20.0 | 15.9 | 13.46 |
| 100 | 118 | 160 | 299 | 8,121 | 8,137 | 23,484 | 14.5 | 19.6 | 12.7 | 8.03 |
| Percent Cooled | | | | | | | | | | |
| Not Cooled | 18 | 2 | 43 | 1,557 | 167 | 8,081 | 11.8 | 14.9 | 5.3 | 22.16 |
| 1 to 50 | 29 | 10 | 96 | 3,848 | 984 | 12,989 | 7.4 | 10.5 | 7.4 | 13.34 |
| 51 to 99 | 44 | 86 | 99 | 2,640 | 4,425 | 6,068 | 16.6 | 19.5 | 16.4 | 10.84 |
| 100 | 70 | 130 | 184 | 4,315 | 6,220 | 10,268 | 16.3 | 20.9 | 17.9 | 10.05 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | |
| Present in Building | 29 | 159 | 162 | 1,823 | 6,566 | 8,289 | 15.6 | 24.2 | 19.6 | 11.01 |
| Not Present | 133 | 70 | 260 | 10,538 | 5,231 | 29,117 | 12.6 | 13.4 | 8.9 | 7.30 |
| LIGHTING AND REFRIGERATION | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | |
| Not Lit | Q | Q | 2 | Q | Q | 734 | Q | Q | 3.2 | 27.47 |
| 1 to 50 | 9 | 13 | 35 | 1,911 | 1,035 | 7,917 | 4.6 | 12.2 | 4.4 | 14.21 |
| 51 to 99 | 44 | 81 | 113 | 3,287 | 4,582 | 9,082 | 13.4 | 17.7 | 12.5 | 12.79 |
| 100 | 108 | 135 | 272 | 7,145 | 6,174 | 19,674 | 15.2 | 21.9 | 13.8 | 8.47 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | | |
| Incandescent Lamps | 91 | 148 | 273 | 6,816 | 7,980 | 23,978 | 13.4 | 18.5 | 11.4 | 8.07 |
| Fluorescent Lamps | 160 | 229 | 412 | 12,212 | 11,733 | 34,934 | 13.1 | 19.5 | 11.8 | 6.59 |
| High-Intensity Discharge Lamps | 45 | 75 | 168 | 2,893 | 3,488 | 11,796 | 15.5 | 21.4 | 14.3 | 14.50 |
| Other Lamps | Q | Q | 4 | Q | Q | 202 | Q | Q | 21.3 | 28.46 |
| High-Efficiency Ballasts | 86 | 130 | 199 | 5,287 | 5,626 | 13,248 | 16.2 | 23.2 | 15.0 | 10.39 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | | |
| Commercial | | | | | | | | | | |
| Refrigeration Units | 99 | 92 | 247 | 5,221 | 4,080 | 15,303 | 18.9 | 22.5 | 16.2 | 10.59 |
| Freezers | 92 | 87 | 239 | 4,634 | 3,751 | 13,242 | 19.8 | 23.2 | 18.0 | 10.71 |
| Residential | | | | | | | | | | |
| Refrigerators | 98 | 205 | 299 | 7,774 | 10,142 | 26,262 | 12.6 | 20.2 | 11.4 | 7.89 |
| Freezers | 24 | 35 | 132 | 1,647 | 1,628 | 9,130 | 14.3 | 21.6 | 14.5 | 14.59 |
| Ice-Making Machines | 80 | 117 | 254 | 4,498 | 4,959 | 13,944 | 17.9 | 23.6 | 18.2 | 10.06 |
| Refrigerated Vending Machines | 126 | 191 | 305 | 8,104 | 8,978 | 21,728 | 15.5 | 21.3 | 14.0 | 7.51 |
| Water Coolers | 102 | 201 | 326 | 7,800 | 9,882 | 25,098 | 13.1 | 20.4 | 13.0 | 7.59 |
| Other | Q | 15 | Q | Q | 312 | 859 | Q | 47.2 | Q | 25.23 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

o Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

— Data not applicable.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

ELECTRICITY

Table 27. Electricity Consumption and Conditional Energy Intensity by Year Constructed

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RISE Row Factor |
|--|---|-----------|-----------|-----------|---|-----------|-----------|-----------|--|-----------|-----------|-----------|-----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| | RISE Construction | 1977 | 1980 | 1981 | 1984 | 0.924 | 0.921 | 0.927 | 0.933 | 1.002 | 0.787 | 0.924 | |
| All Buildings | 202 | 173 | 214 | 224 | 23,483 | 11,921 | 13,172 | 12,987 | 8.6 | 14.5 | 16.2 | 17.3 | 7.56 |
| Building Floorspace (Square Feet) | | | | | | | | | | | | | |
| 1,001 to 5,000 | 30 | 16 | 25 | 23 | 2,970 | 1,105 | 1,204 | 1,129 | 10.3 | 14.9 | 20.8 | 20.7 | 9.68 |
| 5,001 to 10,000 | 20 | 10 | 23 | 19 | 2,718 | 1,013 | 1,314 | 1,252 | 7.4 | 10.1 | 17.3 | 15.1 | 14.04 |
| 10,001 to 25,000 | 20 | 26 | 29 | 36 | 3,620 | 1,981 | 2,163 | 2,224 | 5.5 | 13.4 | 13.3 | 16.4 | 13.57 |
| 25,001 to 50,000 | 25 | 16 | 28 | 29 | 3,408 | 1,641 | 1,860 | 1,763 | 7.3 | 9.6 | 14.9 | 16.3 | 15.76 |
| 50,001 to 100,000 | 30 | 35 | 27 | 35 | 3,351 | 1,889 | 1,606 | 2,072 | 9.0 | 18.3 | 16.7 | 17.0 | 18.47 |
| 100,001 to 200,000 | 21 | 30 | 34 | 28 | 2,191 | 2,233 | 2,254 | 1,543 | 9.4 | 13.6 | 15.3 | 18.1 | 18.94 |
| 200,001 to 500,000 | 30 | 29 | 18 | 30 | 2,785 | 1,518 | 1,190 | 1,502 | 10.9 | 19.2 | 14.7 | 20.1 | 23.50 |
| Over 500,000 | 25 | 9 | 31 | 23 | 2,439 | 541 | 1,581 | 1,501 | 10.4 | 17.5 | 19.5 | 15.4 | 26.58 |
| BUILDING USE | | | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | | | |
| Assembly | 18 | 10 | 20 | 7 | 3,269 | 1,249 | 1,482 | 850 | 5.4 | 7.9 | 13.3 | 8.6 | 20.34 |
| Education | 24 | 17 | 17 | 5 | 3,962 | 2,201 | 1,314 | 593 | 6.0 | 7.8 | 12.8 | 9.2 | 14.89 |
| Food Sales | 5 | Q | Q | 7 | 263 | Q | Q | 169 | 18.0 | Q | Q | 43.1 | 23.76 |
| Food Service | 7 | 6 | 10 | 10 | 436 | 282 | 268 | 181 | 16.9 | 19.9 | 37.5 | 55.1 | 22.63 |
| Health Care | 15 | 7 | 15 | 8 | 802 | 355 | 586 | 310 | 19.0 | 20.7 | 24.9 | 25.4 | 19.59 |
| Lodging | 9 | 8 | 11 | 13 | 1,038 | 1,042 | 578 | 818 | 8.7 | 7.9 | 18.2 | 15.5 | 21.20 |
| Mercantile and Service | 30 | 45 | 50 | 36 | 3,957 | 2,455 | 3,462 | 2,486 | 7.5 | 18.5 | 14.4 | 14.6 | 12.17 |
| Office | 54 | 36 | 56 | 83 | 3,856 | 1,731 | 2,425 | 3,785 | 14.1 | 20.6 | 23.3 | 21.9 | 12.37 |
| Parking Garage | Q | Q | Q | 2 | Q | Q | Q | 427 | Q | Q | Q | 4.9 | 27.05 |
| Public Order and Safety | 3 | Q | Q | Q | 292 | Q | Q | Q | 8.6 | Q | Q | Q | 41.05 |
| Warehouse | 18 | 9 | 16 | 29 | 2,958 | 1,653 | 2,092 | 2,146 | 6.0 | 5.2 | 7.6 | 13.6 | 23.30 |
| Other | 12 | Q | Q | Q | 404 | Q | Q | 654 | 29.4 | Q | Q | 29.6 | 32.70 |
| Vacant | 7 | 1 | Q | 2 | 2,113 | 275 | Q | 469 | 3.3 | 5.1 | Q | 4.7 | 29.74 |
| Weekly Operating Hours | | | | | | | | | | | | | |
| 39 or Fewer | 7 | 5 | 5 | 4 | 2,424 | 808 | 893 | 623 | 2.8 | 5.9 | 6.1 | 5.8 | 18.44 |
| 40 to 48 | 44 | 21 | 35 | 29 | 6,151 | 2,385 | 2,646 | 2,628 | 7.2 | 9.0 | 13.1 | 11.0 | 12.63 |
| 49 to 60 | 42 | 25 | 29 | 45 | 5,093 | 2,304 | 2,807 | 3,146 | 8.2 | 10.9 | 10.2 | 14.3 | 14.40 |
| 61 to 84 | 32 | 35 | 41 | 45 | 3,562 | 2,204 | 2,453 | 2,532 | 9.0 | 15.7 | 16.7 | 17.8 | 14.49 |
| 85 to 167 | 28 | 36 | 43 | 35 | 3,416 | 2,302 | 2,112 | 1,548 | 8.1 | 15.8 | 20.3 | 22.7 | 14.97 |
| 168 (Open Continuously) | 50 | 50 | 62 | 67 | 2,837 | 1,918 | 2,262 | 2,511 | 17.5 | 26.3 | 27.2 | 26.5 | 18.90 |
| Workers | | | | | | | | | | | | | |
| 4 or Fewer | 29 | 14 | 21 | 22 | 6,458 | 2,069 | 2,547 | 2,477 | 4.5 | 6.8 | 8.4 | 8.8 | 11.38 |
| 5 to 9 | 21 | 11 | 21 | 22 | 3,365 | 1,358 | 1,688 | 1,515 | 6.3 | 8.3 | 12.4 | 14.6 | 17.03 |
| 10 to 19 | 17 | 17 | 17 | 19 | 2,582 | 1,394 | 1,150 | 1,317 | 6.6 | 11.9 | 15.0 | 14.3 | 17.05 |
| 20 to 49 | 21 | 27 | 38 | 32 | 3,371 | 2,186 | 2,088 | 2,020 | 6.2 | 12.4 | 18.0 | 15.8 | 13.75 |
| 50 to 99 | 23 | 27 | 29 | 23 | 2,472 | 2,042 | 1,703 | 1,172 | 9.1 | 13.0 | 17.3 | 19.9 | 19.21 |
| 100 to 249 | 37 | 31 | 29 | 43 | 2,020 | 1,473 | 1,563 | 1,715 | 18.5 | 21.3 | 18.4 | 24.8 | 18.20 |
| 250 or More | 54 | 46 | 59 | 63 | 3,214 | 1,400 | 2,432 | 2,771 | 16.8 | 32.7 | 24.2 | 22.9 | 20.00 |
| Ownership and Occupancy | | | | | | | | | | | | | |
| Nongovernment Owned | 130 | 122 | 161 | 206 | 16,780 | 8,905 | 10,251 | 11,614 | 7.8 | 13.7 | 15.7 | 17.8 | 7.71 |
| Owner Occupied | 104 | 90 | 120 | 147 | 13,138 | 6,843 | 7,440 | 8,016 | 8.0 | 13.2 | 16.2 | 18.3 | 9.46 |
| Single Establishment | 82 | 68 | 88 | 109 | 10,341 | 5,414 | 5,401 | 5,434 | 7.9 | 12.6 | 16.3 | 20.0 | 11.39 |
| Multiple Establishment | 23 | 22 | 33 | 38 | 2,798 | 1,428 | 2,040 | 2,581 | 8.1 | 15.4 | 16.0 | 14.7 | 14.27 |
| Nonowner Occupied | 26 | 31 | 41 | 60 | 3,641 | 2,063 | 2,811 | 3,599 | 7.1 | 15.2 | 14.5 | 16.6 | 12.74 |
| Single Establishment | 14 | 13 | 18 | 33 | 2,069 | 1,050 | 1,385 | 1,676 | 6.9 | 12.0 | 12.8 | 19.7 | 17.31 |
| Multiple Establishment | 11 | 18 | 22 | 27 | 1,168 | 914 | 1,315 | 1,829 | 9.0 | 19.9 | 16.8 | 14.6 | 18.49 |
| Vacant | 1 | Q | Q | 404 | Q | Q | Q | Q | 2.0 | Q | Q | Q | 24.91 |
| Government Owned | 72 | 51 | 53 | 18 | 6,703 | 3,016 | 2,921 | 1,373 | 10.7 | 16.9 | 18.2 | 12.9 | 18.15 |
| Federal | Q | Q | Q | Q | Q | Q | Q | Q | 17.8 | Q | Q | Q | 16.42 |
| State | 22 | Q | 17 | 6 | 1,539 | 834 | 1,007 | 489 | 14.1 | Q | 17.3 | 11.7 | 90.68 |
| Local | 26 | 21 | 29 | 9 | 3,803 | 1,968 | 1,720 | 753 | 6.8 | 10.6 | 16.7 | 12.0 | 17.02 |

See footnote at end of table.

Table 27. Electricity Consumption and Conditional Energy Intensity by Year Constructed (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Row Factor |
|---|---|-----------|-----------|-----------|---|-----------|-----------|-----------|--|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| RSE Column Factor | 1.077 | 1.306 | 1.112 | 1.304 | 0.929 | 0.929 | 0.929 | 0.927 | 0.903 | 1.092 | 0.767 | 0.924 | |
| Multibuilding Facility | | | | | | | | | | | | | |
| Not on Multibuilding Facility | 97 | 85 | 114 | 123 | 14,710 | 6,934 | 7,390 | 7,489 | 6.6 | 12.2 | 15.4 | 16.4 | 7.81 |
| Part of Multibuilding Facility | 105 | 88 | 100 | 102 | 8,773 | 4,987 | 5,782 | 5,499 | 11.9 | 17.6 | 17.3 | 18.5 | 12.97 |
| On Facility with Central Plant | 48 | 52 | 48 | 38 | 3,106 | 1,898 | 2,233 | 1,060 | 15.4 | 27.4 | 21.7 | 35.5 | 24.47 |
| Percent Vacant at Least Three Months | | | | | | | | | | | | | |
| 0 | 144 | 140 | 168 | 152 | 15,678 | 8,940 | 10,000 | 8,079 | 9.2 | 15.7 | 16.8 | 18.9 | 8.81 |
| 1 to 50 | 41 | 25 | 43 | 61 | 4,009 | 2,013 | 2,580 | 3,814 | 10.3 | 12.3 | 16.9 | 16.1 | 12.71 |
| 51 to 99 | 11 | 5 | Q | 2 | 2,542 | 400 | Q | 363 | 4.5 | 11.5 | Q | 6.0 | 28.70 |
| 100 | 5 | 3 | 2 | 8 | 1,255 | 568 | 450 | 732 | 4.0 | 5.9 | 4.9 | 11.0 | 20.07 |
| Months in Use Out of Past 12 Months | | | | | | | | | | | | | |
| 0 to 8 | 4 | 3 | 2 | 15 | 1,516 | 465 | 256 | 1,071 | 2.6 | 6.2 | 9.1 | 13.6 | 23.67 |
| 9 to 11 | 8 | 6 | 4 | 3 | 1,697 | 993 | 698 | 387 | 4.8 | 6.4 | 6.4 | 8.6 | 17.87 |
| 12 | 190 | 163 | 207 | 206 | 20,270 | 10,463 | 12,217 | 11,529 | 9.4 | 15.6 | 17.0 | 17.9 | 8.00 |
| LOCATION | | | | | | | | | | | | | |
| Census Region | | | | | | | | | | | | | |
| Northeast | 63 | 46 | 29 | 33 | 6,762 | 2,735 | 1,998 | 1,831 | 9.4 | 16.9 | 14.5 | 18.1 | 19.15 |
| Midwest | 46 | 37 | 48 | 48 | 6,570 | 3,229 | 3,112 | 2,793 | 7.0 | 11.4 | 15.3 | 17.1 | 11.95 |
| South | 60 | 51 | 83 | 92 | 6,747 | 3,918 | 5,153 | 5,398 | 8.8 | 13.0 | 16.2 | 17.0 | 10.86 |
| West | 33 | 39 | 54 | 51 | 3,404 | 2,039 | 2,909 | 2,965 | 9.6 | 19.0 | 18.6 | 17.3 | 17.14 |
| Census Division | | | | | | | | | | | | | |
| Northeast | | | | | | | | | | | | | |
| New England | 13 | 9 | 6 | 7 | 1,513 | 717 | 473 | 424 | 8.5 | 11.9 | 12.4 | 15.6 | 22.99 |
| Middle Atlantic | 50 | 38 | 23 | 27 | 5,248 | 2,018 | 1,525 | 1,407 | 9.6 | 18.7 | 15.2 | 18.8 | 23.73 |
| Midwest | | | | | | | | | | | | | |
| East North Central | 29 | 26 | 29 | 33 | 4,776 | 2,177 | 1,828 | 1,746 | 6.0 | 12.1 | 15.8 | 18.9 | 14.09 |
| West North Central | 17 | 10 | 19 | 15 | 1,794 | 1,052 | 1,284 | 1,047 | 9.7 | 10.0 | 14.6 | 14.0 | 21.79 |
| South | | | | | | | | | | | | | |
| South Atlantic | 27 | 24 | 34 | 36 | 3,016 | 1,656 | 2,143 | 2,814 | 9.1 | 14.4 | 16.1 | 12.9 | 15.20 |
| East South Central | 14 | 8 | 15 | 26 | 1,450 | 776 | 954 | 1,038 | 9.6 | 10.1 | 15.8 | 25.3 | 24.41 |
| West South Central | 18 | 19 | 34 | 30 | 2,281 | 1,486 | 2,055 | 1,546 | 8.0 | 12.9 | 16.5 | 19.1 | 16.84 |
| West | | | | | | | | | | | | | |
| Mountain | 14 | 4 | 13 | 20 | 1,572 | 578 | 904 | 1,118 | 9.2 | 7.7 | 14.3 | 18.3 | 24.36 |
| Pacific | 18 | 34 | 41 | 31 | 1,832 | 1,461 | 2,005 | 1,848 | 10.0 | 23.5 | 20.4 | 16.8 | 18.91 |
| Metropolitan Status | | | | | | | | | | | | | |
| Metropolitan | 168 | 144 | 184 | 198 | 18,230 | 9,853 | 10,701 | 11,051 | 9.2 | 14.6 | 17.2 | 17.9 | 8.88 |
| Nonmetropolitan | 34 | 29 | 30 | 26 | 5,253 | 2,069 | 2,471 | 1,936 | 6.5 | 14.0 | 12.3 | 13.3 | 14.90 |
| Climate Zone: 45-Year Average | | | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | | | |
| Over 7,000 HDD | 15 | 15 | 13 | 20 | 2,033 | 1,065 | 971 | 914 | 7.5 | 13.7 | 12.9 | 21.5 | 17.90 |
| 5,500-7,000 HDD | 58 | 45 | 41 | 52 | 8,241 | 3,587 | 2,796 | 2,872 | 7.0 | 12.5 | 14.6 | 18.2 | 14.86 |
| 4,000-5,499 HDD | 73 | 39 | 53 | 42 | 6,695 | 2,596 | 3,199 | 2,554 | 10.9 | 14.9 | 16.6 | 16.6 | 16.13 |
| Under 4,000 HDD | 34 | 46 | 58 | 56 | 3,608 | 2,247 | 3,516 | 3,202 | 9.3 | 20.5 | 16.6 | 17.5 | 17.70 |
| 2,000 CDD or More and -- | | | | | | | | | | | | | |
| Under 4,000 HDD | 23 | 28 | 49 | 53 | 2,906 | 2,426 | 2,690 | 3,445 | 7.9 | 11.6 | 18.3 | 15.5 | 14.37 |

See footnote at end of table.

ELECTRICITY

Table 27. Electricity Consumption and Conditional Energy Intensity by Year Constructed (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Column Factor |
|--|---|-----------|-----------|-----------|---|-----------|-----------|-----------|--|-----------|-----------|-----------|----------------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| RSE Column Factor | 1.077 | 1.265 | 1.412 | 1.604 | 0.826 | 0.945 | 1.062 | 1.180 | 0.826 | 0.945 | 1.062 | 1.180 | |
| STRUCTURE | | | | | | | | | | | | | |
| Floors | | | | | | | | | | | | | |
| 1 | 44 | 61 | 91 | 75 | 5,986 | 5,070 | 6,348 | 5,200 | 7.3 | 12.0 | 14.3 | 14.4 | 10.47 |
| 2 | 52 | 48 | 54 | 79 | 5,404 | 3,443 | 3,194 | 3,803 | 9.6 | 13.9 | 16.9 | 20.7 | 13.80 |
| 3 | 40 | Q | 14 | 14 | 5,676 | 1,044 | 912 | 880 | 7.1 | Q | 15.1 | 16.1 | 10.49 |
| 4 to 6 | 33 | 16 | 19 | 32 | 4,239 | 1,267 | 1,043 | 1,661 | 7.7 | 12.5 | 18.5 | 19.4 | 20.57 |
| 7 or More | 33 | 23 | 36 | 24 | 2,177 | 1,097 | 1,674 | 1,444 | 15.3 | 20.5 | 21.5 | 16.7 | 17.44 |
| Wall Materials | | | | | | | | | | | | | |
| Masonry | 148 | 122 | 122 | 118 | 18,675 | 8,585 | 7,415 | 6,470 | 7.9 | 14.2 | 16.5 | 18.3 | 8.89 |
| Siding or Shingles | 12 | 6 | 13 | 14 | 1,721 | 625 | 1,359 | 819 | 7.0 | 9.1 | 9.2 | 16.7 | 18.66 |
| Metal Panels | 10 | 20 | 21 | 21 | 653 | 1,122 | 1,804 | 1,802 | 16.0 | 17.9 | 11.6 | 11.5 | 20.00 |
| Concrete Panels | 16 | 18 | 38 | 44 | 1,526 | 1,159 | 1,845 | 2,587 | 10.5 | 15.5 | 20.6 | 17.1 | 21.82 |
| Window Glass | Q | 5 | 16 | 20 | Q | 270 | 504 | 995 | Q | 18.1 | 31.1 | 20.5 | 20.36 |
| Other | Q | Q | 5 | 7 | Q | 245 | 314 | Q | Q | 18.4 | 21.8 | 21.8 | 21.84 |
| Roof Materials | | | | | | | | | | | | | |
| Built-Up | 100 | 106 | 129 | 100 | 11,982 | 6,383 | 6,828 | 5,101 | 8.3 | 16.5 | 18.9 | 19.6 | 10.32 |
| Shingles (Not Wood) | 37 | 19 | 21 | 22 | 5,542 | 1,929 | 1,480 | 1,639 | 6.7 | 10.0 | 14.3 | 13.5 | 12.34 |
| Metal Surfacing | Q | 19 | 21 | 32 | 1,324 | 1,501 | 2,292 | 2,673 | Q | 12.5 | 9.2 | 11.9 | 10.70 |
| Synthetic or Rubber | 21 | 17 | 32 | 52 | 1,759 | 1,289 | 1,710 | 2,149 | 11.8 | 13.1 | 18.6 | 24.4 | 16.22 |
| Slate or Tile | 8 | Q | 3 | 4 | 1,687 | Q | 259 | 285 | 4.6 | Q | 11.2 | 15.7 | 27.44 |
| Concrete | 4 | 4 | 3 | Q | 339 | 313 | 298 | 929 | 10.8 | 12.8 | 11.3 | 10.7 | 30.00 |
| Wooden Materials | 3 | Q | Q | Q | 337 | Q | Q | Q | 9.7 | Q | Q | Q | 27.10 |
| Other | Q | Q | Q | Q | 512 | Q | Q | Q | 17.5 | Q | Q | Q | 47.84 |
| Building Shell Conservation Features (Solely or In Combination) | | | | | | | | | | | | | |
| Roof or Ceiling Insulation | 153 | 106 | 184 | 202 | 14,330 | 8,382 | 10,864 | 10,963 | 10.7 | 12.6 | 16.9 | 18.4 | 2.79 |
| Wall Insulation | 75 | 80 | 117 | 182 | 7,153 | 5,410 | 7,353 | 9,498 | 10.5 | 14.7 | 15.9 | 19.2 | 10.15 |
| Storm or Multiple Glazing | 74 | 56 | 93 | 136 | 7,461 | 4,471 | 5,309 | 6,750 | 9.9 | 12.5 | 17.5 | 20.1 | 10.65 |
| Tinted, Reflective, or Shading Glass | 65 | 61 | 114 | 139 | 5,031 | 3,690 | 6,087 | 7,098 | 12.9 | 16.7 | 18.8 | 19.5 | 10.44 |
| Exterior or Interior Shadings or Awnings | 102 | 84 | 108 | 111 | 9,610 | 4,654 | 5,631 | 6,138 | 10.6 | 18.0 | 19.2 | 18.1 | 11.44 |
| Weather Stripping or Caulking | 155 | 134 | 172 | 200 | 14,867 | 8,604 | 10,143 | 10,753 | 10.4 | 15.6 | 17.0 | 18.6 | 4.61 |
| None of the Above | 15 | 10 | 9 | 5 | 3,973 | 1,204 | 848 | 845 | 3.9 | 8.2 | 10.9 | 5.8 | 20.20 |
| ENERGY SOURCES AND END USES^a | | | | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 202 | 173 | 214 | 224 | 23,483 | 11,921 | 13,172 | 12,987 | 8.6 | 14.5 | 16.2 | 17.3 | 7.89 |
| Natural Gas | 141 | 124 | 135 | 134 | 17,039 | 8,460 | 8,097 | 7,519 | 8.3 | 14.7 | 16.7 | 17.9 | 10.14 |
| Fuel Oil | 54 | 33 | 50 | 57 | 5,722 | 2,275 | 2,399 | 2,182 | 9.5 | 14.4 | 20.7 | 26.3 | 16.55 |
| District Heat | 51 | 35 | 24 | Q | 3,281 | 1,214 | 1,227 | Q | 15.5 | 28.6 | 19.7 | Q | 20.60 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| Propane | 14 | 11 | 16 | 18 | 1,790 | 831 | 1,020 | 1,054 | 7.5 | 12.7 | 15.8 | 17.4 | 20.17 |
| Other | 5 | 2 | 2 | 4 | 611 | Q | 247 | 287 | 7.9 | Q | 9.0 | 13.8 | 37.29 |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | | | | |
| Heated Buildings | 198 | 168 | 202 | 216 | 22,462 | 11,177 | 12,368 | 11,819 | 8.8 | 15.0 | 16.3 | 18.3 | 7.74 |
| Air-Conditioned Buildings | 173 | 155 | 205 | 216 | 18,425 | 10,050 | 11,610 | 11,671 | 9.4 | 15.4 | 17.6 | 18.5 | 7.70 |
| Buildings with Water Heating | 187 | 162 | 200 | 214 | 20,420 | 10,469 | 11,298 | 11,383 | 9.2 | 15.5 | 17.7 | 18.8 | 8.80 |
| Buildings with Cooking | 96 | 91 | 110 | 93 | 9,376 | 4,727 | 5,213 | 4,346 | 10.2 | 19.2 | 21.2 | 21.5 | 11.44 |
| Buildings with Manufacturing | 31 | 11 | 19 | 24 | 2,652 | 786 | 1,079 | 1,078 | 11.8 | 13.4 | 17.6 | 22.7 | 22.40 |

See footnote at end of table.

Table 27. Electricity Consumption and Conditional Energy Intensity by Year Constructed (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Row Factor |
|--|---|-----------|-----------|-----------|---|-----------|-----------|-----------|--|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| RSE Column Factor | 1.077 | 1.395 | 1.112 | 1.304 | 0.828 | 0.924 | 0.929 | 0.927 | 0.893 | 1.002 | 0.787 | 0.924 | |
| Energy End-Use Combinations | | | | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | 88 | 78 | 105 | 87 | 7,930 | 4,147 | 4,778 | 3,926 | 11.1 | 18.8 | 22.0 | 22.1 | 12.81 |
| With Water Heating, Without Cooking | 73 | 66 | 81 | 118 | 8,669 | 4,979 | 5,614 | 6,635 | 8.4 | 13.2 | 14.5 | 17.7 | 9.75 |
| Without Water Heating or Cooking | 11 | 7 | 6 | 4 | 1,653 | 683 | 757 | 548 | 6.4 | 10.4 | 8.3 | 7.7 | 21.02 |
| Without Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | 7 | Q | Q | Q | 1,332 | 424 | Q | Q | 5.1 | Q | Q | Q | 23.90 |
| With Water Heating, Without Cooking | 18 | 5 | 3 | 3 | 2,288 | 674 | 469 | 269 | 7.9 | 8.1 | 6.1 | 12.7 | 26.98 |
| Without Water Heating or Cooking | 2 | 1 | 4 | 1 | 543 | 256 | 492 | 218 | 3.3 | 4.8 | 8.1 | 3.9 | 27.64 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 2 | 1 | 1 | 2 | 773 | 479 | 423 | 607 | 2.9 | 2.3 | 3.0 | 3.3 | 26.88 |
| All Other Combinations | 2 | 4 | Q | 8 | 294 | 279 | 472 | 631 | 5.9 | 15.0 | 25.1 | 12.8 | 29.38 |
| Space-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 49 | 49 | 95 | 112 | 4,409 | 3,292 | 5,014 | 5,986 | 11.0 | 15.0 | 18.9 | 18.6 | 11.10 |
| Main | 21 | 36 | 82 | 96 | 1,891 | 2,209 | 4,131 | 5,217 | 10.9 | 16.2 | 19.8 | 18.5 | 12.11 |
| With Secondary | 4 | 5 | 11 | 14 | 378 | 351 | 615 | 654 | 11.7 | 14.3 | 18.2 | 21.3 | 29.82 |
| Natural Gas Only | Q | Q | 9 | 4 | Q | Q | 438 | 267 | Q | Q | 20.4 | 16.8 | 39.25 |
| Other Energy Sources or Combinations | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| With No Secondary | 16 | 31 | 70 | 83 | 1,513 | 1,859 | 3,516 | 4,563 | 10.8 | 16.5 | 20.0 | 18.1 | 12.59 |
| Secondary | 28 | 14 | 13 | 15 | 2,518 | 1,083 | 883 | 769 | 11.1 | 12.5 | 15.2 | 19.7 | 20.80 |
| Other Excluding Electricity | 150 | 118 | 107 | 104 | 18,054 | 7,885 | 7,354 | 5,832 | 8.3 | 15.0 | 14.6 | 17.9 | 10.29 |
| Building Not Heated | 4 | 5 | Q | 8 | 1,020 | 744 | 804 | 1,169 | 3.6 | 6.5 | 14.8 | 7.0 | 24.26 |
| Main Space-Heating Energy Source | | | | | | | | | | | | | |
| Source | | | | | | | | | | | | | |
| Electricity | 21 | 36 | 82 | 96 | 1,891 | 2,209 | 4,131 | 5,217 | 10.9 | 16.2 | 19.8 | 18.5 | 12.11 |
| Natural Gas | 102 | 103 | 85 | 88 | 13,256 | 6,814 | 5,910 | 5,122 | 7.7 | 15.1 | 14.4 | 17.1 | 10.45 |
| Fuel Oil | 27 | 10 | 11 | Q | 3,553 | 1,002 | 733 | 290 | 7.5 | 10.2 | 14.5 | Q | 21.23 |
| District Heat | 44 | 18 | 22 | Q | 2,935 | 1,096 | 1,164 | Q | 15.0 | 16.7 | 19.1 | Q | 22.91 |
| Propane | 2 | 1 | 2 | Q | 397 | 171 | 264 | 398 | 4.3 | 8.3 | 7.8 | 22.7 | 29.07 |
| Other | Q | Q | Q | Q | 443 | Q | Q | Q | 6.4 | Q | Q | Q | 45.19 |
| Air-Conditioning Energy Source | | | | | | | | | | | | | |
| Electricity | 156 | 141 | 192 | 207 | 16,971 | 9,032 | 10,746 | 11,155 | 9.2 | 15.6 | 17.9 | 18.5 | 8.15 |
| Other Excluding Electricity | 17 | 14 | 13 | 10 | 1,454 | 1,018 | 864 | 516 | 11.8 | 13.7 | 14.6 | 18.7 | 22.00 |
| Air-Conditioning Not Performed | 29 | 18 | 9 | 8 | 5,057 | 1,871 | 1,561 | 1,316 | 5.8 | 9.4 | 6.0 | 5.8 | 19.14 |
| Water-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 62 | 54 | 109 | 108 | 6,122 | 3,408 | 5,661 | 6,302 | 10.2 | 15.8 | 19.2 | 17.1 | 9.59 |
| Other Excluding Electricity | 125 | 109 | 91 | 106 | 14,297 | 7,061 | 5,637 | 5,081 | 8.7 | 15.4 | 16.1 | 20.9 | 11.22 |
| Water Heating Not Performed | 15 | 10 | 15 | 10 | 3,063 | 1,453 | 1,873 | 1,605 | 4.9 | 7.0 | 7.8 | 6.5 | 14.61 |

See footnote at end of table.

ELECTRICITY

Table 27. Electricity Consumption and Conditional Energy Intensity by Year Constructed (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | Total Buildings (Millions) |
|--|---|-----------|-----------|-----------|---|-----------|-----------|-----------|--|-----------|-----------|-----------|----------------------------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| 1985 Delivery Totals | 1,004 | 1,620 | 1,601 | 1,947 | 6,641 | 4,186 | 5,746 | 6,000 | 6,641 | 4,186 | 5,746 | 6,000 | 13.46 |
| Cooking Energy Source | | | | | | | | | | | | | 17.29 |
| Electricity | 52 | 31 | 56 | 35 | 4,099 | 2,274 | 2,753 | 1,724 | 12.7 | 13.4 | 20.5 | 20.1 | 13.46 |
| Other Excluding Electricity | 44 | 60 | 54 | 59 | 5,278 | 2,454 | 2,460 | 2,621 | 8.3 | 24.6 | 21.9 | 22.4 | 17.29 |
| Cooking Not Performed | 106 | 82 | 104 | 131 | 14,106 | 7,194 | 7,959 | 8,642 | 7.5 | 11.4 | 13.0 | 15.1 | 8.89 |
| Manufacturing Energy Source | | | | | | | | | | | | | 20.30 |
| Electricity | 27 | 7 | 14 | Q | 2,355 | 409 | 820 | 821 | 11.7 | 16.8 | 17.5 | 18.7 | 20.30 |
| Other Excluding Electricity | 4 | 4 | 5 | Q | 297 | 377 | 259 | Q | 13.3 | 9.7 | 17.8 | Q | 20.12 |
| Manufacturing Not Performed | 171 | 162 | 195 | 200 | 20,830 | 11,136 | 12,092 | 11,910 | 8.2 | 14.6 | 16.1 | 16.8 | 7.00 |
| HEATING AND COOLING | | | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | | | |
| Not Heated | 4 | 5 | Q | 8 | 1,085 | 777 | 805 | 1,172 | 3.5 | 6.3 | 14.7 | 7.0 | 20.36 |
| 1 to 50 | 15 | 11 | 12 | 23 | 3,926 | 1,556 | 1,910 | 1,922 | 3.9 | 7.2 | 6.5 | 11.8 | 16.24 |
| 51 to 99 | 34 | 28 | 37 | 47 | 3,366 | 1,524 | 1,537 | 2,240 | 10.2 | 18.3 | 23.8 | 20.8 | 14.91 |
| 100 | 149 | 129 | 153 | 147 | 15,107 | 8,064 | 8,920 | 7,653 | 9.8 | 15.9 | 17.2 | 19.2 | 8.23 |
| Percent Cooled | | | | | | | | | | | | | |
| Not Cooled | 29 | 18 | 9 | 8 | 5,057 | 1,871 | 1,561 | 1,316 | 5.8 | 9.4 | 6.0 | 5.8 | 19.14 |
| 1 to 50 | 43 | 29 | 27 | 36 | 8,352 | 3,354 | 3,066 | 3,049 | 5.2 | 8.8 | 8.8 | 11.7 | 13.40 |
| 51 to 99 | 52 | 48 | 64 | 65 | 4,136 | 2,937 | 2,836 | 3,224 | 12.6 | 16.4 | 22.7 | 20.1 | 11.82 |
| 100 | 77 | 77 | 113 | 116 | 5,937 | 3,760 | 5,708 | 5,398 | 13.0 | 20.6 | 19.8 | 21.5 | 12.55 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | | | | |
| Present in Building | 89 | 75 | 84 | 102 | 5,345 | 3,204 | 3,832 | 4,297 | 16.7 | 23.3 | 21.9 | 23.8 | 19.84 |
| Not Present | 113 | 98 | 130 | 122 | 18,138 | 8,718 | 9,339 | 8,690 | 6.2 | 11.2 | 13.9 | 14.0 | 8.24 |
| LIGHTING AND REFRIGERATION | | | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | | | |
| Not Lit | 0 | Q | Q | Q | 350 | Q | Q | Q | 1.0 | Q | Q | Q | 20.16 |
| 1 to 50 | 18 | 11 | 11 | 17 | 5,804 | 1,549 | 1,331 | 2,179 | 3.1 | 6.8 | 8.3 | 7.7 | 14.60 |
| 51 to 99 | 54 | 56 | 56 | 72 | 6,176 | 3,069 | 3,517 | 4,187 | 8.7 | 18.2 | 16.0 | 17.2 | 18.30 |
| 100 | 130 | 105 | 146 | 134 | 11,152 | 7,193 | 8,198 | 6,449 | 11.7 | 14.7 | 17.8 | 20.8 | 9.56 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | | | | | |
| Incandescent Lamps | 146 | 114 | 125 | 127 | 16,065 | 7,823 | 7,920 | 6,966 | 9.1 | 14.6 | 15.8 | 18.2 | 9.49 |
| Fluorescent Lamps | 198 | 171 | 211 | 221 | 22,289 | 11,532 | 12,710 | 12,348 | 8.9 | 14.9 | 16.6 | 17.9 | 7.67 |
| High-Intensity Discharge Lamps | 72 | 53 | 70 | 94 | 5,608 | 3,300 | 4,253 | 5,016 | 12.8 | 16.0 | 16.4 | 18.7 | 14.60 |
| Other Lamps | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| High-Efficiency Ballasts | 84 | 77 | 118 | 136 | 7,530 | 4,500 | 5,901 | 6,231 | 11.1 | 17.1 | 19.9 | 21.9 | 11.23 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | | | | | |
| Commercial | | | | | | | | | | | | | |
| Refrigeration Units | 99 | 99 | 120 | 119 | 9,051 | 5,125 | 5,483 | 4,946 | 11.0 | 19.4 | 21.9 | 24.1 | 11.26 |
| Freezers | 87 | 100 | 115 | 115 | 6,979 | 5,023 | 5,049 | 4,576 | 12.5 | 20.0 | 22.8 | 25.1 | 11.44 |
| Residential | | | | | | | | | | | | | |
| Refrigerators | 157 | 135 | 145 | 165 | 17,149 | 8,688 | 8,949 | 9,393 | 9.2 | 15.5 | 16.2 | 17.6 | 8.75 |
| Freezers | 47 | 50 | 49 | 46 | 4,918 | 2,389 | 2,814 | 2,285 | 9.5 | 20.8 | 17.4 | 19.9 | 17.14 |
| Ice-Making Machines | 103 | 97 | 128 | 123 | 7,485 | 4,806 | 5,803 | 5,307 | 13.8 | 20.2 | 22.1 | 23.2 | 11.89 |
| Refrigerated Vending Machines | 149 | 126 | 170 | 177 | 12,816 | 8,302 | 8,891 | 8,801 | 11.6 | 15.2 | 19.1 | 20.1 | 8.18 |
| Water Coolers | 154 | 142 | 163 | 171 | 14,936 | 9,043 | 9,502 | 9,300 | 10.3 | 15.6 | 17.2 | 18.4 | 9.21 |
| Other | 10 | Q | 17 | Q | 602 | 224 | 355 | Q | 16.8 | Q | 47.6 | Q | 20.66 |

See footnotes at end of table.

Table 27. Electricity Consumption and Conditional Energy Intensity by Year Constructed (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Row Factor |
|--|---|-----------|-----------|-----------|---|-----------|-----------|-----------|--|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| | RSE Column Factor: | 1.004 | 1.553 | 1.037 | 1.347 | 0.852 | 0.899 | 0.934 | 0.929 | 0.910 | 1.212 | 0.894 | 0.901 |
| ENERGY MANAGEMENT | | | | | | | | | | | | | |
| Occupant Control | | | | | | | | | | | | | |
| Any Control of Heating | 87 | 65 | 79 | 83 | 11,150 | 4,525 | 5,605 | 5,752 | 7.8 | 14.3 | 14.2 | 14.4 | 10.03 |
| With Thermostats | 80 | 59 | 72 | 78 | 10,165 | 3,962 | 5,207 | 5,428 | 7.9 | 14.8 | 13.8 | 14.3 | 10.01 |
| Any Control of Cooling | 86 | 63 | 86 | 86 | 10,692 | 4,380 | 5,589 | 5,642 | 8.0 | 14.3 | 15.4 | 15.3 | 10.05 |
| With Thermostats | 77 | 60 | 78 | 81 | 9,375 | 4,045 | 5,269 | 5,343 | 8.2 | 14.8 | 14.8 | 15.2 | 10.04 |
| Computerized Energy Management and Control System | | | | | | | | | | | | | |
| Present in Building | 58 | 44 | 76 | 85 | 3,787 | 2,926 | 3,506 | 4,092 | 15.2 | 15.1 | 21.6 | 20.8 | 12.75 |
| Controls Heating and Cooling | 57 | 41 | 73 | 82 | 3,630 | 2,784 | 3,382 | 3,970 | 15.8 | 14.8 | 21.6 | 20.7 | 12.65 |
| Controls Lighting | Q | 9 | 18 | 31 | Q | 618 | 975 | 1,439 | 9.2 | 15.0 | 18.1 | 21.7 | 18.15 |
| Controls Other | Q | 12 | 13 | 12 | Q | 611 | 692 | 484 | Q | 20.3 | 18.5 | 25.8 | 22.33 |
| Other Energy Management | | | | | | | | | | | | | |
| Regular HVAC Maintenance | 159 | 147 | 180 | 196 | 14,487 | 8,796 | 9,994 | 9,677 | 11.0 | 16.7 | 18.0 | 20.3 | 8.75 |
| Participated in Utility Conservation Program | 43 | 42 | 55 | 31 | 3,632 | 2,538 | 2,923 | 1,734 | 11.8 | 16.6 | 18.9 | 17.8 | 10.15 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

† No applicable RSE row factor.

‡ Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 28. Electricity Consumption and Conditional Energy Intensity for Buildings Cooled with Electricity

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor | |
|--|---|------------------|---------|---|------------------|---------|--|------------------|---------|----------------|--|
| | All Buildings Cooled with Electricity | Electric Heating | | All Buildings Cooled with Electricity | Electric Heating | | All Buildings Cooled with Electricity | Electric Heating | | | |
| | | with | without | | with | without | | with | without | | |
| RSE Column Factor: | 1.026 | 1.344 | 1.286 | 0.788 | 1.099 | 0.932 | 0.777 | 0.874 | 1.030 | | |
| All Buildings | 695 | 285 | 411 | 47,905 | 16,691 | 31,213 | 14.5 | 17.1 | 13.2 | 5.81 | |
| Building Floorspace (Square Feet) | | | | | | | | | | | |
| 1,001 to 5,000 | 78 | 35 | 43 | 4,441 | 1,545 | 2,896 | 17.6 | 22.6 | 14.9 | 7.38 | |
| 5,001 to 10,000 | 63 | 22 | 40 | 4,617 | 1,547 | 3,070 | 13.6 | 14.4 | 13.1 | 11.80 | |
| 10,001 to 25,000 | 99 | 53 | 46 | 7,739 | 3,275 | 4,464 | 12.8 | 16.3 | 10.2 | 10.42 | |
| 25,001 to 50,000 | 87 | 45 | 42 | 6,914 | 2,784 | 4,130 | 12.6 | 16.2 | 10.2 | 11.62 | |
| 50,001 to 100,000 | 113 | 41 | 72 | 7,214 | 2,572 | 4,642 | 15.7 | 16.1 | 15.5 | 14.99 | |
| 100,001 to 200,000 | 92 | 36 | 56 | 6,297 | 2,025 | 4,271 | 14.6 | 17.7 | 13.1 | 11.51 | |
| 200,001 to 500,000 | 92 | 28 | 65 | 5,883 | 1,565 | 4,317 | 15.7 | 17.6 | 15.0 | 18.72 | |
| Over 500,000 | 71 | 24 | 47 | 4,800 | 1,378 | 3,422 | 14.8 | 17.5 | 13.8 | 21.37 | |
| Year Constructed | | | | | | | | | | | |
| 1899 or Before | 6 | 2 | 4 | 1,188 | 304 | 884 | 4.7 | 6.1 | 4.3 | 20.72 | |
| 1900 to 1919 | 18 | 4 | 14 | 3,011 | 524 | 2,487 | 5.9 | 7.2 | 5.6 | 27.80 | |
| 1920 to 1945 | 51 | 13 | 38 | 5,403 | 973 | 4,430 | 9.4 | 13.7 | 8.5 | 15.04 | |
| 1946 to 1959 | 81 | 24 | 57 | 7,370 | 1,723 | 5,647 | 11.0 | 14.1 | 10.1 | 12.11 | |
| 1960 to 1969 | 141 | 46 | 96 | 9,032 | 2,951 | 6,082 | 15.6 | 15.5 | 15.7 | 13.47 | |
| 1970 to 1979 | 192 | 90 | 102 | 10,746 | 4,549 | 6,198 | 17.9 | 19.7 | 16.5 | 8.84 | |
| 1980 to 1983 | 79 | 47 | 32 | 3,564 | 2,034 | 1,530 | 22.1 | 23.0 | 20.9 | 14.73 | |
| 1984 to 1986 | 82 | 41 | 41 | 4,953 | 2,354 | 2,600 | 16.6 | 17.4 | 15.8 | 14.96 | |
| 1987 to 1989 | 46 | 18 | 28 | 2,638 | 1,281 | 1,357 | 17.5 | 14.3 | 20.5 | 18.99 | |
| BUILDING USE | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | |
| Assembly | 45 | 17 | 28 | 4,961 | 1,433 | 3,528 | 9.1 | 12.0 | 7.9 | 20.11 | |
| Education | 44 | 13 | 32 | 5,439 | 980 | 4,458 | 8.1 | 12.8 | 7.1 | 10.82 | |
| Food Sales | 29 | 14 | 15 | 716 | 278 | 438 | 40.2 | 48.7 | 34.8 | 23.14 | |
| Food Service | 29 | 9 | 20 | 1,034 | 323 | 711 | 28.0 | 28.0 | 27.9 | 17.37 | |
| Health Care | 41 | 8 | 33 | 1,804 | 379 | 1,425 | 22.6 | 20.6 | 23.2 | 12.85 | |
| Lodging | 32 | 16 | 16 | 2,722 | 1,064 | 1,658 | 11.7 | 14.8 | 9.7 | 13.68 | |
| Mercantile and Service | 139 | 67 | 71 | 10,448 | 4,330 | 6,118 | 13.3 | 15.5 | 11.7 | 8.22 | |
| Office | 211 | 99 | 113 | 10,595 | 4,340 | 6,256 | 20.0 | 22.8 | 18.0 | 8.23 | |
| Parking Garage | 3 | Q | Q | 422 | Q | Q | 6.1 | Q | Q | 31.93 | |
| Public Order and Safety | 6 | Q | 5 | 482 | Q | 389 | 13.4 | Q | 11.8 | 32.15 | |
| Warehouse | 53 | 17 | 36 | 5,845 | 2,145 | 3,701 | 9.1 | 7.9 | 9.7 | 20.18 | |
| Other | 55 | Q | Q | 1,325 | 598 | 727 | 41.1 | 34.9 | Q | 37.41 | |
| Vacant | 9 | 2 | 7 | 2,112 | 551 | Q | 4.3 | 4.0 | 4.4 | 30.42 | |
| Weekly Operating Hours | | | | | | | | | | | |
| 39 or Fewer | 15 | 6 | 9 | 2,750 | 842 | 1,908 | 5.4 | 7.1 | 4.6 | 15.82 | |
| 40 to 48 | 112 | 42 | 69 | 10,751 | 3,385 | 7,366 | 10.4 | 12.5 | 9.4 | 10.60 | |
| 49 to 60 | 125 | 51 | 74 | 11,084 | 4,330 | 6,754 | 11.3 | 11.8 | 10.9 | 10.28 | |
| 61 to 84 | 136 | 66 | 69 | 8,896 | 3,549 | 5,348 | 15.2 | 18.7 | 12.9 | 11.52 | |
| 85 to 167 | 118 | 42 | 76 | 7,086 | 1,945 | 5,141 | 16.7 | 21.6 | 14.8 | 12.60 | |
| 168 (Open Continuously) | 190 | 77 | 113 | 7,338 | 2,641 | 4,696 | 25.9 | 29.1 | 24.1 | 12.35 | |
| Workers | | | | | | | | | | | |
| 4 or Fewer | 63 | 29 | 34 | 7,995 | 2,718 | 5,277 | 7.9 | 10.5 | 6.5 | 10.93 | |
| 5 to 9 | 68 | 37 | 31 | 6,090 | 2,282 | 3,808 | 11.1 | 16.0 | 8.1 | 10.84 | |
| 10 to 19 | 61 | 24 | 37 | 5,315 | 2,024 | 3,291 | 11.5 | 11.8 | 11.3 | 12.89 | |
| 20 to 49 | 104 | 40 | 64 | 8,329 | 2,897 | 5,432 | 12.5 | 13.9 | 11.8 | 11.48 | |
| 50 to 99 | 93 | 48 | 45 | 6,320 | 2,144 | 4,176 | 14.7 | 22.6 | 10.7 | 12.63 | |
| 100 to 249 | 109 | 48 | 61 | 5,649 | 2,133 | 3,516 | 19.3 | 22.4 | 17.5 | 11.31 | |
| 250 or More | 197 | 59 | 138 | 8,206 | 2,492 | 5,714 | 24.0 | 23.7 | 24.2 | 14.63 | |

See footnote at end of table.

Table 28. Electricity Consumption and Conditional Energy Intensity for Buildings Cooled with Electricity (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor | |
|--------------------------------------|---|------------------|---------|---|------------------|---------|--|------------------|---------|----------------|--|
| | All Buildings Cooled with Electricity | Electric Heating | | All Buildings Cooled with Electricity | Electric Heating | | All Buildings Cooled with Electricity | Electric Heating | | | |
| | | with | without | | with | without | | with | without | | |
| RSE Column Factor: | 1.026 | 1.344 | 1.286 | 0.789 | 1.099 | 0.932 | 0.777 | 0.874 | 1.090 | | |
| Ownership and Occupancy | | | | | | | | | | | |
| Nongovernment Owned | 543 | 247 | 296 | 38,261 | 14,668 | 23,593 | 14.2 | 16.8 | 12.6 | 5.77 | |
| Owner Occupied | 401 | 172 | 229 | 28,270 | 9,926 | 18,344 | 14.2 | 17.3 | 12.5 | 6.76 | |
| Single Establishment | 295 | 116 | 178 | 20,654 | 6,458 | 14,197 | 14.3 | 18.0 | 12.6 | 5.69 | |
| Multiple Establishment | 106 | 55 | 50 | 7,615 | 3,468 | 4,147 | 13.9 | 16.0 | 12.2 | 9.66 | |
| Nonowner Occupied | 143 | 75 | 68 | 9,991 | 4,742 | 5,249 | 14.3 | 15.9 | 12.9 | 9.61 | |
| Single Establishment | 71 | 35 | 36 | 4,988 | 2,321 | 2,668 | 14.2 | 15.3 | 13.3 | 12.95 | |
| Multiple Establishment | 70 | 39 | 30 | 4,636 | 2,321 | 2,315 | 15.1 | 17.0 | 13.2 | 12.09 | |
| Vacant | 2 | Q | 2 | 367 | Q | 266 | 4.9 | Q | 5.8 | 26.43 | |
| Government Owned | 152 | 38 | 114 | 9,644 | 2,023 | 7,621 | 15.8 | 18.7 | 15.0 | 14.10 | |
| Federal | 31 | Q | 20 | 1,314 | Q | 995 | 23.7 | Q | 20.5 | 27.92 | |
| State | 54 | 6 | 48 | 2,581 | 381 | 2,200 | 20.9 | 17.0 | 21.6 | 28.45 | |
| Local | 67 | 21 | 46 | 5,749 | 1,324 | 4,426 | 11.6 | 15.5 | 10.5 | 15.21 | |
| Multibuilding Facility | | | | | | | | | | | |
| Not on Multibuilding Facility | 373 | 174 | 200 | 29,798 | 10,514 | 19,284 | 12.5 | 16.5 | 10.4 | 5.57 | |
| Part of Multibuilding Facility | 322 | 111 | 211 | 18,107 | 6,178 | 11,929 | 17.8 | 18.0 | 17.7 | 9.31 | |
| On Facility with Central Plant | 145 | 36 | 109 | 5,183 | 1,016 | 4,166 | 27.9 | 35.5 | 26.1 | 20.37 | |
| LOCATION | | | | | | | | | | | |
| Census Region | | | | | | | | | | | |
| Northeast | 127 | 39 | 88 | 9,308 | 2,076 | 7,232 | 13.6 | 18.6 | 12.1 | 13.91 | |
| Midwest | 155 | 37 | 118 | 12,292 | 2,288 | 10,004 | 12.6 | 16.1 | 11.8 | 10.96 | |
| South | 264 | 143 | 121 | 18,062 | 8,445 | 9,617 | 14.6 | 16.9 | 12.6 | 8.12 | |
| West | 151 | 66 | 84 | 8,243 | 3,883 | 4,360 | 18.3 | 17.1 | 19.3 | 12.47 | |
| Census Division | | | | | | | | | | | |
| Northeast | | | | | | | | | | | |
| New England | 26 | 8 | 18 | 1,773 | 407 | 1,366 | 14.7 | 19.2 | 13.4 | 16.77 | |
| Middle Atlantic | 100 | 31 | 70 | 7,534 | 1,668 | 5,866 | 13.3 | 18.5 | 11.9 | 16.43 | |
| Midwest | | | | | | | | | | | |
| East North Central | 98 | 23 | 75 | 8,120 | 1,428 | 6,691 | 12.1 | 16.0 | 11.3 | 15.11 | |
| West North Central | 56 | 14 | 42 | 4,172 | 859 | 3,313 | 13.5 | 16.4 | 12.8 | 14.68 | |
| South | | | | | | | | | | | |
| South Atlantic | 114 | 69 | 44 | 8,201 | 4,370 | 3,831 | 13.8 | 15.9 | 11.5 | 11.61 | |
| East South Central | 59 | 29 | 29 | 3,501 | 1,513 | 1,988 | 16.7 | 19.3 | 14.8 | 18.44 | |
| West South Central | 92 | 44 | 47 | 6,360 | 2,562 | 3,798 | 14.4 | 17.3 | 12.5 | 14.34 | |
| West | | | | | | | | | | | |
| Mountain | 42 | 22 | 20 | 2,830 | 1,436 | 1,394 | 14.7 | 15.1 | 14.3 | 22.47 | |
| Pacific | 109 | 45 | 64 | 5,413 | 2,446 | 2,966 | 20.1 | 18.3 | 21.6 | 16.24 | |
| Metropolitan Status | | | | | | | | | | | |
| Metropolitan | 598 | 240 | 358 | 39,578 | 13,732 | 25,846 | 15.1 | 17.5 | 13.8 | 6.27 | |
| Nonmetropolitan | 97 | 44 | 53 | 8,327 | 2,960 | 5,367 | 11.7 | 15.0 | 9.8 | 10.86 | |
| Climate Zone: 45-Year Average | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | |
| Over 7,000 HDD | 52 | 13 | 39 | 3,325 | 718 | 2,607 | 15.7 | 18.3 | 15.0 | 17.67 | |
| 5,500-7,000 HDD | 152 | 40 | 112 | 12,284 | 2,549 | 9,735 | 12.4 | 15.6 | 11.5 | 12.61 | |
| 4,000-5,499 HDD | 171 | 76 | 95 | 11,849 | 3,638 | 8,211 | 14.5 | 21.0 | 11.5 | 11.71 | |
| Under 4,000 HDD | 175 | 77 | 98 | 10,317 | 4,809 | 5,508 | 17.0 | 16.0 | 17.8 | 14.01 | |
| 2,000 CDD or More and -- | | | | | | | | | | | |
| Under 4,000 HDD | 145 | 79 | 66 | 10,130 | 4,978 | 5,152 | 14.3 | 15.8 | 12.9 | 11.76 | |

See footnote at end of table.

Table 28. Electricity Consumption and Conditional Energy Intensity for Buildings Cooled with Electricity (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor | |
|--|---|------------------|---------|---|------------------|---------|--|------------------|---------|----------------|--|
| | All Buildings Cooled with Electricity | Electric Heating | | All Buildings Cooled with Electricity | Electric Heating | | All Buildings Cooled with Electricity | Electric Heating | | | |
| | | with | without | | with | without | | with | without | | |
| RSE Column Factor: | 1.020 | 1.344 | 1.286 | 0.768 | 1.099 | 0.932 | 0.777 | 0.874 | 1.030 | | |
| 1989 Degree-Days | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | |
| Over 7,000 HDD | 71 | 19 | 52 | 5,009 | 1,064 | 3,945 | 14.1 | 17.4 | 13.3 | 17.43 | |
| 5,500-7,000 HDD | 200 | 56 | 144 | 16,089 | 3,433 | 12,656 | 12.4 | 16.3 | 11.4 | 11.44 | |
| 4,000-5,499 HDD | 127 | 71 | 57 | 7,769 | 3,405 | 4,364 | 16.4 | 20.8 | 13.0 | 13.00 | |
| Under 4,000 HDD | 158 | 63 | 96 | 9,474 | 3,947 | 5,528 | 16.7 | 15.9 | 17.3 | 16.26 | |
| 2,000 CDD or More and -- | | | | | | | | | | | |
| Under 4,000 HDD | 139 | 77 | 62 | 9,563 | 4,842 | 4,720 | 14.5 | 15.9 | 13.2 | 11.97 | |
| STRUCTURE | | | | | | | | | | | |
| Floors | | | | | | | | | | | |
| 1 | 237 | 110 | 127 | 17,523 | 6,998 | 10,526 | 13.5 | 15.7 | 12.1 | 7.53 | |
| 2 | 199 | 94 | 105 | 12,861 | 5,226 | 7,636 | 15.5 | 18.0 | 13.7 | 8.82 | |
| 3 | 83 | 29 | 54 | 6,412 | 1,632 | 4,781 | 13.0 | 17.8 | 11.4 | 21.13 | |
| 4 to 6 | 76 | 24 | 52 | 5,885 | 1,637 | 4,248 | 12.9 | 14.7 | 12.3 | 15.97 | |
| 7 or More | 100 | 28 | 72 | 5,223 | 1,199 | 4,024 | 19.1 | 23.0 | 17.9 | 12.92 | |
| Wall Materials | | | | | | | | | | | |
| Masonry | 443 | 174 | 269 | 32,716 | 10,586 | 22,130 | 13.5 | 16.5 | 12.1 | 6.80 | |
| Siding or Shingles | 33 | 18 | 15 | 3,039 | 1,142 | 1,898 | 10.8 | 15.5 | 7.9 | 16.79 | |
| Metal Panels | 58 | 27 | 31 | 3,805 | 1,737 | 2,068 | 15.2 | 15.6 | 14.8 | 17.02 | |
| Concrete Panels | 99 | 43 | 56 | 5,408 | 2,370 | 3,038 | 18.4 | 18.2 | 18.5 | 16.86 | |
| Window Glass | 37 | 14 | 24 | 1,632 | 486 | 1,147 | 22.9 | 28.0 | 20.7 | 23.35 | |
| Other | 25 | 9 | 16 | 1,304 | 371 | 933 | 19.3 | 23.5 | 17.6 | 22.08 | |
| Roof Materials | | | | | | | | | | | |
| Built-Up | 379 | 154 | 225 | 24,352 | 8,895 | 15,457 | 15.6 | 17.3 | 14.5 | 8.03 | |
| Shingles (Not Wood) | 85 | 36 | 49 | 8,223 | 2,514 | 5,709 | 10.3 | 14.3 | 8.6 | 10.05 | |
| Metal Surfacing | 66 | 35 | 31 | 5,283 | 2,436 | 2,847 | 12.5 | 14.5 | 10.8 | 13.60 | |
| Synthetic or Rubber | 111 | 41 | 70 | 5,642 | 1,629 | 4,013 | 19.6 | 25.0 | 17.4 | 14.79 | |
| Slate or Tile | 17 | 5 | 11 | 1,846 | 402 | 1,444 | 9.0 | 12.7 | 7.9 | 25.75 | |
| Concrete | 18 | 5 | Q | 1,351 | 370 | Q | 13.2 | 12.3 | 13.5 | 21.99 | |
| Wooden Materials | 7 | Q | 4 | 461 | Q | 321 | 15.0 | Q | 14.0 | 20.27 | |
| Other | 14 | Q | 7 | 747 | Q | 440 | 18.5 | Q | 16.8 | 31.60 | |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | | | |
| Roof or Ceiling Insulation | 563 | 242 | 320 | 36,344 | 13,808 | 22,535 | 15.5 | 17.5 | 14.2 | 5.58 | |
| Wall Insulation | 397 | 178 | 218 | 24,353 | 9,860 | 14,493 | 16.3 | 18.1 | 15.1 | 6.52 | |
| Storm or Multiple Glazing | 316 | 141 | 175 | 20,002 | 7,492 | 12,510 | 15.8 | 18.8 | 14.0 | 7.34 | |
| Tinted, Reflective, or Shading Glass | 338 | 145 | 193 | 18,779 | 7,848 | 10,930 | 18.0 | 18.5 | 17.6 | 6.75 | |
| Exterior or Interior Shadings or Awnings | 360 | 131 | 229 | 22,021 | 7,070 | 14,951 | 16.3 | 18.5 | 15.3 | 7.22 | |
| Weather Stripping or Caulking | 581 | 236 | 344 | 36,287 | 13,160 | 23,127 | 16.0 | 18.0 | 14.9 | 5.97 | |
| None of the Above | 25 | 11 | 14 | 3,687 | 979 | 2,708 | 6.9 | 11.3 | 5.3 | 20.54 | |
| ENERGY SOURCES AND END USES* | | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | | |
| Electricity | 695 | 285 | 411 | 47,905 | 16,691 | 31,213 | 14.5 | 17.1 | 13.2 | 5.61 | |
| Natural Gas | 454 | 122 | 331 | 33,819 | 8,104 | 25,714 | 13.4 | 15.1 | 12.9 | 7.74 | |
| Fuel Oil | 164 | 37 | 127 | 9,737 | 1,829 | 7,908 | 16.9 | 20.1 | 16.1 | 15.12 | |
| District Heat | 99 | Q | 82 | 4,125 | Q | 3,692 | 24.0 | Q | 22.2 | 22.32 | |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | 5 | |
| Propane | 47 | 19 | 28 | 3,434 | 1,292 | 2,142 | 13.8 | 15.0 | 13.0 | 19.24 | |
| Other | 11 | Q | 7 | 1,045 | Q | 808 | 10.3 | Q | 9.2 | 34.51 | |

See footnote at end of table.

Table 28. Electricity Consumption and Conditional Energy Intensity for Buildings Cooled with Electricity (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | |
|---|---|------------------|---------|---|------------------|---------|--|------------------|---------|
| | All Buildings Cooled with Electricity | Electric Heating | | All Buildings Cooled with Electricity | Electric Heating | | All Buildings Cooled with Electricity | Electric Heating | |
| | | with | without | | with | without | | with | without |
| Base Category, Product | Total | With | Without | Total | With | Without | Total | With | Without |
| Energy End Uses (Solely or in Combination) | | | | | | | | | |
| Heated Buildings | 675 | 285 | 390 | 46,658 | 16,691 | 29,966 | 14.5 | 17.1 | 13.0 |
| Air-Conditioned Buildings | 695 | 285 | 411 | 47,905 | 16,691 | 31,213 | 14.5 | 17.1 | 13.2 |
| Buildings with Water Heating | 660 | 268 | 392 | 43,830 | 15,271 | 28,560 | 15.1 | 17.6 | 13.7 |
| Buildings with Cooking | 341 | 122 | 218 | 19,559 | 5,914 | 13,644 | 17.4 | 20.7 | 16.0 |
| Buildings with Manufacturing | 69 | 25 | 44 | 4,350 | 1,272 | 3,079 | 15.9 | 19.8 | 14.2 |
| Space-Heating Energy Source | | | | | | | | | |
| Electricity | 285 | 285 | -- | 16,691 | 16,691 | -- | 17.1 | 17.1 | -- |
| Main | 222 | 222 | -- | 12,238 | 12,238 | -- | 18.1 | 18.1 | -- |
| With Secondary | 33 | 33 | -- | 1,809 | 1,809 | -- | 18.3 | 18.3 | -- |
| Natural Gas Only | 16 | 16 | -- | 1,028 | 1,028 | -- | 15.8 | 15.8 | -- |
| Other Energy Sources or Combinations | 15 | 15 | -- | 713 | 713 | -- | 21.0 | 21.0 | -- |
| With No Secondary | 189 | 189 | -- | 10,430 | 10,430 | -- | 18.1 | 18.1 | -- |
| Secondary | 63 | 63 | -- | 4,453 | 4,453 | -- | 14.2 | 14.2 | -- |
| Other Excluding Electricity | 390 | -- | 390 | 29,966 | -- | 29,966 | 13.0 | -- | 13.0 |
| Building Not Heated | 21 | -- | 21 | 1,247 | -- | 1,247 | 16.7 | -- | 16.7 |
| Main Space-Heating Energy Source | | | | | | | | | |
| Electricity | 222 | 222 | -- | 12,238 | 12,238 | -- | 18.1 | 18.1 | -- |
| Natural Gas | 327 | 37 | 291 | 26,072 | 3,365 | 22,707 | 12.6 | 11.0 | 12.8 |
| Fuel Oil | 34 | 4 | 29 | 3,535 | 456 | 3,080 | 9.5 | 9.8 | 9.5 |
| District Heat | 75 | Q | 58 | 3,682 | Q | 3,234 | 20.5 | Q | 17.9 |
| Propane | Q | Q | Q | 982 | Q | 723 | 13.0 | Q | 15.9 |
| Other | 3 | Q | Q | 446 | Q | 372 | 7.2 | Q | Q |
| Ability to Switch Main Heating Fuel | | | | | | | | | |
| No Alternate | 507 | 238 | 269 | 35,440 | 13,798 | 21,642 | 14.3 | 17.3 | 12.4 |
| Alternate Main Heating Fuel | | | | | | | | | |
| Electricity | 25 | 14 | 11 | 3,105 | 862 | 2,243 | 8.1 | 16.0 | 5.0 |
| Natural Gas | 28 | 21 | 7 | 1,671 | 1,083 | 589 | 16.5 | 19.4 | 11.1 |
| Fuel Oil | 97 | 8 | 90 | 4,597 | 425 | 4,172 | 21.2 | 17.7 | 21.5 |
| Propane | 10 | 2 | 9 | 1,175 | 248 | 928 | 8.8 | 7.5 | 9.2 |
| Other | 3 | Q | Q | 274 | Q | Q | 10.2 | Q | Q |

See footnote at end of table.

Table 28. Electricity Consumption and Conditional Energy Intensity for Buildings Cooled with Electricity (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor | |
|--|---|------------------|---------|---|------------------|---------|--|------------------|---------|----------------|--|
| | All Buildings Cooled with Electricity | Electric Heating | | All Buildings Cooled with Electricity | Electric Heating | | All Buildings Cooled with Electricity | Electric Heating | | | |
| | | with | without | | with | without | | with | without | | |
| MAIN CENTRAL CHILLER | 1,097 | 1,311 | 1,293 | 0.746 | 1,121 | 0.957 | 0.788 | 0.832 | 1,096 | | |
| Water-Heating Energy Source | | | | | | | | | | | |
| Electricity | 313 | 194 | 119 | 18,743 | 10,323 | 8,419 | 16.7 | 18.8 | 14.1 | 6.82 | |
| Other Excluding Electricity | 347 | 74 | 273 | 25,088 | 4,947 | 20,140 | 13.8 | 14.9 | 13.6 | 6.69 | |
| Water Heating Not Performed | 35 | 16 | 19 | 4,075 | 1,421 | 2,654 | 8.7 | 11.5 | 7.1 | 11.42 | |
| Cooking Energy Source | | | | | | | | | | | |
| Electricity | 161 | 70 | 91 | 9,414 | 3,164 | 6,250 | 17.1 | 22.1 | 14.5 | 9.86 | |
| Other Excluding Electricity | 180 | 52 | 128 | 10,145 | 2,750 | 7,395 | 17.7 | 19.1 | 17.2 | 13.73 | |
| Cooking Not Performed | 355 | 162 | 192 | 28,346 | 10,777 | 17,569 | 12.5 | 15.1 | 11.0 | 6.92 | |
| Manufacturing Energy Source | | | | | | | | | | | |
| Electricity | 50 | 20 | 30 | 3,369 | 1,025 | 2,344 | 14.9 | 19.6 | 12.8 | 10.16 | |
| Other Excluding Electricity | 19 | 5 | Q | 981 | 246 | 735 | 19.2 | 20.4 | 18.8 | 35.61 | |
| Manufacturing Not Performed | 627 | 260 | 367 | 43,555 | 15,420 | 28,135 | 14.4 | 16.8 | 13.0 | 5.88 | |
| HEATING AND COOLING | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | |
| Not Heated | 21 | -- | 21 | 1,257 | -- | 1,257 | 16.7 | -- | 16.7 | 30.72 | |
| 1 to 50 | 51 | 22 | 29 | 7,472 | 3,108 | 4,365 | 6.9 | 7.2 | 6.7 | 16.61 | |
| 51 to 99 | 136 | 63 | 73 | 7,706 | 3,059 | 4,646 | 17.6 | 20.6 | 15.7 | 11.19 | |
| 100 | 487 | 199 | 288 | 31,470 | 10,524 | 20,945 | 15.5 | 18.9 | 13.7 | 6.71 | |
| Percent Cooled | | | | | | | | | | | |
| Not Cooled | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| 1 to 50 | 129 | 42 | 86 | 17,018 | 4,567 | 12,451 | 7.6 | 9.2 | 6.9 | 10.56 | |
| 51 to 99 | 219 | 90 | 129 | 12,331 | 4,629 | 7,702 | 17.7 | 19.5 | 16.7 | 8.42 | |
| 100 | 348 | 152 | 196 | 18,556 | 7,496 | 11,060 | 18.8 | 20.3 | 17.7 | 8.19 | |
| Year Main Central Chiller Installed | | | | | | | | | | | |
| 1959 or Before | 24 | Q | 13 | 1,268 | Q | 901 | 18.6 | Q | 14.1 | 21.98 | |
| 1960 to 1969 | 63 | 11 | 51 | 2,742 | 631 | 2,111 | 22.8 | 17.6 | 24.4 | 24.49 | |
| 1970 to 1979 | 61 | 20 | 41 | 3,124 | 955 | 2,169 | 19.7 | 21.2 | 19.0 | 21.29 | |
| 1980 to 1986 | 70 | 20 | 50 | 3,415 | 841 | 2,575 | 20.6 | 23.8 | 19.5 | 16.83 | |
| 1987 to 1989 | 28 | 12 | 16 | 1,724 | 549 | 1,175 | 16.3 | 22.3 | 13.5 | 23.09 | |
| Year Packaged Cooling System Installed | | | | | | | | | | | |
| 1959 or Before | 21 | Q | 12 | 1,622 | Q | 1,229 | 13.1 | Q | 9.8 | 17.88 | |
| 1960 to 1969 | 72 | 22 | 49 | 4,136 | 1,466 | 2,670 | 17.4 | 15.3 | 18.5 | 21.21 | |
| 1970 to 1979 | 151 | 65 | 86 | 9,805 | 3,639 | 6,166 | 15.4 | 17.9 | 14.0 | 9.80 | |
| 1980 to 1986 | 171 | 74 | 97 | 10,957 | 3,833 | 7,124 | 15.6 | 19.4 | 13.6 | 11.43 | |
| 1987 to 1989 | 84 | 26 | 58 | 5,990 | 1,903 | 4,087 | 14.0 | 13.8 | 14.1 | 11.55 | |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | | |
| Present in Building | 311 | 113 | 198 | 14,302 | 4,742 | 9,560 | 21.7 | 23.7 | 20.7 | 9.31 | |
| Not Present | 385 | 172 | 213 | 33,603 | 11,949 | 21,654 | 11.4 | 14.4 | 9.8 | 6.25 | |
| LIGHTING | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| 1 to 50 | 47 | 22 | 24 | 7,716 | 2,749 | 4,967 | 6.0 | 8.1 | 4.9 | 12.79 | |
| 51 to 99 | 212 | 83 | 130 | 13,983 | 4,757 | 9,226 | 15.2 | 17.4 | 14.0 | 10.53 | |
| 100 | 436 | 180 | 256 | 26,042 | 9,144 | 16,899 | 16.7 | 19.6 | 15.2 | 6.88 | |

See footnotes at end of table.

Table 28. Electricity Consumption and Conditional Energy Intensity for Buildings Cooled with Electricity (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor | |
|--|---|------------------|---------|---|------------------|---------|--|------------------|---------|----------------|--|
| | All Buildings Cooled with Electricity | Electric Heating | | All Buildings Cooled with Electricity | Electric Heating | | All Buildings Cooled with Electricity | Electric Heating | | | |
| | | with | without | | with | without | | with | without | | |
| RSE Column Factor | 1.027 | 1.911 | 1.263 | 0.746 | 1.121 | 0.957 | 0.788 | 0.892 | 1.096 | | |
| ENERGY MANAGEMENT | | | | | | | | | | | |
| Occupant Control | | | | | | | | | | | |
| Any Control of Heating | 275 | 133 | 143 | 22,356 | 9,285 | 13,071 | 12.3 | 14.3 | 10.9 | 6.63 | |
| With Thermostats | 253 | 121 | 132 | 20,638 | 8,577 | 12,061 | 12.3 | 14.2 | 10.9 | 7.45 | |
| Any Control of Cooling | 301 | 132 | 169 | 24,953 | 9,230 | 15,723 | 12.1 | 14.3 | 10.8 | 6.42 | |
| With Thermostats | 277 | 123 | 153 | 22,731 | 8,573 | 14,157 | 12.2 | 14.4 | 10.8 | 7.17 | |
| Reduced Use During Off-Hours | | | | | | | | | | | |
| Heating Only | 19 | 7 | 11 | 1,394 | 435 | 959 | 13.5 | 17.0 | 12.0 | 17.68 | |
| Cooling Only | 56 | 14 | 42 | 3,973 | 778 | 3,196 | 14.2 | 18.3 | 13.2 | 18.04 | |
| Heating and Cooling | 454 | 187 | 268 | 35,801 | 12,695 | 23,106 | 12.7 | 14.7 | 11.6 | 6.31 | |
| Computerized Energy Management and Control System | | | | | | | | | | | |
| Present in Building | 228 | 82 | 146 | 11,535 | 3,587 | 7,948 | 19.8 | 22.8 | 18.4 | 8.99 | |
| Controls Heating and Cooling | 220 | 80 | 140 | 11,034 | 3,441 | 7,593 | 19.9 | 23.1 | 18.5 | 9.08 | |
| Controls Lighting | 56 | 21 | 35 | 2,960 | 1,075 | 1,885 | 18.8 | 19.2 | 18.5 | 15.15 | |
| Controls Other | 42 | 11 | 31 | 1,928 | 473 | 1,455 | 21.7 | 22.4 | 21.5 | 14.67 | |
| Other Energy Management | | | | | | | | | | | |
| Regular HVAC Maintenance | 590 | 233 | 357 | 35,172 | 12,167 | 23,005 | 16.8 | 19.2 | 15.5 | 5.92 | |
| Participated in Utility Conservation Program | 146 | 53 | 93 | 8,368 | 2,605 | 5,762 | 17.4 | 20.3 | 16.1 | 9.67 | |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

o Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

-- Data not applicable.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 29. Electricity Consumption and Conditional Energy Intensity for Buildings Heated with Electricity

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor | |
|--|---|----------------------------|-------------------|---|----------------------------|-------------------|--|----------------------------|-------------------|----------------|--|
| | All Buildings Heated with Electricity | Buildings with Electricity | | All Buildings Heated with Electricity | Buildings with Electricity | | All Buildings Heated with Electricity | Buildings with Electricity | | | |
| | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | |
| RSE Column Factor: | 0.965 | 1.009 | 1.781 | 0.908 | 0.899 | 1.312 | 0.646 | 0.668 | 1.340 | | |
| All Buildings | 305 | 234 | 70 | 18,702 | 13,448 | 5,254 | 16.3 | 17.4 | 13.3 | 7.16 | |
| Building Floorspace (Square Feet) | | | | | | | | | | | |
| 1,001 to 5,000 | 37 | 33 | 5 | 1,815 | 1,412 | 404 | 20.6 | 23.3 | 11.3 | 11.34 | |
| 5,001 to 10,000 | 23 | 18 | 5 | 1,698 | 1,150 | 549 | 13.5 | 15.7 | 8.9 | 14.75 | |
| 10,001 to 25,000 | 58 | 44 | 14 | 3,817 | 2,790 | 1,027 | 15.1 | 15.7 | 13.5 | 15.56 | |
| 25,001 to 50,000 | 47 | 34 | 13 | 3,013 | 1,896 | 1,117 | 15.5 | 18.0 | 11.4 | 21.45 | |
| 50,001 to 100,000 | 44 | 28 | 17 | 2,766 | 1,763 | 1,003 | 16.0 | 15.7 | 16.5 | 16.19 | |
| 100,001 to 200,000 | 40 | 32 | 9 | 2,341 | 1,724 | 617 | 17.3 | 18.3 | 14.3 | 16.75 | |
| 200,001 to 500,000 | 28 | 23 | Q | 1,781 | 1,420 | Q | 15.8 | 16.4 | Q | 23.57 | |
| Over 500,000 | 27 | 23 | Q | 1,470 | 1,294 | Q | 18.2 | 17.8 | Q | 31.66 | |
| Year Constructed | | | | | | | | | | | |
| 1899 or Before | 2 | Q | 1 | 379 | Q | 245 | 5.2 | Q | 3.6 | 27.67 | |
| 1900 to 1919 | 5 | 1 | 4 | 601 | 157 | 444 | 8.6 | 7.6 | 9.0 | 34.08 | |
| 1920 to 1945 | 15 | 6 | Q | 1,323 | 662 | 661 | 11.2 | 9.5 | 12.9 | 27.56 | |
| 1946 to 1959 | 27 | 12 | 15 | 2,106 | 938 | 1,168 | 12.6 | 12.9 | 12.4 | 22.09 | |
| 1960 to 1969 | 49 | 36 | 14 | 3,292 | 2,209 | 1,083 | 15.0 | 16.2 | 12.5 | 14.53 | |
| 1970 to 1979 | 95 | 82 | 13 | 5,014 | 4,131 | 883 | 18.9 | 19.8 | 15.2 | 12.19 | |
| 1980 to 1983 | 48 | 40 | Q | 2,143 | 1,820 | 323 | 22.6 | 21.8 | 27.0 | 19.35 | |
| 1984 to 1986 | 45 | 41 | 4 | 2,518 | 2,255 | 263 | 17.7 | 18.1 | 14.2 | 17.32 | |
| 1987 to 1989 | 19 | 16 | Q | 1,325 | 1,142 | Q | 14.0 | 13.9 | Q | 26.46 | |
| BUILDING USE | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | |
| Assembly | 20 | 10 | 10 | 1,877 | 1,024 | 853 | 10.5 | 9.4 | 11.9 | 22.87 | |
| Education | 15 | 11 | 4 | 1,119 | 672 | 447 | 13.1 | 15.8 | 9.1 | 19.44 | |
| Food Sales | 14 | 14 | Q | 298 | 277 | Q | 48.3 | 50.9 | Q | 27.41 | |
| Food Service | 9 | 8 | Q | 333 | 196 | Q | 28.1 | 40.1 | Q | 27.27 | |
| Health Care | 8 | 6 | Q | 422 | 296 | Q | 19.1 | 19.2 | Q | 23.31 | |
| Lodging | 21 | 18 | Q | 1,338 | 1,072 | Q | 15.3 | 17.0 | Q | 21.72 | |
| Mercantile and Service | 69 | 55 | 14 | 4,530 | 3,330 | 1,200 | 15.3 | 16.4 | 12.0 | 12.73 | |
| Office | 103 | 94 | 9 | 4,545 | 3,908 | 638 | 22.6 | 24.0 | 13.8 | 11.99 | |
| Parking Garage | 1 | 1 | Q | 322 | 247 | Q | 3.5 | 3.5 | Q | 37.65 | |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | Q | Q | 6 | |
| Warehouse | 19 | 12 | 7 | 2,499 | 1,650 | 848 | 7.5 | 7.4 | 7.7 | 23.78 | |
| Other | Q | Q | Q | 601 | Q | Q | 34.8 | Q | Q | 42.03 | |
| Vacant | 3 | 3 | Q | 721 | 485 | Q | 4.4 | 5.2 | Q | 31.63 | |
| Weekly Operating Hours | | | | | | | | | | | |
| 39 or Fewer | 7 | 4 | 2 | 1,090 | 620 | 470 | 6.0 | 6.7 | 4.9 | 24.62 | |
| 40 to 48 | 46 | 31 | 15 | 3,744 | 2,531 | 1,213 | 12.3 | 12.4 | 12.1 | 14.13 | |
| 49 to 60 | 55 | 43 | 12 | 4,791 | 3,362 | 1,429 | 11.5 | 12.6 | 8.7 | 13.07 | |
| 61 to 84 | 70 | 53 | 17 | 3,794 | 2,884 | 910 | 18.4 | 18.3 | 18.9 | 16.85 | |
| 85 to 167 | 44 | 37 | 7 | 2,210 | 1,664 | 545 | 20.0 | 22.5 | 12.6 | 13.80 | |
| 168 (Open Continuously) | 83 | 66 | 16 | 3,073 | 2,387 | 685 | 27.0 | 27.8 | 24.1 | 15.17 | |
| Workers | | | | | | | | | | | |
| 4 or Fewer | 33 | 27 | 6 | 3,536 | 2,510 | 1,026 | 9.3 | 10.9 | 5.4 | 13.89 | |
| 5 to 9 | 38 | 26 | Q | 2,581 | 1,704 | 877 | 14.8 | 15.3 | 13.9 | 16.13 | |
| 10 to 19 | 26 | 21 | 5 | 2,333 | 1,670 | 663 | 11.1 | 12.8 | 6.9 | 15.37 | |
| 20 to 49 | 43 | 35 | 8 | 3,188 | 2,194 | 994 | 13.6 | 16.0 | 8.4 | 15.30 | |
| 50 to 99 | 50 | 35 | 15 | 2,220 | 1,446 | 774 | 22.5 | 24.3 | 19.2 | 18.54 | |
| 100 to 249 | 52 | 34 | 18 | 2,251 | 1,576 | 674 | 23.0 | 21.4 | 26.8 | 15.79 | |
| 250 or More | 62 | 56 | 6 | 2,592 | 2,347 | 245 | 23.9 | 23.7 | 26.1 | 18.04 | |

See footnote at end of table.

Table 29. Electricity Consumption and Conditional Energy Intensity for Buildings Heated with Electricity (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor | |
|--------------------------------------|---|----------------------------|-------------------|---|----------------------------|-------------------|--|----------------------------|-------------------|----------------|--|
| | All Buildings Heated with Electricity | Buildings with Electricity | | All Buildings Heated with Electricity | Buildings with Electricity | | All Buildings Heated with Electricity | Buildings with Electricity | | | |
| | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | |
| RSE Column Factor: | 0.985 | 1.009 | 1.781 | 0.898 | 0.896 | 1.312 | 0.846 | 0.898 | 1.940 | | |
| Ownership and Occupancy | | | | | | | | | | | |
| Nongovernment Owned | 263 | 210 | 53 | 16,238 | 11,982 | 4,255 | 16.2 | 17.5 | 12.5 | 7.95 | |
| Owner Occupied | 182 | 140 | 42 | 11,139 | 8,044 | 3,096 | 16.4 | 17.4 | 13.7 | 9.12 | |
| Single Establishment | 125 | 89 | 36 | 7,354 | 4,974 | 2,380 | 16.9 | 17.8 | 15.2 | 11.55 | |
| Multiple Establishment | 58 | 52 | 6 | 3,785 | 3,070 | 716 | 15.3 | 16.8 | 8.6 | 14.92 | |
| Nonowner Occupied | 80 | 69 | 11 | 5,099 | 3,939 | 1,160 | 15.7 | 17.6 | 9.2 | 15.33 | |
| Single Establishment | 36 | 31 | 5 | 2,427 | 1,697 | 730 | 14.9 | 18.5 | 6.4 | 22.97 | |
| Multiple Establishment | 44 | 38 | 6 | 2,549 | 2,157 | 392 | 17.2 | 17.5 | 15.2 | 16.93 | |
| Vacant | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Government Owned | 42 | 25 | 17 | 2,464 | 1,466 | 998 | 17.0 | 17.0 | 17.1 | 17.02 | |
| Federal | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| State | 8 | 5 | Q | 569 | 332 | Q | 13.3 | 14.5 | Q | 35.85 | |
| Local | 23 | 16 | 7 | 1,547 | 956 | 590 | 15.1 | 16.8 | 12.3 | 21.29 | |
| Multibuilding Facility | | | | | | | | | | | |
| Not on Multibuilding Facility | 185 | 151 | 34 | 11,517 | 8,128 | 3,389 | 16.0 | 18.6 | 10.0 | 7.63 | |
| Part of Multibuilding Facility | 120 | 84 | 36 | 7,185 | 5,320 | 1,865 | 16.7 | 15.7 | 19.4 | 12.22 | |
| On Facility with Central Plant | 40 | 19 | 21 | 1,424 | 828 | 596 | 28.3 | 23.5 | 34.9 | 27.40 | |
| LOCATION | | | | | | | | | | | |
| Census Region | | | | | | | | | | | |
| Northeast | 43 | 25 | 18 | 2,558 | 1,351 | 1,207 | 16.9 | 18.6 | 15.1 | 16.48 | |
| Midwest | 43 | 34 | 10 | 2,808 | 1,746 | 1,062 | 15.5 | 19.4 | 9.1 | 14.37 | |
| South | 147 | 117 | 31 | 8,956 | 6,911 | 2,045 | 16.5 | 16.9 | 15.1 | 12.29 | |
| West | 70 | 59 | 11 | 4,379 | 3,441 | 938 | 16.1 | 17.2 | 12.1 | 15.74 | |
| Census Division | | | | | | | | | | | |
| Northeast | | | | | | | | | | | |
| New England | 9 | 6 | Q | 629 | 358 | Q | 15.0 | 17.2 | Q | 27.01 | |
| Middle Atlantic | 34 | 19 | 15 | 1,929 | 993 | 936 | 17.5 | 19.1 | 15.9 | 18.67 | |
| Midwest | | | | | | | | | | | |
| East North Central | 28 | 23 | 6 | 1,773 | 1,071 | 701 | 16.1 | 21.5 | 7.8 | 17.87 | |
| West North Central | 15 | 11 | 4 | 1,036 | 675 | 361 | 14.4 | 16.0 | 11.4 | 21.42 | |
| South | | | | | | | | | | | |
| South Atlantic | 71 | 55 | 16 | 4,700 | 3,700 | 1,000 | 15.1 | 14.8 | 16.3 | 16.65 | |
| East South Central | 30 | 21 | Q | 1,566 | 1,071 | 494 | 19.1 | 19.8 | 17.4 | 23.64 | |
| West South Central | 46 | 41 | 6 | 2,690 | 2,139 | 551 | 17.3 | 19.0 | 10.7 | 19.47 | |
| West | | | | | | | | | | | |
| Mountain | 22 | 20 | 2 | 1,578 | 1,236 | 341 | 14.1 | 16.2 | 6.7 | 21.58 | |
| Pacific | 48 | 39 | 9 | 2,802 | 2,205 | 597 | 17.2 | 17.7 | 15.2 | 18.50 | |
| Metropolitan Status | | | | | | | | | | | |
| Metropolitan | 258 | 198 | 60 | 15,275 | 11,229 | 4,046 | 16.9 | 17.6 | 14.8 | 7.67 | |
| Nonmetropolitan | 47 | 37 | 10 | 3,426 | 2,219 | 1,208 | 13.7 | 16.5 | 8.4 | 15.90 | |
| Climate Zone: 45-Year Average | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | |
| Over 7,000 HDD | 14 | 11 | 3 | 963 | 575 | 388 | 15.0 | 19.2 | 8.8 | 26.67 | |
| 5,500-7,000 HDD | 47 | 31 | 16 | 3,243 | 1,697 | 1,546 | 14.5 | 18.5 | 10.2 | 13.91 | |
| 4,000-5,499 HDD | 83 | 59 | 24 | 4,204 | 2,806 | 1,398 | 19.7 | 20.9 | 17.1 | 17.08 | |
| Under 4,000 HDD | 79 | 60 | 19 | 5,140 | 3,935 | 1,205 | 15.4 | 15.2 | 16.1 | 15.89 | |
| 2,000 CDD or More and -- | | | | | | | | | | | |
| Under 4,000 HDD | 81 | 74 | 8 | 5,152 | 4,435 | 718 | 15.7 | 16.6 | 10.5 | 14.78 | |

See footnote at end of table.

Table 29. Electricity Consumption and Conditional Energy Intensity for Buildings Heated with Electricity (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | |
|--|---|----------------------------|-------------------|---|----------------------------|-------------------|--|----------------------------|-------------------|------|--|
| | All Buildings Heated with Electricity | Buildings with Electricity | | All Buildings Heated with Electricity | Buildings with Electricity | | All Buildings Heated with Electricity | Buildings with Electricity | | | |
| | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | |
| | 1989 | 1990 | 1991 | 1989 | 1990 | 1991 | 1989 | 1990 | 1991 | | |
| 1989 Degree-Days | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | |
| Over 7,000 HDD | 20 | 13 | 7 | 1,394 | 708 | 687 | 14.2 | 18.3 | 10.1 | 14.0 | |
| 5,500-7,000 HDD | 65 | 48 | 17 | 4,211 | 2,646 | 1,565 | 15.4 | 18.2 | 10.6 | 14.0 | |
| 4,000-5,499 HDD | 76 | 55 | 21 | 3,823 | 2,620 | 1,203 | 19.8 | 20.8 | 17.7 | 14.0 | |
| Under 4,000 HDD | 65 | 47 | 18 | 4,256 | 3,149 | 1,108 | 15.2 | 14.9 | 16.2 | 14.0 | |
| 2,000 CDD or More and -- | | | | | | | | | | | |
| Under 4,000 HDD | 79 | 72 | 7 | 5,017 | 4,325 | 691 | 15.8 | 16.7 | 10.5 | 14.0 | |
| STRUCTURE | | | | | | | | | | | |
| Floors | | | | | | | | | | | |
| 1 | 114 | 98 | 16 | 7,714 | 6,002 | 1,712 | 14.7 | 16.3 | 9.3 | 14.0 | |
| 2 | 100 | 68 | 32 | 5,746 | 4,003 | 1,743 | 17.4 | 16.9 | 18.6 | 14.0 | |
| 3 | 30 | 20 | 11 | 1,967 | 1,046 | 921 | 15.5 | 18.9 | 11.6 | 14.0 | |
| 4 to 6 | 30 | 22 | 8 | 1,916 | 1,169 | 747 | 15.9 | 19.1 | 10.8 | 14.0 | |
| 7 or More | 30 | 27 | Q | 1,359 | 1,228 | Q | 21.9 | 21.8 | Q | 14.0 | |
| Wall Materials | | | | | | | | | | | |
| Masonry | 184 | 141 | 43 | 11,797 | 7,956 | 3,841 | 15.6 | 17.8 | 11.2 | 14.0 | |
| Siding or Shingles | 20 | 18 | 2 | 1,419 | 1,111 | 308 | 14.3 | 16.0 | 7.9 | 14.0 | |
| Metal Panels | 29 | 19 | 9 | 1,964 | 1,588 | 376 | 14.6 | 12.3 | 24.7 | 14.0 | |
| Concrete Panels | 44 | 30 | 14 | 2,457 | 1,811 | 645 | 18.0 | 16.4 | 22.3 | 14.0 | |
| Window Glass | 18 | 17 | Q | 654 | 605 | Q | 27.0 | 28.4 | Q | 14.0 | |
| Other | 9 | 9 | Q | 412 | 377 | Q | 22.7 | 23.8 | Q | 14.0 | |
| Roof Materials | | | | | | | | | | | |
| Built-Up | 166 | 132 | 33 | 9,693 | 6,956 | 2,737 | 17.1 | 19.0 | 12.2 | 14.0 | |
| Shingles (Not Wood) | 39 | 31 | 9 | 2,947 | 1,976 | 971 | 13.3 | 15.5 | 9.0 | 14.0 | |
| Metal Surfacing | 37 | 25 | 12 | 2,754 | 2,061 | 693 | 13.5 | 12.2 | 17.2 | 14.0 | |
| Synthetic or Rubber | 42 | 29 | 14 | 1,882 | 1,366 | 516 | 22.4 | 21.0 | 26.3 | 14.0 | |
| Slate or Tile | 6 | 4 | Q | 490 | 324 | Q | 11.5 | 12.4 | Q | 14.0 | |
| Concrete | 5 | 5 | Q | 395 | 357 | Q | 13.2 | 13.7 | Q | 14.0 | |
| Wooden Materials | 3 | Q | Q | 203 | Q | Q | 14.2 | Q | Q | 14.0 | |
| Other | Q | Q | Q | 339 | Q | Q | 19.0 | Q | Q | 14.0 | |
| Building Shell Conservation | | | | | | | | | | | |
| Features (Solely or in Combination) | | | | | | | | | | | |
| Roof or Ceiling Insulation | 257 | 197 | 59 | 15,050 | 11,048 | 4,002 | 17.0 | 17.8 | 14.8 | 14.0 | |
| Wall Insulation | 189 | 148 | 40 | 10,696 | 8,122 | 2,574 | 17.6 | 18.2 | 15.7 | 14.0 | |
| Storm or Multiple Glazing | 149 | 126 | 23 | 8,202 | 6,053 | 2,149 | 18.2 | 20.8 | 10.8 | 14.0 | |
| Tinted, Reflective, or Shading Glass | 151 | 128 | 23 | 8,273 | 6,761 | 1,512 | 18.3 | 19.0 | 15.0 | 14.0 | |
| Exterior or Interior Shadings or Awnings | 138 | 109 | 29 | 7,692 | 5,714 | 1,978 | 18.0 | 19.1 | 14.8 | 14.0 | |
| Weather Stripping or Caulking | 252 | 199 | 53 | 14,613 | 10,939 | 3,674 | 17.3 | 18.2 | 14.6 | 14.0 | |
| None of the Above | 13 | 10 | 3 | 1,288 | 854 | 433 | 10.4 | 11.6 | 8.0 | 14.0 | |
| ENERGY SOURCES AND END USES^a | | | | | | | | | | | |
| Energy Sources | | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | | |
| Electricity | 305 | 234 | 70 | 18,702 | 13,448 | 5,254 | 16.3 | 17.4 | 13.3 | 14.0 | |
| Natural Gas | 134 | 90 | 45 | 9,136 | 5,109 | 4,027 | 14.7 | 17.6 | 11.1 | 14.0 | |
| Fuel Oil | 39 | 27 | 12 | 2,010 | 1,174 | 836 | 19.2 | 23.0 | 13.9 | 14.0 | |
| District Heat | Q | Q | Q | 606 | Q | Q | 32.8 | Q | Q | 14.0 | |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | 14.0 | |
| Propane | 22 | 19 | 3 | 1,499 | 1,046 | 453 | 14.4 | 17.7 | 6.7 | 14.0 | |
| Other | 4 | Q | Q | 285 | Q | Q | 13.1 | Q | Q | 14.0 | |

See footnote at end of table.

Table 29. Electricity Consumption and Conditional Energy Intensity for Buildings Heated with Electricity (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Flow Factor | |
|---|---|----------------------------|-------------------|---|----------------------------|-------------------|--|----------------------------|-------------------|-----------------|--|
| | All Buildings Heated with Electricity | Buildings with Electricity | | All Buildings Heated with Electricity | Buildings with Electricity | | All Buildings Heated with Electricity | Buildings with Electricity | | | |
| | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | |
| RSE Column Factor | 0.900 | 1.000 | 1.281 | 0.600 | 0.400 | 1.312 | 0.640 | 0.600 | 1.340 | | |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | | |
| Heated Buildings | 305 | 234 | 70 | 18,702 | 13,448 | 5,254 | 16.3 | 17.4 | 13.3 | 7.16 | |
| Air-Conditioned Buildings | 295 | 229 | 66 | 17,246 | 12,509 | 4,737 | 17.1 | 18.3 | 13.9 | 7.34 | |
| Buildings with Water Heating | 287 | 218 | 69 | 16,801 | 11,790 | 5,011 | 17.1 | 18.5 | 13.7 | 7.20 | |
| Buildings with Cooking | 131 | 104 | 27 | 6,520 | 4,691 | 1,829 | 20.1 | 22.1 | 14.8 | 10.97 | |
| Buildings with Manufacturing | 27 | 15 | Q | 1,418 | 881 | 537 | 18.7 | 17.3 | 21.1 | 20.48 | |
| Space-Heating Energy Source | | | | | | | | | | | |
| Electricity | 305 | 234 | 70 | 18,702 | 13,448 | 5,254 | 16.3 | 17.4 | 13.3 | 7.16 | |
| Main | 234 | 234 | -- | 13,448 | 13,448 | -- | 17.4 | 17.4 | -- | 6.73 | |
| With Secondary | 35 | 35 | -- | 1,997 | 1,997 | -- | 17.3 | 17.3 | -- | 19.46 | |
| Natural Gas Only | 17 | 17 | -- | 1,142 | 1,142 | -- | 14.7 | 14.7 | -- | 29.35 | |
| Other Energy Sources or Combinations | 16 | 16 | -- | 787 | 787 | -- | 20.2 | 20.2 | -- | 28.84 | |
| With No Secondary | 200 | 200 | -- | 11,451 | 11,451 | -- | 17.5 | 17.5 | -- | 6.68 | |
| Secondary | 70 | -- | 70 | 5,254 | -- | 5,254 | 13.3 | -- | 13.3 | 11.53 | |
| Other Excluding Electricity | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Building Not Heated | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Main Space-Heating Energy Source | | | | | | | | | | | |
| Electricity | 234 | 234 | -- | 13,448 | 13,448 | -- | 17.4 | 17.4 | -- | 6.73 | |
| Natural Gas | 45 | Q | 39 | 4,012 | Q | 3,719 | 11.3 | Q | 10.6 | 11.36 | |
| Fuel Oil | 5 | Q | 5 | 581 | Q | 566 | 9.1 | Q | 9.3 | 22.99 | |
| District Heat | 19 | Q | 17 | 573 | Q | 523 | 32.5 | Q | 33.0 | 31.57 | |
| Propane | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Other | Q | NC | Q | Q | NC | Q | Q | NC | Q | 99.99 | |
| Ability to Switch Main Heating Fuel | | | | | | | | | | | |
| No Alternate | 256 | 210 | 47 | 15,488 | 11,802 | 3,686 | 16.5 | 17.8 | 12.6 | 7.45 | |
| Alternate Main Heating Fuel | | | | | | | | | | | |
| Electricity | 14 | Q | 13 | 970 | Q | 895 | 14.8 | Q | 14.8 | 20.37 | |
| Natural Gas | 21 | 15 | Q | 1,226 | 991 | Q | 17.5 | 15.6 | Q | 25.43 | |
| Fuel Oil | 8 | 5 | 3 | 433 | 240 | 193 | 17.5 | 20.1 | 14.2 | 30.60 | |
| Propane | 2 | Q | Q | 277 | Q | Q | 8.3 | Q | Q | 41.96 | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Air-Conditioning Energy Source | | | | | | | | | | | |
| Electricity | 285 | 222 | 63 | 16,691 | 12,238 | 4,453 | 17.1 | 18.1 | 14.2 | 7.68 | |
| Other Excluding Electricity | 10 | Q | 3 | 555 | Q | 284 | 18.6 | Q | 10.7 | 27.95 | |
| Air-Conditioning Not Performed | 9 | 6 | 4 | 1,455 | 939 | 516 | 6.5 | 5.9 | 7.6 | 25.52 | |

See footnote at end of table.

Table 29. Electricity Consumption and Conditional Energy Intensity for Buildings Heated with Electricity (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Sums | |
|---|---|----------------------------|-------------------|---|----------------------------|-------------------|--|----------------------------|-------------------|--------------------|--|
| | All Buildings Heated with Electricity | Buildings with Electricity | | All Buildings Heated with Electricity | Buildings with Electricity | | All Buildings Heated with Electricity | Buildings with Electricity | | | |
| | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | |
| RSE Category | 1959 | 1960 | 1961 | 1959 | 1960 | 1961 | 1959 | 1960 | 1961 | | |
| Water-Heating Energy Source | | | | | | | | | | | |
| Electricity | 201 | 171 | 30 | 11,046 | 9,116 | 1,930 | 18.2 | 18.7 | 15.4 | 8.93 | |
| Other Excluding Electricity | 86 | 47 | 39 | 5,755 | 2,674 | 3,081 | 15.0 | 17.7 | 12.6 | 11.77 | |
| Water Heating Not Performed | 18 | 16 | 1 | 1,900 | 1,658 | 242 | 9.4 | 9.9 | 5.6 | 18.62 | |
| Cooking Energy Source | | | | | | | | | | | |
| Electricity | 73 | 56 | 16 | 3,381 | 2,490 | 891 | 21.5 | 22.7 | 18.2 | 13.15 | |
| Other Excluding Electricity | 58 | 47 | 11 | 3,139 | 2,201 | 938 | 18.6 | 21.5 | 11.7 | 16.34 | |
| Cooking Not Performed | 173 | 131 | 43 | 12,182 | 8,757 | 3,425 | 14.2 | 14.9 | 12.5 | 9.69 | |
| Manufacturing Energy Source | | | | | | | | | | | |
| Electricity | 22 | 13 | Q | 1,154 | 755 | 399 | 18.6 | 17.5 | 20.8 | 29.87 | |
| Other Excluding Electricity | 5 | Q | Q | 264 | Q | Q | 19.2 | Q | Q | 52.23 | |
| Manufacturing Not Performed | 278 | 219 | 59 | 17,284 | 12,567 | 4,717 | 16.1 | 17.4 | 12.4 | 7.57 | |
| HEATING AND COOLING | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | |
| Not Heated | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| 1 to 50 | 26 | 22 | 5 | 3,876 | 2,945 | 932 | 6.8 | 7.3 | 5.1 | 14.16 | |
| 51 to 99 | 64 | 48 | 16 | 3,160 | 2,289 | 872 | 20.4 | 21.1 | 18.4 | 14.64 | |
| 100 | 214 | 165 | 49 | 11,654 | 8,204 | 3,450 | 18.4 | 20.1 | 14.3 | 9.99 | |
| Percent Cooled | | | | | | | | | | | |
| Not Cooled | 9 | 6 | 4 | 1,455 | 939 | 516 | 6.5 | 5.9 | 7.6 | 25.82 | |
| 1 to 50 | 43 | 25 | 19 | 4,748 | 2,833 | 1,915 | 9.1 | 8.7 | 9.7 | 16.05 | |
| 51 to 99 | 91 | 76 | 15 | 4,710 | 3,501 | 1,208 | 19.3 | 21.7 | 12.4 | 11.49 | |
| 100 | 161 | 128 | 33 | 7,788 | 6,175 | 1,614 | 20.7 | 20.8 | 20.2 | 9.86 | |
| Heating Equipment (Solely or in Combination) | | | | | | | | | | | |
| Furnaces | 59 | 39 | 20 | 4,529 | 2,376 | 2,153 | 13.1 | 16.4 | 9.5 | 18.92 | |
| Boilers | 52 | 30 | 22 | 3,145 | 1,371 | 1,774 | 16.5 | 21.7 | 12.4 | 13.77 | |
| Individual Space Heaters | 134 | 93 | 41 | 8,596 | 5,448 | 3,148 | 15.6 | 17.2 | 13.0 | 11.67 | |
| Packaged Heating Units | 127 | 98 | 30 | 7,384 | 5,636 | 1,748 | 17.2 | 17.3 | 16.9 | 10.99 | |
| Heat Pumps | 85 | 66 | 19 | 5,158 | 3,886 | 1,273 | 16.4 | 16.9 | 14.9 | 14.12 | |
| Air Ducts | 219 | 166 | 52 | 12,281 | 8,924 | 3,356 | 17.8 | 18.6 | 15.6 | 8.00 | |
| Heating or Reheating Coils | 106 | 76 | 30 | 4,453 | 3,328 | 1,124 | 23.7 | 22.9 | 26.4 | 15.20 | |
| Fan-Coil Units | 43 | 20 | 23 | 1,775 | 845 | 930 | 24.4 | 23.5 | 25.2 | 22.49 | |
| Steam or Hot Water Radiators or Baseboards | 22 | 8 | 14 | 1,671 | 354 | 1,317 | 13.0 | 22.6 | 10.5 | 19.15 | |
| Other | 12 | 12 | Q | 446 | 329 | Q | 27.2 | 35.4 | Q | 37.57 | |
| Cooling Equipment (Solely or in Combination) | | | | | | | | | | | |
| Central Chillers | 77 | 57 | 21 | 3,434 | 2,441 | 993 | 22.5 | 23.3 | 20.7 | 17.03 | |
| Individual Air Conditioners | 71 | 45 | 26 | 4,779 | 2,747 | 2,032 | 14.8 | 16.4 | 12.7 | 12.00 | |
| Packaged Cooling Units | 204 | 154 | 50 | 11,630 | 8,277 | 3,353 | 17.5 | 18.6 | 14.8 | 9.16 | |
| Heat Pumps | 77 | 58 | 19 | 4,799 | 3,518 | 1,280 | 16.0 | 16.5 | 14.6 | 10.60 | |
| Air Ducts | 208 | 157 | 51 | 11,482 | 8,429 | 3,052 | 18.1 | 18.6 | 16.7 | 13.35 | |
| Fan-Coil Units | 63 | 47 | 16 | 2,396 | 1,724 | 672 | 26.4 | 27.3 | 23.9 | 16.82 | |
| Other | 6 | 6 | Q | Q | Q | Q | 11.7 | 12.5 | Q | 51.06 | |
| Year Main Central Chiller Installed | | | | | | | | | | | |
| 1959 or Before | Q | Q | Q | Q | Q | Q | Q | Q | Q | — | |
| 1960 to 1969 | 12 | 6 | 6 | 653 | 320 | 333 | 18.2 | 19.6 | 16.9 | 15.11 | |
| 1970 to 1979 | 22 | 18 | Q | 1,000 | 790 | Q | 21.8 | 23.1 | Q | 41.07 | |
| 1980 to 1986 | 20 | 19 | Q | 852 | 751 | Q | 23.6 | 25.0 | Q | 22.05 | |
| 1987 to 1989 | 12 | Q | Q | 557 | 385 | Q | 22.1 | 21.7 | Q | 31.62 | |

See footnotes at end of table.

Table 29. Electricity Consumption and Conditional Energy Intensity for Buildings Heated with Electricity (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | Total Floorspace of Buildings Using Electricity (million square feet) | | | Electricity Energy Intensity (kWh/sq. ft.) | | | RSE Row Factor | |
|--|---|----------------------------|-------------------|---|----------------------------|-------------------|--|----------------------------|-------------------|----------------|--|
| | All Buildings Heated with Electricity | Buildings with Electricity | | All Buildings Heated with Electricity | Buildings with Electricity | | All Buildings Heated with Electricity | Buildings with Electricity | | | |
| | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | |
| RSE Column Factor: | 0.924 | 1.011 | 1.300 | 0.811 | 0.931 | 1.328 | 0.606 | 0.673 | 1.377 | | |
| Year Packaged Cooling System Installed | | | | | | | | | | | |
| 1959 or Before | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| 1960 to 1969 | 23 | 17 | 5 | 1,537 | 1,043 | 493 | 14.9 | 16.8 | 11.1 | 22.14 | |
| 1970 to 1979 | 69 | 58 | 11 | 3,815 | 2,888 | 928 | 18.2 | 20.2 | 11.8 | 12.56 | |
| 1980 to 1986 | 76 | 59 | 17 | 3,941 | 2,954 | 987 | 19.2 | 19.9 | 17.0 | 16.07 | |
| 1987 to 1989 | 27 | 18 | 9 | 1,943 | 1,227 | 716 | 13.7 | 14.7 | 11.9 | 21.45 | |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | | |
| Present in Building | 117 | 91 | 27 | 4,986 | 3,701 | 1,285 | 23.5 | 24.5 | 20.7 | 12.16 | |
| Not Present | 187 | 144 | 43 | 13,716 | 9,747 | 3,968 | 13.7 | 14.8 | 10.9 | 8.59 | |
| LIGHTING | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| 1 to 50 | 25 | 19 | 5 | 3,293 | 2,099 | 1,195 | 7.6 | 9.3 | 4.6 | 17.51 | |
| 51 to 99 | 88 | 66 | 22 | 5,161 | 3,618 | 1,544 | 17.1 | 18.2 | 14.4 | 13.05 | |
| 100 | 191 | 149 | 42 | 10,183 | 7,689 | 2,494 | 18.8 | 19.4 | 16.9 | 9.06 | |
| ENERGY MANAGEMENT | | | | | | | | | | | |
| Occupant Control | | | | | | | | | | | |
| Any Control of Heating | 140 | 110 | 29 | 10,133 | 7,233 | 2,900 | 13.8 | 15.2 | 10.2 | 9.81 | |
| With Thermostats | 127 | 100 | 27 | 9,290 | 6,714 | 2,576 | 13.7 | 14.9 | 10.5 | 10.74 | |
| Any Control of Cooling | 135 | 107 | 27 | 9,466 | 6,871 | 2,595 | 14.2 | 15.6 | 10.6 | 10.07 | |
| With Thermostats | 126 | 100 | 26 | 8,782 | 6,499 | 2,283 | 14.3 | 15.3 | 11.5 | 10.67 | |
| Reduced Use During Off-Hours | | | | | | | | | | | |
| Heating Only | 14 | 10 | 4 | 1,664 | 1,077 | 586 | 8.6 | 9.3 | 7.4 | 20.96 | |
| Cooling Only | 15 | 10 | 4 | 800 | 492 | 308 | 18.3 | 21.0 | 13.9 | 24.19 | |
| Heating and Cooling | 195 | 154 | 42 | 13,144 | 9,624 | 3,520 | 14.9 | 16.0 | 11.8 | 7.49 | |
| Computerized Energy Management and Control System | | | | | | | | | | | |
| Present in Building | 86 | 64 | 21 | 3,854 | 2,798 | 1,056 | 22.3 | 23.0 | 20.3 | 13.40 | |
| Controls Heating and Cooling | 83 | 62 | 21 | 3,708 | 2,666 | 1,042 | 22.5 | 23.4 | 20.3 | 13.65 | |
| Controls Lighting | 22 | 17 | Q | 1,147 | 893 | Q | 18.9 | 19.2 | Q | 17.85 | |
| Controls Other | 12 | 10 | Q | 553 | 431 | Q | 21.0 | 23.3 | Q | 20.56 | |
| Other Energy Management | | | | | | | | | | | |
| Regular HVAC Maintenance | 249 | 191 | 57 | 13,344 | 9,766 | 3,578 | 18.6 | 19.6 | 16.0 | 7.63 | |
| Participated in Utility Conservation Program | 58 | 43 | 15 | 2,919 | 2,094 | 825 | 20.0 | 20.6 | 18.2 | 16.00 | |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

o Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

-- Data not applicable.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

ELECTRICITY

Table 30. Electricity Peak Demand-Metered Buildings

| Building Characteristics | Buildings Using Electricity | | | Demand-Metered Buildings | | | Buildings Not Demand-Metered | | | RSE Row Factor |
|--|--------------------------------|---|--|--------------------------------|---|--|--------------------------------|---|--|----------------|
| | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | |
| RSE Column Factor: | 0.069 | 0.709 | 1.022 | 0.063 | 0.906 | 1.220 | 1.028 | 1.285 | 1.483 | |
| All Buildings | 4,294 | 61,563 | 813 | 2,217 | 43,532 | 661 | 2,078 | 18,031 | 151 | 5.69 |
| Building Floorspace (Square Feet) | | | | | | | | | | |
| 1,001 to 5,000 | 2,360 | 6,409 | 95 | 999 | 2,777 | 60 | 1,360 | 3,632 | 36 | 6.94 |
| 5,001 to 10,000 | 855 | 6,297 | 72 | 468 | 3,469 | 53 | 387 | 2,828 | 19 | 9.18 |
| 10,001 to 25,000 | 622 | 9,989 | 112 | 406 | 6,649 | 89 | 216 | 3,340 | 23 | 8.92 |
| 25,001 to 50,000 | 243 | 8,671 | 97 | 176 | 6,309 | 79 | 67 | 2,362 | 19 | 9.94 |
| 50,001 to 100,000 | 125 | 8,918 | 127 | 94 | 6,707 | 108 | 30 | 2,211 | 19 | 12.13 |
| 100,001 to 200,000 | 60 | 8,222 | 113 | 49 | 6,768 | 94 | 11 | 1,453 | 20 | 14.21 |
| 200,001 to 500,000 | 23 | 6,996 | 107 | 17 | 5,103 | 95 | 6 | 1,893 | 13 | 20.84 |
| Over 500,000 | 7 | 6,062 | 89 | 7 | 5,751 | 85 | 0 | 311 | 4 | 19.18 |
| Year Constructed | | | | | | | | | | |
| 1899 or Before | 162 | 1,568 | 7 | 65 | 970 | 5 | 97 | 598 | 2 | 19.54 |
| 1900 to 1919 | 223 | 3,849 | 22 | 101 | 2,129 | 16 | 122 | 1,720 | 6 | 18.62 |
| 1920 to 1945 | 631 | 7,880 | 62 | 284 | 5,547 | 50 | 346 | 2,332 | 11 | 11.05 |
| 1946 to 1959 | 823 | 10,185 | 111 | 400 | 6,837 | 88 | 423 | 3,349 | 23 | 11.01 |
| 1960 to 1969 | 775 | 11,921 | 173 | 420 | 8,835 | 141 | 355 | 3,086 | 31 | 10.29 |
| 1970 to 1979 | 855 | 13,172 | 214 | 514 | 9,940 | 175 | 341 | 3,232 | 39 | 8.19 |
| 1980 to 1983 | 309 | 4,209 | 86 | 189 | 3,343 | 73 | 120 | 866 | 13 | 12.93 |
| 1984 to 1986 | 315 | 5,628 | 89 | 143 | 3,607 | 72 | 172 | 2,021 | 17 | 13.29 |
| 1987 to 1989 | 202 | 3,150 | 49 | 100 | 2,324 | 39 | 102 | 825 | 10 | 16.82 |
| BUILDING USE | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | |
| Assembly | 614 | 6,851 | 55 | 263 | 4,086 | 42 | 351 | 2,765 | 13 | 13.21 |
| Education | 282 | 8,070 | 64 | 167 | 6,122 | 52 | 115 | 1,948 | 11 | 11.80 |
| Food Sales | 102 | 792 | 31 | 69 | 662 | 28 | 33 | 129 | 3 | 23.48 |
| Food Service | 241 | 1,167 | 33 | 164 | 935 | 25 | 77 | 232 | 8 | 13.97 |
| Health Care | 80 | 2,054 | 45 | 35 | 1,642 | 39 | 45 | 412 | 6 | 17.80 |
| Lodging | 140 | 3,476 | 40 | 94 | 2,834 | 35 | 46 | 642 | 6 | 14.74 |
| Mercantile and Service | 1,276 | 12,361 | 161 | 604 | 7,948 | 119 | 672 | 4,412 | 43 | 8.57 |
| Office | 679 | 11,796 | 229 | 384 | 9,291 | 193 | 295 | 2,505 | 36 | 8.11 |
| Parking Garage | 45 | 983 | 5 | 27 | 756 | 4 | 18 | 227 | Q | 26.75 |
| Public Order and Safety | 50 | 608 | 8 | 19 | 473 | 7 | 30 | 135 | 2 | 26.66 |
| Warehouse | 543 | 8,850 | 71 | 274 | 6,202 | 58 | 269 | 2,648 | 13 | 13.99 |
| Other | 62 | 1,528 | 59 | 37 | 964 | Q | 25 | 565 | 8 | 35.03 |
| Vacant | 182 | 3,027 | 11 | 81 | 1,618 | 9 | 102 | Q | 2 | 21.31 |
| Weekly Operating Hours | | | | | | | | | | |
| 39 or Fewer | 687 | 4,747 | 21 | 236 | 2,388 | 13 | 452 | 2,359 | 8 | 11.00 |
| 40 to 48 | 1,100 | 13,810 | 129 | 561 | 9,571 | 105 | 539 | 4,239 | 24 | 8.99 |
| 49 to 60 | 978 | 13,349 | 140 | 505 | 9,208 | 114 | 473 | 4,141 | 26 | 7.71 |
| 61 to 84 | 621 | 10,751 | 153 | 355 | 8,114 | 120 | 266 | 2,636 | 33 | 8.70 |
| 85 to 167 | 513 | 9,377 | 142 | 316 | 6,784 | 118 | 197 | 2,594 | 24 | 11.95 |
| 168 (Open Continuously) | 395 | 9,529 | 228 | 244 | 7,467 | 192 | 151 | 2,061 | 37 | 10.54 |
| Weekly Operating Schedule | | | | | | | | | | |
| Open 1 to 23 Hours | | | | | | | | | | |
| Monday through Friday | 1,186 | 17,966 | 195 | 643 | 12,937 | 162 | 543 | 5,028 | 32 | 8.22 |
| Monday through Saturday | 1,041 | 11,216 | 115 | 517 | 7,802 | 91 | 523 | 3,414 | 24 | 8.44 |
| Monday through Sunday | 787 | 11,833 | 185 | 458 | 8,743 | 148 | 330 | 3,091 | 37 | 10.05 |
| Open 24 Hours (Continuously) | 395 | 9,529 | 228 | 244 | 7,467 | 192 | 151 | 2,061 | 37 | 10.84 |
| Other | 885 | 11,020 | 90 | 355 | 6,583 | 69 | 530 | 4,436 | 22 | 12.62 |

See footnote at end of table.

Table 30. Electricity Peak Demand-Metered Buildings (Continued)

| Building Characteristics | Buildings Using Electricity | | | Demand-Metered Buildings | | | Buildings Not Demand-Metered | | | RSE Row Factor |
|---|--------------------------------|---|--|--------------------------------|---|--|--------------------------------|---|--|----------------|
| | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | |
| RSE Column Factor | 0.000 | 0.709 | 1.022 | 0.933 | 0.904 | 1.253 | 1.039 | 1.255 | 1.469 | |
| Workers | | | | | | | | | | |
| 4 or Fewer | 2,261 | 13,550 | 86 | 966 | 6,639 | 56 | 1,296 | 6,911 | 30 | 7.96 |
| 5 to 9 | 903 | 7,926 | 76 | 494 | 5,240 | 54 | 409 | 2,686 | 22 | 8.24 |
| 10 to 19 | 507 | 6,443 | 70 | 301 | 4,212 | 51 | 206 | 2,231 | 19 | 10.44 |
| 20 to 49 | 381 | 9,665 | 117 | 268 | 7,400 | 95 | 113 | 2,265 | 23 | 8.94 |
| 50 to 99 | 132 | 7,389 | 102 | 101 | 5,830 | 84 | 31 | 1,560 | 18 | 12.47 |
| 100 to 249 | 79 | 6,771 | 140 | 61 | 5,461 | 121 | 18 | 1,310 | 19 | 14.22 |
| 250 or More | 32 | 9,818 | 222 | 27 | 8,750 | 200 | 5 | 1,068 | 22 | 10.39 |
| Ownership and Occupancy | | | | | | | | | | |
| Nongovernment Owned | 3,736 | 47,550 | 619 | 1,881 | 32,539 | 493 | 1,855 | 15,011 | 126 | 5.86 |
| Owner Occupied | 2,733 | 35,437 | 462 | 1,368 | 24,146 | 375 | 1,366 | 11,291 | 87 | 6.65 |
| Single Establishment | 2,366 | 26,590 | 347 | 1,192 | 17,742 | 282 | 1,174 | 8,848 | 65 | 7.46 |
| Multiple Establishment | 367 | 8,847 | 115 | 176 | 6,404 | 93 | 191 | 2,443 | 22 | 11.24 |
| Nonowner Occupied | 1,002 | 12,113 | 157 | 513 | 8,393 | 118 | 489 | 3,720 | 39 | 8.76 |
| Single Establishment | 658 | 6,179 | 78 | 336 | 4,350 | 58 | 322 | 1,829 | 20 | 11.70 |
| Multiple Establishment | 256 | 5,227 | 78 | 140 | 3,611 | 59 | 116 | 1,616 | 19 | 10.01 |
| Vacant | 89 | 707 | 2 | 38 | 431 | 2 | 51 | 276 | Q | 22.66 |
| Government Owned | 559 | 14,013 | 194 | 336 | 10,993 | 168 | 223 | 3,020 | 25 | 11.07 |
| Federal | 38 | 1,900 | 39 | 28 | Q | 34 | 10 | 152 | Q | 42.26 |
| State | 131 | 3,870 | 70 | 85 | 3,011 | 62 | 45 | 859 | 8 | 21.86 |
| Local | 390 | 8,243 | 84 | 222 | 6,234 | 72 | 168 | 2,009 | 12 | 11.46 |
| Percent Vacant at Least Three Months | | | | | | | | | | |
| 0 | 3,507 | 42,697 | 604 | 1,818 | 30,238 | 493 | 1,689 | 12,458 | 112 | 5.99 |
| 1 to 50 | 374 | 12,416 | 171 | 192 | 9,084 | 137 | 181 | 3,332 | 34 | 10.39 |
| 51 to 99 | 98 | 3,446 | 19 | 54 | 2,288 | 17 | 45 | Q | 2 | 20.00 |
| 100 | 315 | 3,005 | 19 | 153 | 1,922 | 14 | 163 | 1,083 | 4 | 12.70 |
| Months in Use Out of Past 12 Months | | | | | | | | | | |
| 0 to 8 | 310 | 3,308 | 24 | 165 | 2,298 | 17 | 145 | 1,010 | 6 | 14.60 |
| 9 to 11 | 270 | 3,775 | 22 | 135 | 2,571 | 17 | 135 | 1,203 | 6 | 12.85 |
| 12 | 3,715 | 54,480 | 767 | 1,917 | 38,662 | 627 | 1,798 | 15,818 | 139 | 5.81 |
| LOCATION | | | | | | | | | | |
| Census Region | | | | | | | | | | |
| Northeast | 751 | 13,326 | 172 | 446 | 10,052 | 143 | 305 | 3,274 | 29 | 12.77 |
| Midwest | 1,001 | 15,704 | 178 | 482 | 11,040 | 151 | 519 | 4,665 | 27 | 11.13 |
| South | 1,723 | 21,215 | 286 | 942 | 15,179 | 239 | 782 | 6,036 | 47 | 9.44 |
| West | 819 | 11,318 | 177 | 347 | 7,262 | 129 | 472 | 4,056 | 48 | 14.60 |
| Census Division | | | | | | | | | | |
| Northeast | | | | | | | | | | |
| New England | 177 | 3,127 | 34 | 109 | 2,069 | 27 | 68 | 1,058 | 7 | 15.80 |
| Middle Atlantic | 574 | 10,199 | 138 | 336 | 7,983 | 116 | 238 | 2,216 | 22 | 15.88 |
| Midwest | | | | | | | | | | |
| East North Central | 656 | 10,527 | 117 | 336 | 7,277 | 99 | 320 | 3,250 | 18 | 16.52 |
| West North Central | 345 | 5,177 | 61 | 146 | 3,762 | 52 | 199 | 1,415 | 9 | 18.10 |
| South | | | | | | | | | | |
| South Atlantic | 692 | 9,628 | 122 | 394 | 7,244 | 109 | 298 | 2,384 | 13 | 15.12 |
| East South Central | 381 | 4,218 | 63 | 200 | 2,880 | 54 | 181 | 1,338 | 9 | 10.55 |
| West South Central | 651 | 7,369 | 101 | 349 | 5,056 | 76 | 302 | 2,313 | 24 | 16.07 |
| West | | | | | | | | | | |
| Mountain | 300 | 4,172 | 52 | 167 | 3,412 | 46 | 133 | 760 | 7 | 25.40 |
| Pacific | 519 | 7,146 | 125 | 180 | 3,849 | 83 | 339 | 3,296 | 42 | 14.51 |

See footnote at end of table.

ELECTRICITY

Table 30. Electricity Peak Demand-Metered Buildings (Continued)

| Building Characteristics | Buildings Using Electricity | | | Demand-Metered Buildings | | | Buildings Not Demand-Metered | | | RSE Row Factor |
|--|--------------------------------|---|--|--------------------------------|---|--|--------------------------------|---|--|----------------|
| | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | |
| RSE Column Factor: | 0.069 | 0.709 | 1.022 | 0.933 | 0.906 | 1.233 | 1.036 | 1.285 | 1.483 | |
| Metropolitan Status | | | | | | | | | | |
| Metropolitan | 2,946 | 49,835 | 693 | 1,630 | 36,288 | 568 | 1,315 | 13,547 | 125 | 6.59 |
| Nonmetropolitan | 1,349 | 11,728 | 119 | 586 | 7,244 | 93 | 763 | 4,484 | 26 | 12.79 |
| Climate Zone: 45-Year Average | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | |
| Over 7,000 HDD | 333 | 4,983 | 62 | 145 | 3,340 | 52 | 188 | 1,643 | 10 | 16.02 |
| 5,500-7,000 HDD | 1,074 | 17,496 | 196 | 635 | 13,034 | 171 | 438 | 4,462 | 25 | 13.95 |
| 4,000-5,499 HDD | 917 | 15,045 | 207 | 410 | 10,682 | 170 | 506 | 4,363 | 37 | 14.48 |
| Under 4,000 HDD | 982 | 12,573 | 194 | 454 | 8,353 | 147 | 528 | 4,220 | 47 | 15.78 |
| 2,000 CDD or More and -- | | | | | | | | | | |
| Under 4,000 HDD | 989 | 11,466 | 154 | 572 | 8,123 | 121 | 417 | 3,343 | 33 | 14.72 |
| ENERGY SOURCES AND END USES* | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | |
| Electricity | 4,294 | 61,563 | 813 | 2,217 | 43,532 | 661 | 2,078 | 18,031 | 151 | 5.69 |
| Natural Gas | 2,417 | 41,115 | 534 | 1,311 | 29,768 | 428 | 1,106 | 11,347 | 106 | 7.71 |
| Fuel Oil | 580 | 12,579 | 194 | 305 | 9,536 | 164 | 276 | 3,043 | 30 | 14.56 |
| District Heat | 98 | 6,578 | 130 | 76 | 5,529 | 116 | 22 | 1,048 | 14 | 27.23 |
| District Chilled Water | 24 | 1,927 | 47 | 17 | 1,462 | 40 | Q | 464 | Q | 45.26 |
| Propane | 348 | 4,695 | 59 | 173 | 3,338 | 51 | 175 | 1,357 | 7 | 17.42 |
| Other | 129 | 1,537 | 13 | 55 | 1,188 | 11 | 74 | 350 | 2 | 22.80 |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | |
| Heated Buildings | 3,872 | 57,826 | 784 | 2,035 | 41,371 | 637 | 1,837 | 16,455 | 147 | 5.92 |
| Air-Conditioned Buildings | 3,182 | 51,757 | 749 | 1,770 | 37,841 | 614 | 1,412 | 13,916 | 135 | 6.10 |
| Buildings with Water Heating | 3,180 | 53,569 | 762 | 1,787 | 38,953 | 624 | 1,393 | 14,617 | 138 | 6.04 |
| Buildings with Cooking | 864 | 23,662 | 390 | 553 | 18,464 | 338 | 311 | 5,198 | 52 | 9.56 |
| Buildings with Manufacturing | 205 | 5,595 | 85 | 120 | 4,497 | 76 | 85 | 1,098 | 10 | 15.80 |
| Energy End-Use Combinations | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | 660 | 20,781 | 358 | 446 | 16,371 | 309 | 213 | 4,410 | 49 | 10.77 |
| With Water Heating, Without Cooking | 1,906 | 25,896 | 338 | 1,059 | 18,173 | 262 | 847 | 7,723 | 76 | 7.12 |
| Without Water Heating or Cooking | 484 | 3,641 | 28 | 193 | 2,263 | 21 | 290 | 1,377 | 7 | 14.46 |
| Without Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | 138 | 2,079 | 19 | 62 | 1,407 | Q | 76 | 672 | 3 | 21.23 |
| With Water Heating, Without Cooking | 373 | 3,700 | 30 | 150 | 2,209 | 20 | 223 | 1,491 | 10 | 14.83 |
| Without Water Heating or Cooking | 291 | 1,509 | 8 | 115 | 768 | 5 | 176 | 741 | 2 | 18.41 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 269 | 2,282 | 7 | 97 | 1,185 | 5 | 171 | 1,097 | 2 | 16.80 |
| All Other Combinations | 174 | 1,675 | 26 | 93 | 1,156 | 23 | 80 | 519 | 3 | 25.83 |

See footnote at end of table.

Table 30. Electricity Peak Demand-Metered Buildings (Continued)

| Building Characteristics | Buildings Using Electricity | | | Demand-Metered Buildings | | | Buildings Not Demand-Metered | | | RSE Row Factor |
|--|--------------------------------|---|--|--------------------------------|---|--|--------------------------------|---|--|----------------|
| | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | |
| RSE Column Factor | 0.039 | 0.769 | 1.022 | 0.933 | 0.966 | 1.258 | 1.058 | 1.265 | 1.483 | |
| Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 1,283 | 18,702 | 305 | 720 | 13,674 | 250 | 563 | 5,027 | 54 | 6.24 |
| Main | 957 | 13,448 | 234 | 533 | 10,049 | 193 | 424 | 3,399 | 41 | 6.37 |
| With Secondary | 93 | 1,997 | 35 | 55 | 1,603 | 29 | 37 | 395 | 5 | 22.34 |
| Natural Gas Only | 54 | 1,142 | 17 | 34 | 858 | 14 | 20 | 285 | Q | 29.36 |
| Other Energy Sources or Combinations | 36 | 787 | 16 | 19 | 720 | 15 | 17 | 67 | 1 | 34.41 |
| With No Secondary | 864 | 11,451 | 200 | 478 | 8,447 | 164 | 387 | 3,004 | 36 | 6.71 |
| Secondary | 326 | 5,254 | 70 | 187 | 3,625 | 57 | 139 | 1,629 | 13 | 14.28 |
| Other Excluding Electricity | 2,589 | 39,124 | 480 | 1,315 | 27,696 | 387 | 1,274 | 11,428 | 92 | 7.10 |
| Building Not Heated | 422 | 3,737 | 29 | 181 | 2,162 | 24 | 241 | 1,576 | 4 | 16.04 |
| Main Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 957 | 13,448 | 234 | 533 | 10,049 | 193 | 424 | 3,399 | 41 | 6.37 |
| Natural Gas | 2,078 | 31,102 | 377 | 1,095 | 21,618 | 295 | 983 | 9,484 | 82 | 6.21 |
| Fuel Oil | 473 | 5,577 | 53 | 237 | 3,775 | 45 | 235 | 1,803 | 9 | 15.26 |
| District Heat | 93 | 6,020 | 104 | 72 | 4,987 | 90 | 21 | 1,033 | 14 | 22.21 |
| Propane | 208 | 1,230 | Q | 74 | 614 | Q | 133 | 616 | 2 | 24.16 |
| Other | 68 | 761 | 4 | 33 | 563 | 3 | 36 | 198 | 1 | 33.86 |
| Air-Conditioning Energy Source | | | | | | | | | | |
| Electricity | 3,072 | 47,905 | 695 | 1,705 | 34,836 | 570 | 1,367 | 13,069 | 126 | 6.30 |
| Other Excluding Electricity | 111 | 3,852 | 53 | 66 | 3,005 | 44 | 45 | 847 | 9 | 19.73 |
| Air-Conditioning Not Performed | 1,112 | 9,806 | 64 | 446 | 5,691 | 47 | 666 | 4,115 | 17 | 10.17 |
| Water-Heating Energy Source | | | | | | | | | | |
| Electricity | 1,554 | 21,493 | 333 | 863 | 15,716 | 276 | 690 | 5,777 | 56 | 6.97 |
| Other Excluding Electricity | 1,626 | 32,076 | 430 | 923 | 23,236 | 348 | 703 | 8,839 | 82 | 7.64 |
| Water Heating Not Performed | 1,115 | 7,994 | 50 | 430 | 4,580 | 37 | 685 | 3,414 | 13 | 9.80 |
| Cooking Energy Source | | | | | | | | | | |
| Electricity | 387 | 10,850 | 174 | 239 | 9,034 | 153 | 148 | 1,816 | 21 | 10.42 |
| Other Excluding Electricity | 477 | 12,812 | 216 | 314 | 9,431 | 185 | 163 | 3,382 | 32 | 12.80 |
| Cooking Not Performed | 3,431 | 37,901 | 423 | 1,664 | 25,068 | 324 | 1,767 | 12,833 | 99 | 6.20 |
| Manufacturing Energy Source | | | | | | | | | | |
| Electricity | 163 | 4,406 | 64 | 90 | 3,560 | 56 | 73 | 846 | 8 | 18.66 |
| Other Excluding Electricity | 42 | 1,190 | 21 | 30 | 937 | 20 | 12 | 253 | 1 | 20.82 |
| Manufacturing Not Performed | 4,090 | 55,968 | 727 | 2,097 | 39,035 | 586 | 1,993 | 16,932 | 142 | 5.82 |
| HEATING AND COOLING | | | | | | | | | | |
| Percent Heated | | | | | | | | | | |
| Not Heated | 433 | 3,839 | 29 | 187 | 2,231 | 24 | 245 | 1,608 | 5 | 15.78 |
| 1 to 50 | 630 | 9,314 | 61 | 327 | 6,107 | 46 | 303 | 3,207 | 15 | 13.16 |
| 51 to 99 | 496 | 8,668 | 146 | 272 | 6,378 | 118 | 225 | 2,290 | 28 | 10.84 |
| 100 | 2,735 | 39,742 | 577 | 1,430 | 28,816 | 473 | 1,305 | 10,926 | 104 | 6.82 |
| Percent Cooled | | | | | | | | | | |
| Not Cooled | 1,112 | 9,806 | 64 | 446 | 5,691 | 47 | 666 | 4,115 | 17 | 10.17 |
| 1 to 50 | 1,037 | 17,821 | 135 | 565 | 12,102 | 108 | 473 | 5,719 | 28 | 9.59 |
| 51 to 99 | 597 | 13,133 | 230 | 361 | 10,209 | 194 | 235 | 2,924 | 36 | 8.89 |
| 100 | 1,548 | 20,803 | 384 | 844 | 15,531 | 313 | 704 | 5,273 | 71 | 9.11 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | |
| Present in Building | 264 | 16,678 | 350 | 194 | 13,844 | 306 | 71 | 2,834 | 44 | 9.65 |
| Not Present | 4,030 | 44,885 | 463 | 2,023 | 29,688 | 355 | 2,007 | 15,197 | 108 | 5.91 |

See footnote at end of table.

Table 30. Electricity Peak Demand-Metered Buildings (Continued)

| Building Characteristics | Buildings Using Electricity | | | Demand-Metered Buildings | | | Buildings Not Demand-Metered | | | RSE Row Factor |
|---|--------------------------------|---|--|--------------------------------|---|--|--------------------------------|---|--|----------------|
| | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | Number of Buildings (thousand) | Total Floor-space (million square feet) | Total Electricity Consumed (billion kWh) | |
| RSE Column Factor | 0.697 | 0.749 | 0.897 | 0.505 | 0.598 | 1.066 | 1.178 | 1.521 | 1.460 | |
| LIGHTING AND REFRIGERATION | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | |
| Not Lit | 75 | 757 | 2 | 28 | 416 | 1 | 47 | 341 | 1 | 27.43 |
| 1 to 50 | 999 | 10,864 | 56 | 496 | 6,714 | 44 | 504 | 4,150 | 13 | 10.23 |
| 51 to 99 | 951 | 16,950 | 238 | 493 | 12,254 | 188 | 458 | 4,696 | 50 | 6.93 |
| 100 | 2,268 | 32,992 | 516 | 1,200 | 24,148 | 428 | 1,069 | 8,844 | 88 | 7.51 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | | |
| Commercial | | | | | | | | | | |
| Refrigeration Units | 908 | 24,805 | 438 | 592 | 19,032 | 367 | 316 | 5,572 | 71 | 6.82 |
| Freezers | 707 | 21,627 | 417 | 471 | 17,318 | 352 | 235 | 4,309 | 65 | 6.90 |
| Residential | | | | | | | | | | |
| Refrigerators | 2,471 | 44,179 | 602 | 1,320 | 31,880 | 494 | 1,151 | 12,299 | 108 | 6.22 |
| Freezers | 617 | 12,406 | 191 | 343 | 9,409 | 152 | 274 | 2,997 | 38 | 10.44 |
| Ice-Making Machines | 771 | 23,401 | 451 | 539 | 18,531 | 385 | 232 | 4,869 | 66 | 9.14 |
| Refrigerated Vending Machines | 1,513 | 38,810 | 622 | 950 | 30,229 | 521 | 563 | 8,581 | 101 | 6.35 |
| Water Coolers | 1,745 | 42,781 | 629 | 1,064 | 32,822 | 533 | 682 | 9,959 | 97 | 6.70 |
| Other | 56 | 1,408 | 54 | 35 | 1,149 | 52 | 21 | 259 | 3 | 26.02 |
| ENERGY MANAGEMENT | | | | | | | | | | |
| Occupant Control | | | | | | | | | | |
| Any Control of Heating | 2,399 | 27,033 | 315 | 1,160 | 17,469 | 242 | 1,239 | 9,563 | 72 | 6.70 |
| With Thermostats | 2,100 | 24,762 | 289 | 1,026 | 16,064 | 224 | 1,073 | 8,698 | 65 | 7.14 |
| Any Control of Cooling | 1,977 | 26,303 | 321 | 1,037 | 17,866 | 255 | 940 | 8,438 | 66 | 7.05 |
| With Thermostats | 1,756 | 24,032 | 296 | 925 | 16,343 | 235 | 831 | 7,688 | 61 | 7.65 |
| Reduced Use During Off-Hours | | | | | | | | | | |
| Heating Only | 790 | 7,126 | 63 | 334 | 4,318 | 46 | 456 | 2,807 | 17 | 11.02 |
| Cooling Only | 283 | 4,112 | 59 | 155 | 3,023 | 51 | 128 | 1,089 | 8 | 17.40 |
| Heating and Cooling | 2,397 | 38,683 | 490 | 1,275 | 27,698 | 393 | 1,122 | 10,985 | 97 | 7.00 |
| Computerized Energy Management and Control System | | | | | | | | | | |
| Present in Building | 263 | 14,310 | 263 | 184 | 11,750 | 221 | 80 | 2,560 | 41 | 10.96 |
| Controls Heating and Cooling | 251 | 13,767 | 254 | 175 | 11,259 | 213 | 77 | 2,507 | 40 | 11.16 |
| Controls Lighting | 51 | 3,835 | 65 | 39 | 3,115 | 53 | 12 | 720 | 13 | 21.81 |
| Controls Other | 32 | 2,316 | 47 | 27 | 2,050 | 41 | 4 | 266 | 6 | 23.01 |
| ELECTRICITY DEMAND | | | | | | | | | | |
| Annual Consumption (kilowatthours) | | | | | | | | | | |
| 10,000 or Less | 1,019 | 4,582 | 5 | 281 | 1,612 | 1 | 739 | 2,971 | 4 | 6.70 |
| 10,001 to 25,000 | 913 | 5,413 | 15 | 375 | 2,505 | 6 | 538 | 2,908 | 9 | 5.24 |
| 25,001 to 50,000 | 702 | 5,544 | 25 | 394 | 3,099 | 14 | 307 | 2,445 | 11 | 6.15 |
| 50,001 to 100,000 | 639 | 7,052 | 46 | 390 | 4,592 | 28 | 249 | 2,460 | 17 | 8.39 |
| 100,001 to 500,000 | 762 | 14,099 | 160 | 557 | 10,441 | 120 | 205 | 3,658 | 41 | 7.20 |
| 500,001 to 1,000,000 | 122 | 5,901 | 85 | 104 | 4,927 | 72 | 18 | 974 | 13 | 11.79 |
| 1,000,001 to 2,000,000 | 69 | 5,022 | 95 | 57 | 4,211 | 78 | 12 | 811 | 17 | 14.77 |
| 2,000,001 to 5,000,000 | 50 | 6,263 | 156 | 43 | 5,098 | 133 | 8 | 1,165 | 22 | 16.87 |
| Over 5,000,000 | 18 | 7,688 | 225 | 16 | 7,047 | 207 | 2 | 641 | 18 | 16.10 |

See footnotes at end of table.

Table 30. Electricity Peak Demand-Metered Buildings (Continued)

| Building Characteristics | Buildings Using Electricity | | | Demand-Metered Buildings | | | Buildings Not Demand-Metered | | | Total Electricity Consumed (billion kWh) |
|--|---|---|---|---|---|---|---|---|---|--|
| | Number of Buildings (thou- sand) | Total Floor- space (million square feet) | Total Elec- tricity Consumed (billion kWh) | Number of Buildings (thou- sand) | Total Floor- space (million square feet) | Total Elec- tricity Consumed (billion kWh) | Number of Buildings (thou- sand) | Total Floor- space (million square feet) | Total Elec- tricity Consumed (billion kWh) | |
| Total | 1,231 | 25,125 | 447 | 1,231 | 25,125 | 447 | -- | -- | -- | 3,632 |
| Peak Electricity Demand (kilowatts) | | | | | | | | | | |
| 10 or Less | 398 | 2,130 | 5 | 398 | 2,130 | 5 | -- | -- | -- | 16,01 |
| 11 to 25 | 638 | 4,225 | 24 | 638 | 4,225 | 24 | -- | -- | -- | 11,10 |
| 26 to 50 | 484 | 5,758 | 42 | 484 | 5,758 | 42 | -- | -- | -- | 13,90 |
| 51 to 100 | 316 | 5,294 | 54 | 316 | 5,294 | 54 | -- | -- | -- | 11,80 |
| 101 to 250 | 225 | 7,249 | 100 | 225 | 7,249 | 100 | -- | -- | -- | 7,57 |
| 251 to 1,000 | 128 | 10,287 | 196 | 128 | 10,287 | 196 | -- | -- | -- | 10,70 |
| Over 1,000 | 26 | 8,589 | 241 | 26 | 8,589 | 241 | -- | -- | -- | 2,607 |
| Season of Peak Electricity Demand | | | | | | | | | | |
| Summer Peaking | 1,231 | 25,125 | 447 | 1,231 | 25,125 | 447 | -- | -- | -- | 3,632 |
| Winter Peaking | 690 | 13,907 | 173 | 690 | 13,907 | 173 | -- | -- | -- | 11,10 |
| Summer and Winter Peaking | 295 | 4,500 | 41 | 295 | 4,500 | 41 | -- | -- | -- | 10,57 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

a Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

-- Data not applicable.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 31. Season of Peak Electricity Demand for Number of Buildings and Floorspace

| Building Characteristics | Number of Buildings (thousand) | | | | Total Floorspace (million square feet) | | | | RSE Row Factor | |
|--|-----------------------------------|-----------------------------------|--------|-------------------|---|-----------------------------------|--------|-------------------|----------------------|--|
| | Demand-Metered Buildings | Season of Peak Electricity Demand | | | Demand-Metered Buildings | Season of Peak Electricity Demand | | | | |
| | | Summer | Winter | Summer and Winter | | Summer | Winter | Summer and Winter | | |
| RSE Column Factor: | 0.642 | 0.665 | 1.019 | 1.566 | 0.818 | 0.946 | 0.927 | 2.052 | | |
| All Buildings | 2,217 | 1,231 | 690 | 295 | 43,532 | 25,125 | 13,907 | 4,500 | 8.01 | |
| Building Floorspace (Square Feet) | | | | | | | | | | |
| 1,001 to 5,000 | 999 | 548 | 306 | 145 | 2,777 | 1,546 | 852 | 378 | 11.65 | |
| 5,001 to 10,000 | 468 | 267 | 126 | 74 | 3,469 | 2,009 | 917 | 543 | 12.57 | |
| 10,001 to 25,000 | 406 | 219 | 144 | 42 | 6,649 | 3,589 | 2,373 | 687 | 12.97 | |
| 25,001 to 50,000 | 176 | 103 | 56 | 18 | 6,309 | 3,634 | 2,033 | 642 | 14.84 | |
| 50,001 to 100,000 | 94 | 55 | 32 | Q | 6,707 | 3,937 | 2,230 | Q | 14.06 | |
| 100,001 to 200,000 | 49 | 24 | 19 | Q | 6,768 | 3,405 | 2,520 | Q | 19.02 | |
| 200,001 to 500,000 | 17 | 10 | 6 | Q | 5,103 | 2,842 | 1,927 | Q | 23.47 | |
| Over 500,000 | 7 | 5 | 1 | Q | 5,751 | 4,163 | 1,055 | Q | 27.85 | |
| Year Constructed | | | | | | | | | | |
| 1899 or Before | 65 | 29 | Q | Q | 970 | 413 | Q | Q | 32.46 | |
| 1900 to 1919 | 101 | 53 | 30 | Q | 2,129 | 1,409 | 585 | Q | 28.70 | |
| 1920 to 1945 | 284 | 153 | 86 | 46 | 5,547 | 3,018 | 1,740 | 789 | 19.17 | |
| 1946 to 1959 | 400 | 231 | 119 | 50 | 6,837 | 3,975 | 2,005 | Q | 16.76 | |
| 1960 to 1969 | 420 | 243 | 112 | 64 | 8,835 | 4,753 | 2,883 | 1,200 | 12.29 | |
| 1970 to 1979 | 514 | 281 | 174 | 59 | 9,940 | 6,295 | 2,931 | 714 | 12.42 | |
| 1980 to 1983 | 189 | 96 | 71 | 22 | 3,343 | 1,728 | 1,304 | 311 | 16.81 | |
| 1984 to 1986 | 143 | 82 | 48 | Q | 3,607 | 2,149 | 1,337 | Q | 21.84 | |
| 1987 to 1989 | 100 | 62 | 29 | Q | 2,324 | 1,386 | 718 | Q | 24.49 | |
| BUILDING USE | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | |
| Assembly | 263 | 147 | 69 | 47 | 4,086 | 2,392 | 828 | 866 | 19.12 | |
| Education | 167 | 89 | 70 | Q | 6,122 | 3,020 | 2,759 | Q | 17.51 | |
| Food Sales | 69 | 47 | Q | Q | 662 | 553 | Q | Q | 32.90 | |
| Food Service | 164 | 118 | Q | Q | 935 | 622 | Q | Q | 20.77 | |
| Health Care | 35 | 24 | Q | Q | 1,642 | 1,373 | Q | Q | 23.48 | |
| Lodging | 94 | 51 | 37 | Q | 2,834 | 1,409 | 1,265 | Q | 21.57 | |
| Mercantile and Service | 604 | 327 | 189 | 87 | 7,948 | 4,555 | 2,326 | 1,067 | 12.88 | |
| Office | 384 | 219 | 119 | 46 | 9,291 | 6,214 | 2,528 | 550 | 18.32 | |
| Parking Garage | 27 | Q | Q | Q | 756 | Q | Q | Q | 44.00 | |
| Public Order and Safety | 19 | 13 | Q | NC | 473 | 307 | Q | NC | 42.76 | |
| Warehouse | 274 | 129 | 99 | 46 | 6,202 | 2,798 | 2,454 | 950 | 20.54 | |
| Other | 37 | 21 | Q | Q | 964 | 759 | Q | Q | 53.80 | |
| Vacant | 81 | 34 | 37 | Q | 1,618 | 828 | 615 | Q | 26.32 | |
| Weekly Operating Hours | | | | | | | | | | |
| 39 or Fewer | 236 | 123 | 81 | 32 | 2,388 | 1,186 | 922 | 280 | 19.67 | |
| 40 to 48 | 561 | 301 | 187 | 74 | 9,571 | 5,557 | 3,034 | 980 | 13.00 | |
| 49 to 60 | 505 | 257 | 182 | 66 | 9,208 | 5,189 | 3,089 | 930 | 12.97 | |
| 61 to 84 | 355 | 219 | 81 | 54 | 8,114 | 4,575 | 2,449 | 1,091 | 15.41 | |
| 85 to 167 | 316 | 186 | 82 | 47 | 6,784 | 4,027 | 2,028 | 728 | 18.81 | |
| 168 (Open Continuously) | 244 | 144 | 77 | 23 | 7,467 | 4,591 | 2,386 | 490 | 13.41 | |
| Weekly Operating Schedule | | | | | | | | | | |
| Open 1 to 23 Hours | | | | | | | | | | |
| Monday through Friday | 643 | 338 | 238 | 67 | 12,937 | 7,234 | 4,563 | 1,140 | 11.88 | |
| Monday through Saturday | 517 | 283 | 141 | 93 | 7,802 | 4,211 | 2,565 | 1,025 | 15.04 | |
| Monday through Sunday | 458 | 278 | 120 | 60 | 8,743 | 5,271 | 2,193 | 1,279 | 15.90 | |
| Open 24 Hours (Continuously) | 244 | 144 | 77 | 23 | 7,467 | 4,591 | 2,386 | 490 | 13.41 | |
| Other | 355 | 188 | 115 | 52 | 6,583 | 3,817 | 2,200 | 566 | 18.26 | |

See footnote at end of table.

Table 31. Season of Peak Electricity Demand for Number of Buildings and Floorspace (Continued)

| Building Characteristics | Number of Buildings (thousand) | | | | Total Floorspace (million square feet) | | | | RSE Row Factor | |
|---|--------------------------------|-----------------------------------|--------|-------------------|--|-----------------------------------|--------|-------------------|----------------|--|
| | Demand-Metered Buildings | Season of Peak Electricity Demand | | | Demand-Metered Buildings | Season of Peak Electricity Demand | | | | |
| | | Summer | Winter | Summer and Winter | | Summer | Winter | Summer and Winter | | |
| RSE Column Factor: | 0.642 | 0.866 | 1.019 | 1.586 | 0.818 | 0.946 | 0.927 | 2.052 | | |
| Workers | | | | | | | | | | |
| 4 or Fewer | 966 | 504 | 311 | 150 | 6,639 | 3,607 | 2,148 | 883 | 12.29 | |
| 5 to 9 | 494 | 276 | 144 | 74 | 5,240 | 2,810 | 1,593 | 838 | 15.96 | |
| 10 to 19 | 301 | 177 | 96 | 27 | 4,212 | 2,254 | 1,573 | 385 | 16.42 | |
| 20 to 49 | 268 | 159 | 80 | 30 | 7,400 | 3,829 | 2,485 | 1,087 | 14.32 | |
| 50 to 99 | 101 | 57 | 35 | Q | 5,830 | 2,805 | 2,481 | Q | 15.72 | |
| 100 to 249 | 61 | 38 | 19 | Q | 5,461 | 3,215 | 1,874 | Q | 18.58 | |
| 250 or More | 27 | 19 | 7 | Q | 8,750 | 6,605 | 1,752 | Q | 23.17 | |
| Ownership and Occupancy | | | | | | | | | | |
| Nongovernment Owned | 1,881 | 1,051 | 566 | 264 | 32,539 | 18,491 | 10,261 | 3,787 | 8.85 | |
| Owner Occupied | 1,368 | 789 | 403 | 176 | 24,146 | 14,193 | 7,239 | 2,715 | 10.10 | |
| Single Establishment | 1,192 | 674 | 357 | 161 | 17,742 | 10,255 | 5,418 | 2,069 | 10.57 | |
| Multiple Establishment | 176 | 115 | 45 | Q | 6,404 | 3,938 | 1,821 | Q | 18.61 | |
| Nonowner Occupied | 513 | 262 | 163 | 87 | 8,393 | 4,298 | 3,022 | 1,072 | 14.50 | |
| Single Establishment | 336 | 178 | 98 | 60 | 4,350 | 2,450 | 1,331 | 569 | 17.84 | |
| Multiple Establishment | 140 | 69 | 48 | Q | 3,611 | 1,730 | 1,463 | Q | 23.56 | |
| Vacant | 38 | Q | Q | Q | 431 | Q | Q | Q | 33.62 | |
| Government Owned | 336 | 179 | 125 | 32 | 10,993 | 6,634 | 3,646 | 713 | 13.86 | |
| Federal | 28 | 22 | Q | Q | Q | Q | Q | Q | 52.15 | |
| State | 85 | 49 | 33 | Q | 3,011 | 1,903 | 908 | Q | 26.45 | |
| Local | 222 | 108 | 87 | 27 | 6,234 | 3,141 | 2,613 | 481 | 16.01 | |
| Percent Vacant at Least Three Months | | | | | | | | | | |
| Months | | | | | | | | | | |
| 0 | 1,818 | 1,022 | 546 | 250 | 30,238 | 17,479 | 9,684 | 3,075 | 8.56 | |
| 1 to 50 | 192 | 97 | 70 | 25 | 9,084 | 5,500 | 2,682 | 902 | 17.84 | |
| 51 to 99 | 54 | 28 | 19 | Q | 2,288 | 1,351 | 635 | Q | 35.32 | |
| 100 | 153 | 84 | 55 | Q | 1,922 | 796 | 905 | Q | 23.24 | |
| Months in Use Out of Past 12 Months | | | | | | | | | | |
| 0 to 8 | 165 | 84 | 57 | Q | 2,298 | 1,002 | 790 | Q | 22.90 | |
| 9 to 11 | 135 | 71 | 48 | Q | 2,571 | 1,029 | 1,433 | Q | 23.16 | |
| 12 | 1,917 | 1,075 | 585 | 257 | 38,662 | 23,094 | 11,684 | 3,884 | 8.25 | |
| LOCATION | | | | | | | | | | |
| Census Region | | | | | | | | | | |
| Northeast | 446 | 231 | 169 | 46 | 10,052 | 5,344 | 3,572 | 1,135 | 14.50 | |
| Midwest | 482 | 281 | 118 | Q | 11,040 | 6,580 | 3,292 | 1,168 | 17.13 | |
| South | 942 | 530 | 281 | 131 | 15,179 | 8,925 | 4,735 | 1,519 | 12.73 | |
| West | 347 | 188 | 123 | 36 | 7,262 | 4,276 | 2,308 | 677 | 15.66 | |
| Census Division | | | | | | | | | | |
| Northeast | | | | | | | | | | |
| New England | 109 | 58 | 38 | Q | 2,069 | 1,100 | 800 | Q | 23.76 | |
| Middle Atlantic | 336 | 173 | 130 | 33 | 7,983 | 4,244 | 2,772 | Q | 14.30 | |
| Midwest | | | | | | | | | | |
| East North Central | 336 | 198 | 71 | Q | 7,277 | 4,234 | 2,222 | Q | 22.15 | |
| West North Central | 146 | 84 | 47 | Q | 3,762 | 2,346 | 1,069 | Q | 25.53 | |
| South | | | | | | | | | | |
| South Atlantic | 394 | 199 | 138 | 56 | 7,244 | 3,693 | 2,691 | 860 | 19.62 | |
| East South Central | 200 | 122 | 51 | Q | 2,880 | 1,976 | 711 | Q | 33.99 | |
| West South Central | 349 | 209 | 92 | 48 | 5,056 | 3,257 | 1,333 | 466 | 20.72 | |
| West | | | | | | | | | | |
| Mountain | 167 | 93 | 65 | Q | 3,412 | 2,258 | 1,022 | Q | 27.27 | |
| Pacific | 180 | 95 | 58 | 26 | 3,849 | 2,018 | 1,286 | 546 | 22.48 | |

See footnote at end of table.

ELECTRICITY

Table 31. Season of Peak Electricity Demand for Number of Buildings and Floorspace (Continued)

| Building Characteristics | Number of Buildings (thousand) | | | | Total Floorspace (million square feet) | | | | RSE Rate Factor | |
|--|--------------------------------|-----------------------------------|--------|-------------------|--|-----------------------------------|--------|-------------------|-----------------------|--|
| | Demand-Metered Buildings | Season of Peak Electricity Demand | | | Demand-Metered Buildings | Season of Peak Electricity Demand | | | | |
| | | Summer | Winter | Summer and Winter | | Summer | Winter | Summer and Winter | | |
| PEAK DEMAND PERIOD | D-B | D-W | D-SW | D-SW | D-B | D-B | D-W | D-SW | RSE Rate Factor | |
| Metropolitan Status | | | | | | | | | | |
| Metropolitan | 1,630 | 926 | 492 | 212 | 36,288 | 21,610 | 11,050 | 3,629 | 8.59 | |
| Nonmetropolitan | 586 | 305 | 198 | 83 | 7,244 | 3,515 | 2,858 | 871 | 18.59 | |
| Climate Zone: 45-Year Average | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | |
| Over 7,000 HDD | 145 | 71 | 62 | Q | 3,340 | 1,920 | 1,170 | Q | 22.45 | |
| 5,500-7,000 HDD | 635 | 348 | 183 | 105 | 13,034 | 7,201 | 4,424 | 1,408 | 17.00 | |
| 4,000-5,499 HDD | 410 | 216 | 151 | 43 | 10,682 | 6,213 | 3,417 | 1,052 | 16.54 | |
| Under 4,000 HDD | 454 | 251 | 143 | 60 | 8,353 | 4,858 | 2,347 | 1,148 | 21.88 | |
| 2,000 CDD or More and -- | | | | | | | | | | |
| Under 4,000 HDD | 572 | 345 | 151 | 77 | 8,123 | 4,933 | 2,550 | 640 | 21.20 | |
| ENERGY SOURCES AND END USES* | | | | | | | | | | |
| Energy Sources | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Electricity | 2,217 | 1,231 | 690 | 295 | 43,532 | 25,125 | 13,907 | 4,500 | 8.21 | |
| Natural Gas | 1,311 | 810 | 316 | 185 | 29,768 | 18,518 | 7,987 | 3,263 | 10.20 | |
| Fuel Oil | 305 | 162 | 106 | 37 | 9,536 | 5,891 | 2,968 | 676 | 10.01 | |
| District Heat | 76 | 48 | 21 | Q | 5,529 | 4,247 | 925 | Q | 41.59 | |
| District Chilled Water | 17 | Q | Q | Q | 1,462 | Q | Q | Q | 72.10 | |
| Propane | 173 | 109 | 44 | Q | 3,398 | 1,934 | 1,220 | Q | 29.73 | |
| Other | 55 | 20 | 27 | Q | 1,188 | 439 | 652 | Q | 37.12 | |
| Energy End Uses | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Heated Buildings | 2,035 | 1,144 | 637 | 255 | 41,371 | 24,245 | 12,970 | 4,156 | 8.10 | |
| Air-Conditioned Buildings | 1,770 | 1,072 | 490 | 208 | 37,841 | 23,392 | 10,943 | 3,506 | 8.43 | |
| Buildings with Water Heating | 1,787 | 1,027 | 537 | 223 | 38,953 | 23,029 | 12,119 | 3,804 | 8.10 | |
| Buildings with Cooking | 553 | 340 | 149 | 63 | 18,464 | 11,242 | 5,585 | 1,637 | 13.70 | |
| Buildings with Manufacturing | 120 | 58 | 49 | Q | 4,497 | 2,863 | 1,270 | Q | 21.30 | |
| Energy End-Use Combinations | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | 446 | 290 | 110 | 47 | 16,371 | 10,393 | 4,542 | 1,435 | 16.11 | |
| With Water Heating, Without Cooking | 1,059 | 626 | 313 | 119 | 18,173 | 11,034 | 5,484 | 1,655 | 10.88 | |
| Without Water Heating or Cooking | 193 | 113 | 54 | 26 | 2,263 | 1,338 | 674 | 251 | 22.68 | |
| Without Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | 62 | 25 | 32 | Q | 1,407 | 479 | 828 | Q | 29.46 | |
| With Water Heating, Without Cooking | 150 | 46 | 73 | 31 | 2,209 | 643 | 1,084 | Q | 20.47 | |
| Without Water Heating or Cooking | 115 | 38 | 55 | Q | 768 | 285 | 303 | Q | 26.58 | |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 97 | 40 | 39 | Q | 1,185 | 293 | 710 | Q | 33.91 | |
| All Other Combinations | 93 | 53 | 16 | Q | 1,156 | 661 | 282 | Q | 29.16 | |

See footnote at end of table.

Table 31. Season of Peak Electricity Demand for Number of Buildings and Floorspace (Continued)

| Building Characteristics | Number of Buildings (thousand) | | | | Total Floorspace (million square feet) | | | | RSE Row Factor | |
|--|--------------------------------|-----------------------------------|--------|-------------------|--|-----------------------------------|--------|-------------------|----------------|--|
| | Demand-Metered Buildings | Season of Peak Electricity Demand | | | Demand-Metered Buildings | Season of Peak Electricity Demand | | | | |
| | | Summer | Winter | Summer and Winter | | Summer | Winter | Summer and Winter | | |
| RSE Column Factor: | 0.612 | 0.698 | 1.019 | 1.500 | 0.618 | 0.646 | 0.927 | 2.052 | | |
| Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 720 | 322 | 320 | 78 | 13,674 | 6,373 | 6,190 | 1,112 | 11.65 | |
| Main | 533 | 227 | 254 | 53 | 10,049 | 4,302 | 5,021 | 727 | 13.65 | |
| With Secondary | 55 | 28 | 23 | Q | 1,603 | 760 | 651 | Q | 31.72 | |
| Natural Gas Only | 34 | 19 | Q | Q | 858 | 363 | Q | Q | 42.85 | |
| Other Energy Sources or Combinations | 19 | Q | Q | Q | 720 | Q | Q | Q | 50.07 | |
| With No Secondary | 478 | 198 | 230 | 49 | 8,447 | 3,542 | 4,370 | 535 | 14.13 | |
| Secondary | 187 | 95 | 67 | Q | 3,625 | 2,071 | 1,169 | Q | 19.93 | |
| Other Excluding Electricity | 1,315 | 822 | 317 | 176 | 27,696 | 17,872 | 6,780 | 3,044 | 0.95 | |
| Building Not Heated | 181 | 87 | 53 | 41 | 2,162 | 880 | 938 | 344 | 21.26 | |
| Main Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 533 | 227 | 254 | 53 | 10,049 | 4,302 | 5,021 | 727 | 13.65 | |
| Natural Gas | 1,095 | 668 | 251 | 156 | 21,618 | 13,585 | 5,530 | 2,503 | 11.45 | |
| Fuel Oil | 237 | 128 | 81 | 29 | 3,775 | 1,890 | 1,412 | 472 | 21.87 | |
| District Heat | 72 | 46 | 20 | Q | 4,987 | 3,859 | 772 | Q | 20.75 | |
| Propane | 74 | 52 | Q | Q | 614 | 423 | Q | Q | 51.81 | |
| Other | 33 | Q | Q | Q | 563 | Q | Q | Q | 48.20 | |
| Air-Conditioning Energy Source | | | | | | | | | | |
| Electricity | 1,705 | 1,027 | 476 | 201 | 34,836 | 21,396 | 10,311 | 3,129 | 6.73 | |
| Other Excluding Electricity | 66 | 45 | Q | Q | 3,005 | 1,997 | Q | Q | 31.50 | |
| Air-Conditioning Not Performed | 446 | 159 | 200 | 87 | 5,691 | 1,733 | 2,964 | 994 | 15.16 | |
| Water-Heating Energy Source | | | | | | | | | | |
| Electricity | 863 | 439 | 320 | 104 | 15,716 | 8,671 | 5,555 | 1,490 | 10.22 | |
| Other Excluding Electricity | 923 | 588 | 217 | 119 | 23,236 | 14,358 | 6,564 | 2,314 | 10.80 | |
| Water Heating Not Performed | 430 | 204 | 153 | 72 | 4,580 | 2,096 | 1,788 | 695 | 15.60 | |
| Cooking Energy Source | | | | | | | | | | |
| Electricity | 239 | 145 | 78 | Q | 9,034 | 5,210 | 3,070 | Q | 16.95 | |
| Other Excluding Electricity | 314 | 195 | 71 | 47 | 9,431 | 6,033 | 2,515 | 883 | 17.10 | |
| Cooking Not Performed | 1,664 | 891 | 541 | 232 | 25,068 | 13,883 | 8,322 | 2,863 | 9.54 | |
| Manufacturing Energy Source | | | | | | | | | | |
| Electricity | 90 | 44 | 39 | Q | 3,560 | 2,366 | 951 | Q | 25.82 | |
| Other Excluding Electricity | 30 | 14 | Q | Q | 937 | 497 | Q | Q | 37.81 | |
| Manufacturing Not Performed | 2,097 | 1,173 | 641 | 283 | 39,035 | 22,262 | 12,638 | 4,135 | 8.22 | |
| HEATING AND COOLING | | | | | | | | | | |
| Percent Heated | | | | | | | | | | |
| Not Heated | 187 | 88 | 59 | 41 | 2,231 | 900 | 981 | 350 | 20.70 | |
| 1 to 50 | 327 | 176 | 96 | 55 | 6,107 | 3,286 | 2,070 | 750 | 17.21 | |
| 51 to 99 | 272 | 164 | 81 | 27 | 6,378 | 3,998 | 1,984 | 396 | 16.99 | |
| 100 | 1,430 | 803 | 455 | 173 | 28,816 | 16,941 | 8,872 | 3,004 | 9.60 | |
| Percent Cooled | | | | | | | | | | |
| Not Cooled | 446 | 159 | 200 | 87 | 5,691 | 1,733 | 2,964 | 994 | 16.19 | |
| 1 to 50 | 565 | 322 | 171 | 71 | 12,102 | 6,311 | 4,314 | 1,476 | 12.15 | |
| 51 to 99 | 361 | 240 | 90 | 31 | 10,209 | 6,561 | 2,795 | Q | 14.00 | |
| 100 | 844 | 510 | 229 | 105 | 15,531 | 10,521 | 3,834 | 1,176 | 12.72 | |

See footnote at end of table.

ELECTRICITY

Table 31. Season of Peak Electricity Demand for Number of Buildings and Floorspace (Continued)

| Building Characteristics | Number of Buildings (thousand) | | | | Total Floorspace (million square feet) | | | | RSE Row Factor | |
|--|--------------------------------|-----------------------------------|--------|-------------------|--|-----------------------------------|--------|-------------------|----------------|--|
| | Demand-Metered Buildings | Season of Peak Electricity Demand | | | Demand-Metered Buildings | Season of Peak Electricity Demand | | | | |
| | | Summer | Winter | Summer and Winter | | Summer | Winter | Summer and Winter | | |
| RSE Column Factor | 0.005 | 0.025 | 1.000 | 1.500 | 0.027 | 0.944 | 0.971 | 2.093 | | |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | |
| Present in Building | 194 | 121 | 63 | 10 | 13,844 | 9,374 | 3,939 | 531 | 13.82 | |
| Not Present | 2,023 | 1,110 | 627 | 286 | 29,688 | 15,751 | 9,969 | 3,968 | 6.52 | |
| LIGHTING AND REFRIGERATION | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | |
| Not Lit | 28 | Q | Q | Q | 416 | Q | Q | Q | 36.56 | |
| 1 to 50 | 496 | 256 | 164 | 76 | 6,714 | 3,199 | 2,606 | 908 | 15.51 | |
| 51 to 99 | 493 | 302 | 139 | 52 | 12,254 | 7,545 | 3,556 | 1,154 | 12.33 | |
| 100 | 1,200 | 667 | 372 | 161 | 24,148 | 14,279 | 7,505 | 2,364 | 9.43 | |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | | |
| Commercial | | | | | | | | | | |
| Refrigeration Units | 592 | 378 | 145 | 69 | 19,032 | 11,924 | 5,598 | 1,510 | 11.42 | |
| Freezers | 471 | 299 | 114 | 58 | 17,318 | 10,902 | 5,104 | 1,312 | 11.70 | |
| Residential | | | | | | | | | | |
| Refrigerators | 1,320 | 751 | 404 | 165 | 31,880 | 19,009 | 9,999 | 2,872 | 9.24 | |
| Freezers | 343 | 211 | 90 | 42 | 9,409 | 5,804 | 2,600 | 1,006 | 15.42 | |
| Ice-Making Machines | 539 | 332 | 153 | 54 | 18,531 | 12,048 | 5,101 | 1,383 | 11.23 | |
| Refrigerated Vending Machines | 950 | 558 | 289 | 103 | 30,229 | 18,139 | 9,393 | 2,697 | 9.12 | |
| Water Coolers | 1,064 | 620 | 325 | 119 | 32,822 | 19,571 | 10,076 | 3,176 | 8.81 | |
| Other | 35 | 21 | Q | Q | 1,149 | 662 | Q | Q | 27.81 | |
| ENERGY MANAGEMENT | | | | | | | | | | |
| Occupant Control | | | | | | | | | | |
| Any Control of Heating | 1,160 | 653 | 358 | 148 | 17,469 | 10,167 | 5,106 | 2,196 | 9.76 | |
| With Thermostats | 1,026 | 572 | 324 | 130 | 16,064 | 9,289 | 4,747 | 2,029 | 9.60 | |
| Any Control of Cooling | 1,037 | 627 | 288 | 122 | 17,866 | 10,765 | 5,281 | 1,820 | 10.26 | |
| With Thermostats | 925 | 563 | 259 | 103 | 16,343 | 9,913 | 4,746 | 1,684 | 10.46 | |
| Reduced Use During Off-Hours | | | | | | | | | | |
| Heating Only | 334 | 115 | 152 | 66 | 4,318 | 1,478 | 2,104 | 737 | 14.48 | |
| Cooling Only | 155 | 84 | 45 | Q | 3,023 | 1,614 | 816 | Q | 20.80 | |
| Heating and Cooling | 1,275 | 778 | 349 | 148 | 27,698 | 17,281 | 8,159 | 2,258 | 10.13 | |
| Computerized Energy Management and Control System | | | | | | | | | | |
| Present in Building | 184 | 112 | 55 | Q | 11,750 | 7,987 | 3,006 | Q | 16.30 | |
| Controls Heating and Cooling | 175 | 109 | 50 | Q | 11,259 | 7,839 | 2,792 | Q | 16.46 | |
| Controls Lighting | 39 | 21 | 14 | Q | 3,115 | 2,040 | 844 | Q | 37.14 | |
| Controls Other | 27 | 12 | 12 | Q | 2,050 | 1,272 | 489 | Q | 34.84 | |
| ELECTRICITY DEMAND | | | | | | | | | | |
| Annual Consumption (kilowatthours) | | | | | | | | | | |
| 10,000 or Less | 281 | 107 | 106 | 68 | 1,612 | 672 | 527 | 412 | 21.23 | |
| 10,001 to 25,000 | 375 | 186 | 116 | 73 | 2,505 | 1,103 | 949 | 453 | 16.88 | |
| 25,001 to 50,000 | 394 | 225 | 118 | 51 | 3,099 | 1,693 | 948 | 457 | 13.75 | |
| 50,001 to 100,000 | 390 | 244 | 111 | 35 | 4,592 | 2,523 | 1,193 | 876 | 16.95 | |
| 100,001 to 500,000 | 557 | 335 | 169 | 53 | 10,441 | 5,281 | 4,210 | 950 | 10.71 | |
| 500,001 to 1,000,000 | 104 | 58 | 36 | Q | 4,927 | 2,643 | 1,804 | Q | 15.70 | |
| 1,000,001 to 2,000,000 | 57 | 34 | 20 | Q | 4,211 | 2,237 | 1,610 | Q | 22.27 | |
| 2,000,001 to 5,000,000 | 43 | 30 | 10 | Q | 5,098 | 3,554 | 1,265 | Q | 21.84 | |
| Over 5,000,000 | 16 | 12 | 4 | Q | 7,047 | 5,418 | 1,400 | Q | 27.62 | |

See footnotes at end of table.

Table 31. Season of Peak Electricity Demand for Number of Buildings and Floorspace (Continued)

| Building Characteristics | Number of Buildings (thousand) | | | | Total Floorspace (million square feet) | | | | RSE Row Factor | |
|--|-----------------------------------|-----------------------------------|--------|-------------------|---|-----------------------------------|--------|-------------------|----------------|--|
| | Demand-Metered Buildings | Season of Peak Electricity Demand | | | Demand-Metered Buildings | Season of Peak Electricity Demand | | | | |
| | | Summer | Winter | Summer and Winter | | Summer | Winter | Summer and Winter | | |
| RSE Column Factor: | 0.808 | 0.825 | 1.038 | 1.599 | 0.827 | 0.844 | 0.971 | 2.093 | | |
| Peak Electricity Demand (kilowatts) | | | | | | | | | | |
| 10 or Less | 398 | 157 | 135 | 106 | 2,130 | 688 | 798 | 643 | 19.80 | |
| 11 to 25 | 638 | 369 | 186 | 83 | 4,225 | 2,396 | 1,236 | 593 | 14.66 | |
| 26 to 50 | 484 | 298 | 139 | 47 | 5,758 | 3,102 | 1,597 | 1,059 | 15.90 | |
| 51 to 100 | 316 | 183 | 102 | 31 | 5,294 | 2,779 | 2,042 | 473 | 14.56 | |
| 101 to 250 | 225 | 128 | 79 | Q | 7,249 | 3,772 | 2,855 | Q | 13.23 | |
| 251 to 1,000 | 128 | 76 | 43 | 9 | 10,287 | 5,867 | 3,613 | 808 | 15.55 | |
| Over 1,000 | 26 | 19 | 6 | Q | 8,589 | 6,522 | 1,766 | Q | 30.22 | |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

NC No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 32. Electricity Consumption and Conditional Energy Intensity by Season of Peak Demand

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Row Factor | |
|--|--|-----------------------------------|--------|-------------------|---|-----------------------------------|--------|-------------------|----------------------|--|
| | Demand-Metered Buildings | Season of Peak Electricity Demand | | | Demand-Metered Buildings | Season of Peak Electricity Demand | | | | |
| | | Summer | Winter | Summer and Winter | | Summer | Winter | Summer and Winter | | |
| RSE Column Factor: | 0.003 | 1.198 | 1.091 | 1.500 | 0.623 | 0.762 | 0.920 | 1.500 | | |
| All Buildings | 661 | 447 | 173 | 41 | 15.2 | 17.8 | 12.5 | 9.1 | 9.22 | |
| Building Floorspace (Square Feet) | | | | | | | | | | |
| 1,001 to 5,000 | 60 | 37 | 17 | 6 | 21.5 | 23.7 | 19.8 | 16.1 | 12.91 | |
| 5,001 to 10,000 | 53 | 39 | 9 | 5 | 15.3 | 19.3 | 10.2 | 9.1 | 18.89 | |
| 10,001 to 25,000 | 89 | 48 | 34 | 7 | 13.3 | 13.4 | 14.3 | 9.6 | 18.19 | |
| 25,001 to 50,000 | 79 | 54 | 18 | 7 | 12.4 | 14.7 | 8.7 | 11.3 | 18.39 | |
| 50,001 to 100,000 | 108 | 81 | 23 | Q | 16.1 | 20.6 | 10.2 | Q | 19.59 | |
| 100,001 to 200,000 | 94 | 56 | 32 | Q | 13.9 | 16.3 | 12.8 | Q | 20.02 | |
| 200,001 to 500,000 | 95 | 61 | Q | Q | 18.6 | 21.6 | 15.2 | Q | 28.18 | |
| Over 500,000 | 85 | 72 | 11 | Q | 14.7 | 17.3 | 10.5 | Q | 25.51 | |
| Year Constructed | | | | | | | | | | |
| 1899 or Before | 5 | 3 | Q | Q | 5.4 | 6.4 | Q | Q | 30.57 | |
| 1900 to 1919 | 16 | 11 | Q | Q | 7.7 | 8.1 | Q | Q | 28.30 | |
| 1920 to 1945 | 50 | 35 | 8 | 8 | 9.1 | 11.7 | 4.5 | 9.5 | 16.11 | |
| 1946 to 1959 | 88 | 66 | 19 | 4 | 12.9 | 16.7 | 9.3 | Q | 22.63 | |
| 1960 to 1969 | 141 | 97 | 33 | 11 | 16.0 | 20.3 | 11.5 | 9.5 | 18.33 | |
| 1970 to 1979 | 175 | 117 | 48 | 10 | 17.7 | 18.6 | 16.5 | 13.8 | 12.48 | |
| 1980 to 1983 | 73 | 44 | 25 | 4 | 21.8 | 25.3 | 19.4 | 12.4 | 24.87 | |
| 1984 to 1986 | 72 | 45 | 26 | Q | 20.0 | 20.8 | 19.6 | Q | 27.01 | |
| 1987 to 1989 | 39 | 29 | 7 | Q | 16.9 | 21.3 | 10.0 | Q | 26.87 | |
| BUILDING USE | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | |
| Assembly | 42 | 27 | 7 | 7 | 10.2 | 11.2 | 8.9 | Q | 25.00 | |
| Education | 52 | 29 | 21 | Q | 8.5 | 9.7 | 7.6 | Q | 12.36 | |
| Food Sales | 28 | 23 | Q | Q | 42.0 | 41.4 | Q | Q | 24.92 | |
| Food Service | 25 | 19 | Q | Q | 27.3 | 30.6 | Q | Q | 19.58 | |
| Health Care | 39 | 32 | Q | Q | 24.0 | 23.5 | Q | Q | 19.76 | |
| Lodging | 35 | 18 | 15 | Q | 12.2 | 12.8 | 12.1 | Q | 20.01 | |
| Mercantile and Service | 119 | 74 | 30 | 15 | 14.9 | 16.1 | 13.1 | 13.6 | 14.94 | |
| Office | 193 | 124 | 63 | 7 | 20.8 | 19.9 | 24.9 | 12.2 | 14.71 | |
| Parking Garage | 4 | Q | Q | Q | 5.1 | Q | Q | Q | 38.15 | |
| Public Order and Safety | 7 | 5 | Q | NC | 13.9 | 17.2 | Q | NC | 42.78 | |
| Warehouse | 58 | 40 | 15 | 3 | 9.4 | 14.5 | 6.0 | 3.1 | 28.03 | |
| Other | Q | Q | Q | Q | 52.3 | 62.4 | Q | Q | 35.09 | |
| Vacant | 9 | 6 | 3 | Q | 5.9 | 7.8 | 4.4 | Q | 29.41 | |
| Weekly Operating Hours | | | | | | | | | | |
| 39 or Fewer | 13 | 7 | 5 | 1 | 5.3 | 6.2 | 5.1 | 2.1 | 19.80 | |
| 40 to 48 | 105 | 75 | 26 | 4 | 11.0 | 13.4 | 8.7 | 4.5 | 15.32 | |
| 49 to 60 | 114 | 72 | 35 | 7 | 12.4 | 13.8 | 11.5 | 7.6 | 15.96 | |
| 61 to 84 | 120 | 78 | 35 | 7 | 14.8 | 16.9 | 14.3 | Q | 15.50 | |
| 85 to 167 | 118 | 80 | 26 | 12 | 17.4 | 19.9 | 12.9 | 16.3 | 16.97 | |
| 168 (Open Continuously) | 192 | 136 | 46 | 10 | 25.7 | 29.6 | 19.2 | 20.1 | 21.98 | |
| Weekly Operating Schedule | | | | | | | | | | |
| Open 1 to 23 Hours | | | | | | | | | | |
| Monday through Friday | 162 | 113 | 42 | 8 | 12.5 | 15.6 | 9.1 | 6.9 | 12.82 | |
| Monday through Saturday | 91 | 55 | 30 | 6 | 11.6 | 13.0 | 11.8 | 5.7 | 15.30 | |
| Monday through Sunday | 148 | 94 | 40 | 15 | 16.9 | 17.8 | 18.1 | Q | 14.53 | |
| Open 24 Hours (Continuously) | 192 | 136 | 46 | 10 | 25.7 | 29.6 | 19.2 | 20.1 | 21.98 | |
| Other | 69 | 50 | 16 | 3 | 10.5 | 13.2 | 7.2 | 4.7 | 21.25 | |

See footnote at end of table.

Table 32. Electricity Consumption and Conditional Energy Intensity by Season of Peak Demand (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | PSE Row Factor | |
|---|--|-----------------------------------|--------|-------------------|---|-----------------------------------|--------|-------------------|-------------------|--|
| | Demand-Metered Buildings | Season of Peak Electricity Demand | | | Demand-Metered Buildings | Season of Peak Electricity Demand | | | | |
| | | Summer | Winter | Summer and Winter | | Summer | Winter | Summer and Winter | | |
| PSE Column Factor | 0.503 | 1.108 | 1.891 | 1.560 | 0.623 | 0.782 | 0.928 | 1.500 | | |
| Workers | | | | | | | | | | |
| 4 or Fewer | 56 | 32 | 19 | 6 | 8.5 | 8.8 | 8.7 | 6.6 | 13.06 | |
| 5 to 9 | 54 | 34 | 15 | 5 | 10.3 | 12.2 | 9.3 | 5.8 | 10.79 | |
| 10 to 19 | 51 | 31 | 15 | 5 | 12.1 | 13.6 | 9.8 | 12.4 | 10.79 | |
| 20 to 49 | 95 | 63 | 26 | 6 | 12.8 | 16.5 | 10.5 | Q | 10.21 | |
| 50 to 99 | 84 | 50 | 24 | Q | 14.5 | 17.8 | 9.7 | Q | 17.88 | |
| 100 to 249 | 121 | 86 | 31 | Q | 22.1 | 26.7 | 16.3 | Q | 21.68 | |
| 250 or More | 200 | 151 | 44 | Q | 22.9 | 22.9 | 24.8 | Q | 20.75 | |
| Ownership and Occupancy | | | | | | | | | | |
| Nongovernment Owned | 493 | 317 | 140 | 36 | 15.2 | 17.1 | 13.7 | 9.5 | 10.18 | |
| Owner Occupied | 375 | 246 | 103 | 27 | 15.5 | 17.3 | 14.2 | 9.8 | 11.90 | |
| Single Establishment | 282 | 187 | 74 | 20 | 15.9 | 18.3 | 13.7 | 9.7 | 13.60 | |
| Multiple Establishment | 93 | 58 | 28 | Q | 14.5 | 14.8 | 15.4 | Q | 12.38 | |
| Nonowner Occupied | 118 | 71 | 38 | 9 | 14.1 | 16.6 | 12.4 | 8.8 | 16.48 | |
| Single Establishment | 58 | 42 | 14 | 2 | 13.3 | 17.3 | 10.4 | 2.7 | 22.52 | |
| Multiple Establishment | 59 | 28 | 23 | Q | 16.3 | 16.1 | 15.8 | Q | 16.68 | |
| Vacant | 2 | Q | Q | Q | 4.0 | Q | Q | Q | 39.38 | |
| Government Owned | 168 | 130 | 33 | 5 | 15.3 | 19.6 | 9.1 | 7.0 | 17.23 | |
| Federal | 34 | Q | Q | Q | 19.2 | 19.6 | Q | Q | 22.04 | |
| State | 62 | 53 | 8 | Q | 20.7 | 27.8 | 9.1 | Q | 32.23 | |
| Local | 72 | 46 | 23 | 4 | 11.6 | 14.6 | 8.7 | 7.4 | 20.33 | |
| Percent Vacant at Least Three Months | | | | | | | | | | |
| 0 | 493 | 338 | 127 | 28 | 16.3 | 19.3 | 13.1 | 9.2 | 10.88 | |
| 1 to 50 | 137 | 90 | 36 | 11 | 15.1 | 16.4 | 13.3 | 12.4 | 16.88 | |
| 51 to 99 | 17 | Q | 4 | Q | 7.5 | 9.0 | 7.0 | Q | 32.03 | |
| 100 | 14 | 7 | 6 | Q | 7.5 | 9.0 | 6.8 | Q | 23.00 | |
| Months in Use Out of Past 12 Months | | | | | | | | | | |
| 0 to 8 | 17 | 9 | 6 | Q | 7.6 | 9.1 | 8.0 | Q | 29.62 | |
| 9 to 11 | 17 | 8 | 7 | Q | 6.5 | 8.1 | 5.2 | Q | 16.86 | |
| 12 | 627 | 430 | 159 | 38 | 16.2 | 18.6 | 13.6 | 9.8 | 9.81 | |
| LOCATION | | | | | | | | | | |
| Census Region | | | | | | | | | | |
| Northeast | 143 | 101 | 31 | 10 | 14.2 | 19.0 | 8.8 | Q | 17.08 | |
| Midwest | 151 | 98 | 46 | 7 | 13.7 | 14.9 | 13.9 | 6.4 | 16.94 | |
| South | 239 | 166 | 57 | 15 | 15.7 | 18.6 | 12.1 | 10.1 | 12.48 | |
| West | 129 | 82 | 39 | 8 | 17.7 | 19.2 | 16.7 | 11.7 | 18.68 | |
| Census Division | | | | | | | | | | |
| Northeast | | | | | | | | | | |
| New England | 27 | 19 | 7 | Q | 13.2 | 17.3 | 8.8 | Q | 19.38 | |
| Middle Atlantic | 116 | 82 | 24 | 9 | 14.5 | 19.4 | 8.8 | Q | 20.11 | |
| Midwest | | | | | | | | | | |
| East North Central | 99 | 62 | 31 | Q | 13.6 | 14.7 | 14.0 | 7.1 | 17.22 | |
| West North Central | 52 | 36 | 15 | Q | 13.8 | 15.2 | Q | Q | 17.22 | |
| South | | | | | | | | | | |
| South Atlantic | 109 | 71 | 31 | 7 | 15.0 | 19.1 | 11.5 | 8.2 | 16.36 | |
| East South Central | 54 | 45 | 7 | Q | 18.6 | 22.6 | Q | Q | 30.87 | |
| West South Central | 76 | 51 | 19 | 7 | 15.1 | 15.5 | 14.3 | 14.4 | 20.42 | |
| West | | | | | | | | | | |
| Mountain | 46 | 28 | Q | Q | 13.4 | 12.2 | 16.0 | Q | 32.27 | |
| Pacific | 83 | 55 | 22 | 6 | 21.5 | 27.0 | 17.3 | 11.2 | 24.22 | |

See footnote at end of table.

ELECTRICITY

Table 32. Electricity Consumption and Conditional Energy Intensity by Season of Peak Demand (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Row Factor | |
|--|--|-----------------------------------|--------|-------------------|---|-----------------------------------|--------|-------------------|----------------|--|
| | Demand-Metered Buildings | Season of Peak Electricity Demand | | | Demand-Metered Buildings | Season of Peak Electricity Demand | | | | |
| | | Summer | Winter | Summer and Winter | | Summer | Winter | Summer and Winter | | |
| RSE Column Factor | 0.803 | 1.106 | 1.091 | 1.560 | 0.825 | 0.782 | 0.929 | 1.500 | | |
| Metropolitan Status | | | | | | | | | | |
| Metropolitan | 568 | 387 | 145 | 36 | 15.7 | 17.9 | 13.1 | 9.8 | 10.33 | |
| Nonmetropolitan | 93 | 60 | 28 | 5 | 12.9 | 17.0 | 9.8 | 6.3 | 18.22 | |
| Climate Zone: 45-Year Average | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | |
| Over 7,000 HDD | 52 | 35 | 15 | Q | 15.6 | 18.1 | 13.1 | Q | 26.65 | |
| 5,500-7,000 HDD | 171 | 106 | 53 | 11 | 13.1 | 14.7 | 12.0 | 8.1 | 20.06 | |
| 4,000-5,499 HDD | 170 | 119 | 43 | 8 | 15.9 | 19.2 | 12.6 | Q | 14.60 | |
| Under 4,000 HDD | 147 | 108 | 29 | 10 | 17.6 | 22.2 | 12.5 | 8.9 | 19.01 | |
| 2,000 CDD or More and -- | | | | | | | | | | |
| Under 4,000 HDD | 121 | 79 | 32 | 10 | 14.9 | 16.0 | 12.7 | 15.1 | 17.77 | |
| ENERGY SOURCES AND END USES* | | | | | | | | | | |
| Energy Sources (Solely or In Combination) | | | | | | | | | | |
| Electricity | 661 | 447 | 173 | 41 | 15.2 | 17.8 | 12.5 | 9.1 | 9.40 | |
| Natural Gas | 428 | 311 | 90 | 28 | 14.4 | 16.8 | 11.3 | 8.5 | 12.78 | |
| Fuel Oil | 164 | 118 | 42 | Q | 17.2 | 20.1 | 14.1 | 6.0 | 26.04 | |
| District Heat | 116 | 98 | 13 | Q | 21.0 | 23.1 | 13.6 | Q | 29.63 | |
| District Chilled Water | 40 | Q | Q | Q | 27.5 | Q | Q | Q | 45.82 | |
| Propane | 51 | 34 | 14 | Q | 15.3 | 17.7 | 11.5 | Q | 24.82 | |
| Other | 11 | Q | 3 | Q | 9.1 | 16.4 | 4.9 | Q | 41.10 | |
| Energy End Uses (Solely or In Combination) | | | | | | | | | | |
| Heated Buildings | 637 | 429 | 169 | 39 | 15.4 | 17.7 | 13.1 | 9.3 | 9.26 | |
| Air-Conditioned Buildings | 614 | 417 | 159 | 38 | 16.2 | 17.8 | 14.5 | 10.9 | 9.18 | |
| Buildings with Water Heating | 624 | 425 | 161 | 38 | 16.0 | 18.5 | 13.3 | 9.9 | 9.82 | |
| Buildings with Cooking | 338 | 238 | 81 | 19 | 18.3 | 21.2 | 14.4 | Q | 14.08 | |
| Buildings with Manufacturing | 76 | 58 | 15 | Q | 16.8 | 20.3 | 11.7 | Q | 24.99 | |
| Energy End-Use Combinations | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | 309 | 220 | 73 | 17 | 18.9 | 21.2 | 16.0 | Q | 14.27 | |
| With Water Heating, Without Cooking | 262 | 168 | 76 | 18 | 14.4 | 15.3 | 13.8 | 10.7 | 11.37 | |
| Without Water Heating or Cooking | 21 | 12 | 7 | 2 | 9.2 | 9.3 | 9.9 | 6.5 | 22.44 | |
| Without Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | Q | Q | 5 | Q | 11.3 | Q | 5.9 | Q | 24.54 | |
| With Water Heating, Without Cooking | 20 | Q | 6 | 1 | 9.2 | Q | 5.5 | 2.5 | 26.91 | |
| Without Water Heating or Cooking | 5 | 3 | 2 | Q | 7.2 | 10.3 | 6.8 | Q | 36.18 | |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 5 | 3 | 2 | Q | 4.0 | 9.4 | 2.2 | Q | 40.14 | |
| All Other Combinations | 23 | 17 | 4 | Q | 19.9 | 25.6 | 13.3 | Q | 37.87 | |

See footnote at end of table.

Table 32. Electricity Consumption and Conditional Energy Intensity by Season of Peak Demand (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Row Factor | |
|--|--|-----------------------------------|--------|-------------------|---|-----------------------------------|--------|-------------------|----------------|--|
| | Demand-Metered Buildings | Season of Peak Electricity Demand | | | Demand-Metered Buildings | Season of Peak Electricity Demand | | | | |
| | | Summer | Winter | Summer and Winter | | Summer | Winter | Summer and Winter | | |
| RSE Column Factor | 0.000 | 1.000 | 1.000 | 1.000 | 0.000 | 10.702 | 0.000 | 1.000 | | |
| Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 250 | 125 | 108 | 17 | 18.3 | 19.6 | 17.4 | 15.5 | 10.11 | |
| Main | 193 | 89 | 94 | 10 | 19.2 | 20.6 | 18.8 | 14.1 | 11.63 | |
| With Secondary | 29 | 19 | 9 | Q | 18.2 | 24.4 | 14.4 | Q | 23.99 | |
| Natural Gas Only | 14 | Q | Q | Q | 15.9 | 26.2 | Q | Q | 36.65 | |
| Other Energy Sources or Combinations | 15 | Q | Q | Q | 20.7 | Q | Q | Q | 32.83 | |
| With No Secondary | 164 | 70 | 85 | 9 | 19.4 | 19.8 | 19.4 | 16.8 | 13.00 | |
| Secondary | 57 | 37 | 13 | Q | 15.7 | 17.7 | 11.4 | Q | 29.47 | |
| Other Excluding Electricity | 387 | 304 | 62 | 22 | 14.0 | 17.0 | 9.1 | 7.1 | 14.00 | |
| Building Not Heated | 24 | 18 | 4 | Q | 11.2 | 20.4 | 4.2 | Q | 37.37 | |
| Main Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 193 | 89 | 94 | 10 | 19.2 | 20.6 | 18.8 | 14.1 | 11.63 | |
| Natural Gas | 295 | 215 | 59 | 21 | 13.6 | 15.8 | 10.6 | 8.5 | 14.99 | |
| Fuel Oil | 45 | 34 | 9 | 2 | 11.8 | 17.8 | 6.5 | 3.6 | 29.64 | |
| District Heat | 90 | 75 | 9 | Q | 18.1 | 19.5 | 12.0 | Q | 23.95 | |
| Propane | Q | Q | Q | Q | 19.8 | 25.4 | Q | Q | 51.74 | |
| Other | 3 | Q | Q | Q | 6.0 | Q | Q | Q | 61.39 | |
| Air-Conditioning Energy Source | | | | | | | | | | |
| Electricity | 570 | 386 | 148 | 36 | 16.4 | 18.0 | 14.4 | 11.5 | 9.63 | |
| Other Excluding Electricity | 44 | 32 | Q | Q | 14.7 | 15.9 | Q | Q | 21.07 | |
| Air-Conditioning Not Performed | 47 | 30 | 15 | 3 | 8.3 | 17.2 | 4.9 | 2.9 | 22.00 | |
| Water-Heating Energy Source | | | | | | | | | | |
| Electricity | 276 | 165 | 91 | 20 | 17.6 | 19.0 | 16.4 | 13.5 | 10.95 | |
| Other Excluding Electricity | 348 | 260 | 70 | 18 | 15.0 | 18.1 | 10.6 | 7.6 | 13.96 | |
| Water Heating Not Performed | 37 | 22 | 12 | 3 | 8.2 | 10.4 | 6.9 | 4.6 | 18.41 | |
| Cooking Energy Source | | | | | | | | | | |
| Electricity | 153 | 107 | 41 | Q | 17.0 | 20.5 | 13.2 | Q | 12.60 | |
| Other Excluding Electricity | 185 | 131 | 40 | 13 | 19.6 | 21.8 | 15.9 | 14.9 | 20.66 | |
| Cooking Not Performed | 324 | 209 | 93 | 22 | 12.9 | 15.0 | 11.1 | 7.7 | 10.73 | |
| Manufacturing Energy Source | | | | | | | | | | |
| Electricity | 56 | 44 | 10 | Q | 15.6 | 18.5 | 10.6 | Q | 28.34 | |
| Other Excluding Electricity | 20 | Q | Q | Q | 21.4 | 29.3 | Q | Q | 45.12 | |
| Manufacturing Not Performed | 586 | 389 | 158 | 38 | 15.0 | 17.5 | 12.5 | 9.3 | 9.73 | |
| HEATING AND COOLING | | | | | | | | | | |
| Percent Heated | | | | | | | | | | |
| Not Heated | 24 | 18 | 4 | Q | 10.9 | 20.0 | 4.2 | Q | 36.83 | |
| 1 to 50 | 46 | 29 | 13 | 4 | 7.6 | 8.9 | 6.4 | 5.0 | 22.65 | |
| 51 to 99 | 118 | 80 | 31 | 7 | 18.5 | 20.0 | 15.8 | 16.5 | 15.64 | |
| 100 | 473 | 320 | 125 | 29 | 16.4 | 18.9 | 14.1 | 9.5 | 11.21 | |
| Percent Cooled | | | | | | | | | | |
| Not Cooled | 47 | 30 | 15 | 3 | 8.3 | 17.2 | 4.9 | 2.9 | 22.00 | |
| 1 to 50 | 108 | 68 | 32 | 8 | 8.9 | 10.8 | 7.3 | 5.3 | 12.64 | |
| 51 to 99 | 194 | 134 | 50 | 10 | 19.0 | 20.4 | 17.9 | Q | 12.95 | |
| 100 | 313 | 215 | 77 | 21 | 20.1 | 20.5 | 20.1 | 17.6 | 13.73 | |

See footnote at end of table.

ELECTRICITY

Table 32. Electricity Consumption and Conditional Energy Intensity by Season of Peak Demand (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | RSE Row Factor | |
|--|---|-----------------------------------|--------|-------------------|--|-----------------------------------|--------|-------------------|----------------|--|
| | Demand-Metered Buildings | Season of Peak Electricity Demand | | | Demand-Metered Buildings | Season of Peak Electricity Demand | | | | |
| | | Summer | Winter | Summer and Winter | | Summer | Winter | Summer and Winter | | |
| RSE Column Factor | 0.756 | 0.980 | 1.193 | 1.576 | 0.609 | 0.749 | 0.952 | 1.395 | | |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | |
| Present in Building | 306 | 222 | 77 | 7 | 22.1 | 23.7 | 19.6 | 12.7 | 15.03 | |
| Not Present | 355 | 225 | 96 | 34 | 12.0 | 14.3 | 9.6 | 8.6 | 9.40 | |
| LIGHTING AND REFRIGERATION | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | |
| Not Lit | 1 | Q | Q | Q | 3.5 | Q | Q | Q | 49.64 | |
| 1 to 50 | 44 | 21 | 20 | 3 | 6.5 | 6.6 | 7.6 | 3.1 | 17.98 | |
| 51 to 99 | 188 | 133 | 47 | 8 | 15.4 | 17.7 | 13.3 | Q | 14.54 | |
| 100 | 428 | 292 | 105 | 30 | 17.7 | 20.5 | 14.0 | 12.9 | 10.88 | |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | | |
| Commercial | | | | | | | | | | |
| Refrigeration Units | 367 | 262 | 84 | 20 | 19.3 | 22.0 | 15.0 | 13.5 | 10.87 | |
| Freezers | 352 | 251 | 82 | 20 | 20.3 | 23.0 | 16.1 | 15.0 | 12.20 | |
| Residential | | | | | | | | | | |
| Refrigerators | 494 | 341 | 129 | 23 | 15.5 | 17.9 | 12.9 | 8.2 | 11.25 | |
| Freezers | 152 | 115 | 30 | 7 | 16.2 | 19.8 | 11.5 | 7.3 | 12.67 | |
| Ice-Making Machines | 385 | 272 | 90 | 24 | 20.8 | 22.6 | 17.6 | 17.1 | 22.39 | |
| Refrigerated Vending Machines | 521 | 353 | 137 | Q | 17.2 | 19.5 | 14.6 | Q | 20.64 | |
| Water Coolers | 533 | 368 | 137 | 27 | 16.2 | 18.8 | 13.6 | 8.5 | 10.27 | |
| Other | 52 | 36 | 12 | Q | 44.9 | 54.5 | 32.8 | Q | 15.83 | |
| ENERGY MANAGEMENT | | | | | | | | | | |
| Occupant Control | | | | | | | | | | |
| Any Control of Heating | 242 | 153 | 73 | Q | 13.9 | 15.1 | 14.2 | Q | 18.05 | |
| With Thermostats | 224 | 141 | 68 | Q | 14.0 | 15.2 | 14.3 | Q | 20.06 | |
| Any Control of Cooling | 255 | 164 | 74 | Q | 14.2 | 15.2 | 14.1 | Q | 20.81 | |
| With Thermostats | 235 | 151 | 69 | 14 | 14.4 | 15.3 | 14.6 | 8.4 | 20.77 | |
| Reduced Use During Off-Hours | | | | | | | | | | |
| Heating Only | 46 | 28 | 15 | 3 | 10.7 | 19.1 | 7.3 | 3.6 | 14.92 | |
| Cooling Only | 51 | 36 | 13 | 2 | 16.9 | 22.2 | 15.6 | 4.1 | 11.59 | |
| Heating and Cooling | 393 | 263 | 110 | 20 | 14.2 | 15.2 | 13.5 | Q | 14.25 | |
| Computerized Energy Management and Control System | | | | | | | | | | |
| Present in Building | 221 | 162 | 50 | 10 | 18.8 | 20.2 | 16.5 | 13.5 | 9.78 | |
| Controls Heating and Cooling | 213 | 157 | 49 | Q | 19.0 | 20.1 | 17.5 | Q | 14.22 | |
| Controls Lighting | 53 | 40 | 11 | Q | 16.9 | 19.6 | 12.6 | Q | 19.61 | |
| Controls Other | 41 | 28 | 9 | Q | 20.0 | 22.0 | 17.4 | Q | 14.03 | |
| ELECTRICITY DEMAND | | | | | | | | | | |
| Annual Consumption (kilowatthours) | | | | | | | | | | |
| 10,000 or Less | 1 | 1 | 1 | Q | .9 | .9 | 1.0 | Q | 22.15 | |
| 10,001 to 25,000 | 6 | 3 | 2 | 1 | 2.5 | 2.9 | 2.0 | 2.7 | 17.53 | |
| 25,001 to 50,000 | 14 | 8 | 4 | 2 | 4.6 | 4.9 | 4.5 | 3.9 | 12.84 | |
| 50,001 to 100,000 | 28 | 18 | 8 | 3 | 6.2 | 7.0 | 6.7 | Q | 14.77 | |
| 100,001 to 500,000 | 120 | 73 | 37 | 10 | 11.5 | 13.7 | 8.7 | 11.0 | 14.37 | |
| 500,001 to 1,000,000 | 72 | 40 | 25 | Q | 14.7 | 15.3 | 14.0 | Q | 16.37 | |
| 1,000,001 to 2,000,000 | 78 | 47 | 26 | 5 | 18.6 | 21.1 | 16.4 | 13.4 | 13.05 | |
| 2,000,001 to 5,000,000 | 133 | 96 | 29 | Q | 26.1 | 27.1 | 22.8 | Q | 21.73 | |
| Over 5,000,000 | 207 | 161 | Q | Q | 29.4 | 29.7 | Q | Q | 10.45 | |

See footnotes at end of table.

Table 32. Electricity Consumption and Conditional Energy Intensity by Season of Peak Demand (Continued)

| Building Characteristics | Total Electricity Consumption (billion kWh) | | | | Electricity Energy Intensity (kWh/sq. ft.) | | | | Source | |
|--|--|-----------------------------------|--------|-------------------|---|-----------------------------------|--------|-------------------|--------|--|
| | Demand-Metered Buildings | Season of Peak Electricity Demand | | | Demand-Metered Buildings | Season of Peak Electricity Demand | | | | |
| | | Summer | Winter | Summer and Winter | | Summer | Winter | Summer and Winter | | |
| Peak Electricity Demand (kilowatts) | | | | | | | | | | |
| 10 or Less | 5 | Q | 2 | Q | 2.1 | Q | 1.9 | Q | 1.9 | |
| 11 to 25 | 24 | Q | Q | 3 | 5.7 | Q | Q | 4.9 | 4.9 | |
| 26 to 50 | 42 | 27 | 10 | 4 | 7.2 | 8.8 | 6.5 | 3.7 | 3.7 | |
| 51 to 100 | 54 | 32 | 17 | 5 | 10.2 | 11.5 | 8.4 | 10.7 | 10.7 | |
| 101 to 250 | 100 | 56 | 36 | 8 | 13.8 | 14.9 | 12.5 | 13.2 | 13.2 | |
| 251 to 1,000 | 196 | 129 | 53 | 15 | 19.1 | 22.0 | 14.6 | Q | Q | |
| Over 1,000 | 241 | 187 | 49 | 5 | 28.1 | 28.6 | 27.9 | 16.5 | 16.5 | |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

NC No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

ELECTRICITY

**Table 33. Peak Electricity Demand Category for Number of Buildings
(Thousand)**

| Building Characteristics | Demand-Metered Buildings | 10 kW or Less | 11 to 25 kW | 26 to 50 kW | 51 to 100 kW | 101 to 250 kW | 251 to 1,000 kW | Over 1,000 kW | RSE Row Factor |
|--|--------------------------|---------------|-------------|-------------|--------------|---------------|-----------------|---------------|----------------|
| RSE Column Factor: | 0.568 | 0.903 | 1.001 | 0.991 | 1.026 | 1.020 | 1.089 | 1.732 | |
| All Buildings | 2,217 | 398 | 638 | 484 | 316 | 225 | 128 | 26 | 9.30 |
| Building Floorspace (Square Feet) | | | | | | | | | |
| 1,001 to 5,000 | 999 | 298 | 390 | 195 | 92 | Q | Q | NC | 12.31 |
| 5,001 to 10,000 | 468 | 62 | 150 | 144 | 73 | 31 | Q | Q | 16.64 |
| 10,001 to 25,000 | 406 | 25 | 79 | 108 | 93 | 83 | 18 | Q | 16.75 |
| 25,001 to 50,000 | 176 | 11 | Q | 25 | 42 | 57 | 28 | Q | 17.52 |
| 50,001 to 100,000 | 94 | 2 | Q | Q | 13 | 26 | 36 | Q | 16.12 |
| 100,001 to 200,000 | 49 | 0 | Q | Q | Q | 8 | 28 | 4 | 16.62 |
| 200,001 to 500,000 | 17 | NC | NC | Q | Q | Q | 6 | 9 | 20.34 |
| Over 500,000 | 7 | NC | NC | Q | Q | Q | Q | 5 | 25.16 |
| Year Constructed | | | | | | | | | |
| 1899 or Before | 65 | 12 | Q | Q | Q | Q | Q | Q | 33.79 |
| 1900 to 1919 | 101 | 32 | 40 | 15 | Q | Q | Q | Q | 29.35 |
| 1920 to 1945 | 284 | 71 | 88 | 65 | 31 | 17 | 11 | 1 | 20.72 |
| 1946 to 1959 | 400 | 91 | 137 | 80 | 44 | 31 | 12 | 5 | 18.99 |
| 1960 to 1969 | 420 | 74 | 125 | 76 | 59 | 57 | 25 | 5 | 15.75 |
| 1970 to 1979 | 514 | 76 | 121 | 128 | 88 | 56 | 39 | 6 | 14.76 |
| 1980 to 1983 | 189 | 23 | 48 | 44 | 33 | 24 | 15 | 3 | 24.18 |
| 1984 to 1986 | 143 | 16 | 34 | 35 | 19 | 25 | 13 | 2 | 23.40 |
| 1987 to 1989 | 100 | 5 | 26 | 26 | 22 | Q | 9 | Q | 30.15 |
| BUILDING USE | | | | | | | | | |
| Principal Building Activity | | | | | | | | | |
| Assembly | 263 | 42 | 65 | 67 | 52 | 26 | 10 | Q | 21.41 |
| Education | 167 | 18 | 17 | 38 | 37 | 34 | 20 | 2 | 21.82 |
| Food Sales | 69 | Q | Q | Q | Q | Q | Q | Q | 35.08 |
| Food Service | 164 | Q | 37 | 59 | 42 | Q | Q | NC | 23.90 |
| Health Care | 35 | Q | Q | Q | Q | Q | 4 | 2 | 26.05 |
| Lodging | 94 | Q | Q | 19 | 13 | 16 | 10 | Q | 23.80 |
| Mercantile and Service | 604 | 123 | 221 | 131 | 70 | 35 | 22 | 3 | 15.88 |
| Office | 384 | 54 | 106 | 68 | 51 | 58 | 38 | 9 | 15.35 |
| Parking Garage | 27 | Q | Q | Q | Q | Q | Q | Q | 54.60 |
| Public Order and Safety | 19 | NC | Q | Q | Q | Q | Q | Q | 56.33 |
| Warehouse | 274 | 93 | 79 | 46 | 27 | 19 | 6 | Q | 22.70 |
| Other | 37 | Q | Q | Q | Q | Q | Q | Q | 69.72 |
| Vacant | 81 | 32 | 26 | Q | Q | Q | Q | Q | 29.39 |
| Weekly Operating Hours | | | | | | | | | |
| 39 or Fewer | 236 | 81 | 65 | 45 | 28 | 12 | Q | Q | 21.48 |
| 40 to 48 | 561 | 104 | 174 | 122 | 83 | 52 | 22 | Q | 14.37 |
| 49 to 60 | 505 | 99 | 178 | 112 | 50 | 40 | 21 | 6 | 14.79 |
| 61 to 84 | 355 | 51 | 106 | 65 | 54 | 47 | 26 | 5 | 18.06 |
| 85 to 167 | 316 | 37 | 58 | 95 | 63 | 32 | 25 | Q | 18.55 |
| 168 (Open Continuously) | 244 | 26 | 57 | 44 | 38 | 43 | 30 | 6 | 18.55 |
| Weekly Operating Schedule | | | | | | | | | |
| Open 1 to 23 Hours | | | | | | | | | |
| Monday through Friday | 643 | 100 | 182 | 136 | 96 | 82 | 39 | 8 | 14.31 |
| Monday through Saturday | 517 | 117 | 200 | 104 | 45 | 30 | 17 | 4 | 16.88 |
| Monday through Sunday | 458 | 51 | 109 | 124 | 96 | 44 | 28 | 6 | 18.16 |
| Open 24 Hours (Continuously) | 244 | 26 | 57 | 44 | 38 | 43 | 30 | 6 | 18.55 |
| Other | 355 | 104 | 90 | 75 | 42 | 27 | 14 | 2 | 19.77 |
| Workers | | | | | | | | | |
| 4 or Fewer | 966 | 297 | 371 | 173 | 91 | 25 | Q | Q | 14.44 |
| 5 to 9 | 494 | 71 | 178 | 149 | 59 | 28 | Q | Q | 14.68 |
| 10 to 19 | 301 | 19 | 64 | 106 | 68 | 35 | 9 | Q | 19.82 |
| 20 to 49 | 268 | 9 | Q | 49 | 82 | 84 | 22 | Q | 16.28 |
| 50 to 99 | 101 | 2 | Q | Q | 14 | 40 | 33 | Q | 19.43 |
| 100 to 249 | 61 | 0 | NC | Q | Q | 13 | 38 | Q | 17.63 |
| 250 or More | 27 | NC | Q | Q | Q | Q | 9 | 16 | 19.19 |

See footnote at end of table.

Table 33. Peak Electricity Demand Category for Number of Buildings (Continued)
 (Thousand)

| Building Characteristics | Demand-Metered Buildings | 10 kW or Less | 11 to 25 kW | 26 to 50 kW | 51 to 100 kW | 101 to 250 kW | 251 to 1,000 kW | Over 1,000 kW | RSE Row Factor |
|---|--------------------------|---------------|-------------|-------------|--------------|---------------|-----------------|---------------|----------------|
| RSE Column Factor | 0.566 | 0.903 | 1.001 | 0.991 | 1.026 | 1.020 | 1.069 | 1.732 | |
| Ownership and Occupancy | | | | | | | | | |
| Nongovernment Owned | 1,881 | 346 | 575 | 423 | 258 | 170 | 93 | 16 | 10.31 |
| Owner Occupied | 1,368 | 223 | 419 | 326 | 192 | 126 | 68 | 13 | 11.39 |
| Single Establishment | 1,192 | 197 | 375 | 280 | 171 | 107 | 53 | 9 | 12.67 |
| Multiple Establishment | 176 | 26 | 44 | 46 | 21 | 19 | 15 | 4 | 20.88 |
| Nonowner Occupied | 513 | 122 | 156 | 97 | 67 | 44 | 25 | 3 | 16.73 |
| Single Establishment | 336 | 77 | 118 | 64 | 45 | 22 | 10 | Q | 19.08 |
| Multiple Establishment | 140 | 28 | Q | Q | Q | 20 | 15 | 2 | 24.71 |
| Vacant | 38 | Q | Q | Q | Q | Q | Q | Q | 35.90 |
| Government Owned | 336 | 53 | 63 | 62 | 58 | 55 | 35 | 10 | 16.76 |
| Federal | 28 | Q | Q | Q | Q | Q | Q | Q | 61.33 |
| State | 85 | 15 | Q | 18 | Q | 18 | 9 | 2 | 29.03 |
| Local | 222 | 36 | 43 | 39 | 41 | 37 | 23 | Q | 19.67 |
| Percent Vacant at Least Three Months | | | | | | | | | |
| 0 | 1,818 | 306 | 547 | 414 | 255 | 186 | 92 | 19 | 10.05 |
| 1 to 50 | 192 | 38 | 43 | 27 | 28 | 24 | 26 | 7 | 19.81 |
| 51 to 99 | 54 | 10 | Q | Q | Q | Q | Q | Q | 38.71 |
| 100 | 153 | 45 | 35 | 33 | 26 | Q | 7 | Q | 25.64 |
| Months in Use Out of Past 12 Months | | | | | | | | | |
| 0 to 8 | 165 | 56 | 38 | Q | 22 | Q | Q | Q | 26.03 |
| 9 to 11 | 135 | 20 | 32 | 36 | 25 | 16 | 7 | Q | 27.08 |
| 12 | 1,917 | 322 | 568 | 416 | 269 | 200 | 114 | 26 | 9.19 |
| LOCATION | | | | | | | | | |
| Census Region | | | | | | | | | |
| Northeast | 446 | 82 | 148 | 97 | 60 | 31 | 22 | 5 | 17.50 |
| Midwest | 482 | 103 | 136 | 97 | 55 | 50 | 35 | 7 | 18.01 |
| South | 942 | 166 | 256 | 223 | 137 | 102 | 49 | 9 | 15.45 |
| West | 347 | 47 | 99 | 67 | 65 | 43 | 22 | 5 | 21.14 |
| Census Division | | | | | | | | | |
| Northeast | | | | | | | | | |
| New England | 109 | 23 | 33 | Q | 19 | 9 | Q | Q | 28.80 |
| Middle Atlantic | 336 | 59 | 115 | 78 | 41 | 22 | 17 | 4 | 19.82 |
| Midwest | | | | | | | | | |
| East North Central | 336 | 81 | 106 | 53 | 34 | 32 | 23 | 6 | 23.68 |
| West North Central | 146 | 23 | 29 | 43 | 21 | 18 | 11 | 1 | 26.30 |
| South | | | | | | | | | |
| South Atlantic | 394 | 63 | 120 | 82 | 58 | 40 | 24 | Q | 23.75 |
| East South Central | 200 | 44 | 43 | 42 | 35 | 20 | 13 | Q | 30.52 |
| West South Central | 349 | 58 | 92 | 99 | 44 | 41 | 12 | Q | 26.24 |
| West | | | | | | | | | |
| Mountain | 167 | 19 | 55 | 40 | 32 | 12 | 7 | Q | 28.59 |
| Pacific | 180 | 28 | 44 | 27 | 32 | 31 | 15 | 3 | 26.47 |
| Metropolitan Status | | | | | | | | | |
| Metropolitan | 1,630 | 281 | 464 | 341 | 232 | 178 | 109 | 25 | 10.94 |
| Nonmetropolitan | 586 | 118 | 174 | 143 | 84 | 47 | 19 | Q | 18.22 |
| Climate Zone: 45-Year Average | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | |
| Over 7,000 HDD | 145 | 15 | Q | 47 | 24 | 18 | 11 | Q | 27.85 |
| 5,500-7,000 HDD | 635 | 124 | 206 | 136 | 72 | 58 | 32 | 6 | 18.31 |
| 4,000-5,499 HDD | 410 | 77 | 115 | 78 | 65 | 35 | 32 | 8 | 19.78 |
| Under 4,000 HDD | 454 | 76 | 138 | 78 | 75 | 53 | 29 | 5 | 23.28 |
| 2,000 CDD or More and -- | | | | | | | | | |
| Under 4,000 HDD | 572 | 106 | 150 | 146 | 80 | 62 | 24 | Q | 23.33 |

See footnote at end of table.

Table 33. Peak Electricity Demand Category for Number of Buildings (Continued)
(Thousand)

| Building Characteristics | Demand-Metered Buildings | 10 kW or Less | 11 to 25 kW | 26 to 50 kW | 51 to 100 kW | 101 to 250 kW | 251 to 1,000 kW | Over 1,000 kW | PERCENTAGE |
|--|--------------------------|---------------|--------------|--------------|--------------|---------------|-----------------|---------------|---------------|
| PEB Column Totals | 4,600 | 6,609 | 1,601 | 1,003 | 1,001 | 1,000 | 1,000 | 1,000 | 100.00 |
| ENERGY SOURCES AND END USES* | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | |
| Electricity | 2,217 | 398 | 638 | 484 | 316 | 225 | 128 | 26 | 49.50 |
| Natural Gas | 1,311 | 210 | 362 | 317 | 198 | 130 | 78 | 15 | 29.59 |
| Fuel Oil | 305 | 54 | 104 | 55 | 39 | 20 | 23 | 9 | 20.40 |
| District Heat | 76 | Q | Q | Q | Q | Q | Q | 5 | 31.38 |
| District Chilled Water | 17 | Q | Q | Q | Q | Q | Q | Q | 10.63 |
| Propane | 173 | 29 | 57 | 35 | 25 | 16 | 8 | Q | 38.21 |
| Other | 55 | Q | Q | Q | Q | Q | Q | Q | 20.31 |
| Energy End Uses (Solely or in Combination) | | | | | | | | | |
| Heated Buildings | 2,035 | 324 | 585 | 461 | 300 | 216 | 124 | 25 | 81.48 |
| Air-Conditioned Buildings | 1,770 | 209 | 516 | 426 | 265 | 208 | 121 | 25 | 9.70 |
| Buildings with Water Heating | 1,787 | 224 | 503 | 428 | 282 | 204 | 120 | 26 | 38.45 |
| Buildings with Cooking | 553 | 29 | 125 | 144 | 98 | 87 | 53 | 16 | 14.43 |
| Buildings with Manufacturing | 120 | 16 | 21 | 27 | Q | 14 | 16 | Q | 24.02 |
| Energy End-Use Combinations | | | | | | | | | |
| Heated Buildings | | | | | | | | | |
| With Air Conditioning | 446 | 13 | 92 | 121 | 82 | 74 | 49 | 15 | 15.60 |
| With Water Heating and Cooking | 1,059 | 134 | 329 | 253 | 161 | 109 | 64 | 8 | 12.00 |
| With Water Heating, Without Cooking | 193 | 46 | 74 | 37 | 16 | 17 | Q | Q | 25.37 |
| Without Water Heating or Cooking | 62 | Q | Q | Q | Q | Q | Q | Q | 33.84 |
| Without Air Conditioning | 150 | 54 | 39 | 27 | 21 | Q | Q | Q | 22.68 |
| With Water Heating and Cooking | 115 | 65 | Q | Q | Q | Q | Q | Q | 26.46 |
| Buildings without Heating, Air Conditioning, Water Heating, or Cooking | 97 | 56 | 25 | Q | Q | Q | Q | Q | 29.88 |
| All Other Combinations | 93 | 21 | 31 | Q | Q | Q | Q | Q | 33.39 |
| Space-Heating Energy Source | | | | | | | | | |
| Electricity | | | | | | | | | |
| Electricity | 720 | 69 | 183 | 176 | 128 | 98 | 56 | 9 | 13.89 |
| Main | 533 | 39 | 127 | 132 | 106 | 80 | 43 | 6 | 10.00 |
| With Secondary | 55 | Q | Q | Q | Q | Q | 6 | Q | 21.38 |
| Natural Gas Only | 34 | Q | Q | Q | Q | Q | Q | Q | 13.75 |
| Other Energy Sources or Combinations | 19 | Q | Q | Q | Q | Q | Q | Q | 34.16 |
| With No Secondary | 478 | 32 | 115 | 120 | 95 | 73 | 37 | 5 | 75.77 |
| Secondary | 187 | 30 | 56 | 44 | 22 | 18 | 13 | Q | 23.08 |
| Other Excluding Electricity | 1,315 | 255 | 402 | 284 | 171 | 119 | 68 | 16 | 11.00 |
| Building Not Heated | 181 | 74 | 53 | 24 | 16 | 9 | Q | Q | 20.12 |
| Main Space-Heating Energy Source | | | | | | | | | |
| Electricity | | | | | | | | | |
| Electricity | 533 | 39 | 127 | 132 | 106 | 80 | 43 | 6 | 13.89 |
| Natural Gas | 1,095 | 196 | 323 | 257 | 149 | 107 | 54 | 10 | 11.37 |
| Fuel Oil | 237 | 45 | 90 | 49 | 34 | 9 | 9 | 2 | 27.15 |
| District Heat | 72 | 9 | Q | 9 | 9 | Q | 18 | 4 | 20.00 |
| Propane | 74 | Q | Q | Q | Q | Q | Q | Q | 14.11 |
| Other | 33 | Q | Q | Q | Q | Q | Q | NC | 66.24 |

See footnote at end of table.

Table 33. Peak Electricity Demand Category for Number of Buildings (Continued)
(Thousand)

| Building Characteristics | Demand-Metered Buildings | 10 kW or Less | 11 to 25 kW | 26 to 50 kW | 51 to 100 kW | 101 to 250 kW | 251 to 1,000 kW | Over 1,000 kW | RSE Row Factor |
|--|--------------------------|---------------|-------------|-------------|--------------|---------------|-----------------|---------------|----------------|
| RSE Column Factor: | 0.006 | 0.003 | 1.001 | 0.001 | 1.020 | 1.020 | 1.000 | 1.750 | |
| Air-Conditioning Energy Source | | | | | | | | | |
| Electricity | 1,705 | 207 | 499 | 409 | 250 | 201 | 115 | 23 | 10.01 |
| Other Excluding Electricity | 66 | 2 | Q | Q | 15 | Q | 6 | 3 | 28.41 |
| Air-Conditioning Not Performed | 446 | 189 | 122 | 59 | 51 | 17 | 7 | Q | 16.84 |
| Water-Heating Energy Source | | | | | | | | | |
| Electricity | 863 | 107 | 253 | 216 | 123 | 95 | 58 | 11 | 12.66 |
| Other Excluding Electricity | 923 | 118 | 250 | 212 | 159 | 109 | 61 | 15 | 11.28 |
| Water Heating Not Performed | 430 | 174 | 136 | 56 | 34 | 22 | 8 | Q | 21.46 |
| Cooking Energy Source | | | | | | | | | |
| Electricity | 239 | 9 | 48 | 60 | 41 | 44 | 29 | 9 | 19.36 |
| Other Excluding Electricity | 314 | 20 | 77 | 84 | 58 | 43 | 25 | 7 | 18.25 |
| Cooking Not Performed | 1,664 | 370 | 513 | 340 | 218 | 138 | 75 | 10 | 10.92 |
| Manufacturing Energy Source | | | | | | | | | |
| Electricity | 90 | 11 | Q | 23 | Q | Q | 14 | Q | 25.77 |
| Other Excluding Electricity | 30 | 4 | Q | Q | Q | Q | Q | Q | 43.92 |
| Manufacturing Not Performed | 2,097 | 383 | 617 | 457 | 296 | 212 | 112 | 21 | 9.35 |
| HEATING AND COOLING | | | | | | | | | |
| Percent Heated | | | | | | | | | |
| Not Heated | 187 | 77 | 55 | 24 | 17 | 9 | Q | Q | 26.40 |
| 1 to 50 | 327 | 91 | 108 | 57 | 40 | 22 | 7 | Q | 20.34 |
| 51 to 99 | 272 | 17 | 76 | 72 | 51 | 29 | 21 | 6 | 18.89 |
| 100 | 1,430 | 213 | 399 | 331 | 209 | 166 | 96 | 16 | 10.25 |
| Percent Cooled | | | | | | | | | |
| Not Cooled | 446 | 189 | 122 | 59 | 51 | 17 | 7 | Q | 19.64 |
| 1 to 50 | 565 | 100 | 195 | 129 | 62 | 51 | 24 | 3 | 14.12 |
| 51 to 99 | 361 | 22 | 84 | 99 | 65 | 45 | 36 | 11 | 17.19 |
| 100 | 844 | 87 | 237 | 198 | 138 | 112 | 61 | 12 | 13.54 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | |
| Present in Building | 194 | 1 | Q | 26 | 30 | 44 | 51 | 17 | 18.28 |
| Not Present | 2,023 | 397 | 614 | 459 | 286 | 181 | 77 | 9 | 10.89 |
| LIGHTING AND REFRIGERATION | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | |
| Not Lit | 28 | Q | Q | Q | Q | Q | Q | Q | 40.39 |
| 1 to 50 | 496 | 143 | 177 | 87 | 55 | 23 | 10 | Q | 18.45 |
| 51 to 99 | 493 | 61 | 123 | 120 | 85 | 61 | 35 | 8 | 14.00 |
| 100 | 1,200 | 178 | 330 | 275 | 176 | 142 | 82 | 17 | 11.20 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | |
| Commercial | | | | | | | | | |
| Refrigeration Units | 592 | 28 | 115 | 172 | 117 | 83 | 59 | 18 | 13.70 |
| Freezers | 471 | 20 | 76 | 128 | 99 | 74 | 55 | 18 | 14.00 |
| Residential | | | | | | | | | |
| Refrigerators | 1,320 | 173 | 390 | 292 | 192 | 157 | 94 | 21 | 10.19 |
| Freezers | 343 | 27 | 92 | 95 | 58 | 44 | 21 | 6 | 17.49 |
| Ice-Making Machines | 539 | 23 | 94 | 145 | 103 | 91 | 62 | 21 | 13.71 |
| Refrigerated Vending Machines | 950 | 75 | 205 | 224 | 165 | 155 | 102 | 24 | 10.00 |
| Water Coolers | 1,064 | 99 | 245 | 256 | 170 | 162 | 107 | 25 | 10.42 |
| Other | 35 | Q | Q | Q | Q | Q | 9 | Q | 33.35 |

See footnote at end of table.

ELECTRICITY

Table 33. Peak Electricity Demand Category for Number of Buildings (Continued)
 (Thousand)

| Building Characteristics | Demand-Metered Buildings | 10 kW or Less | 11 to 25 kW | 26 to 50 kW | 51 to 100 kW | 101 to 250 kW | 251 to 1,000 kW | Over 1,000 kW | RSE Row Factor |
|--|--------------------------|---------------|-------------|-------------|--------------|---------------|-----------------|---------------|----------------|
| ENERGY MANAGEMENT | | | | | | | | | |
| Occupant Control | | | | | | | | | |
| Any Control of Heating | 1,160 | 200 | 373 | 278 | 151 | 98 | 54 | 6 | 11.09 |
| With Thermostats | 1,026 | 172 | 331 | 244 | 132 | 92 | 50 | 6 | 11.88 |
| Any Control of Cooling | 1,037 | 140 | 331 | 259 | 131 | 111 | 58 | 7 | 11.44 |
| With Thermostats | 925 | 120 | 298 | 230 | 119 | 101 | 52 | 7 | 12.14 |
| Reduced Use During Off-Hours | | | | | | | | | |
| Heating Only | 334 | 109 | 93 | 55 | 50 | 18 | 8 | Q | 17.09 |
| Cooling Only | 155 | 24 | 39 | 40 | 24 | 19 | 7 | Q | 23.75 |
| Heating and Cooling | 1,275 | 164 | 397 | 320 | 179 | 123 | 74 | 17 | 11.19 |
| Computerized Energy Management and Control System | | | | | | | | | |
| Present in Building | 184 | 3 | 21 | 35 | 33 | 41 | 37 | 13 | 18.23 |
| Controls Heating and Cooling | 175 | 3 | 20 | 33 | 31 | 40 | 35 | 13 | 18.63 |
| Controls Lighting | 39 | 0 | Q | Q | Q | Q | 9 | 3 | 24.95 |
| Controls Other | 27 | NC | NC | Q | Q | Q | 6 | 2 | 31.79 |
| ELECTRICITY DEMAND | | | | | | | | | |
| Annual Consumption (kilowatthours) | | | | | | | | | |
| 10,000 or Less | 281 | 225 | 40 | Q | Q | NC | NC | NC | 18.81 |
| 10,001 to 25,000 | 375 | 138 | 203 | 29 | Q | Q | Q | Q | 18.04 |
| 25,001 to 50,000 | 394 | 33 | 259 | 84 | 16 | Q | Q | Q | 18.18 |
| 50,001 to 100,000 | 390 | 2 | 123 | 204 | 53 | Q | Q | NC | 18.00 |
| 100,001 to 500,000 | 557 | 0 | Q | 155 | 235 | 142 | 12 | Q | 18.72 |
| 500,001 to 1,000,000 | 104 | NC | Q | NC | Q | 66 | 33 | Q | 17.19 |
| 1,000,001 to 2,000,000 | 57 | NC | NC | NC | Q | 49 | Q | Q | 20.01 |
| 2,000,001 to 5,000,000 | 43 | NC | NC | NC | Q | 33 | 9 | Q | 20.69 |
| Over 5,000,000 | 16 | NC | NC | NC | NC | Q | Q | 16 | 18.30 |
| Season of Peak Electricity Demand | | | | | | | | | |
| Summer Peaking | 1,231 | 157 | 369 | 298 | 183 | 128 | 76 | 19 | 19.54 |
| Winter Peaking | 690 | 135 | 186 | 139 | 102 | 79 | 43 | 6 | 18.40 |
| Summer and Winter Peaking | 295 | 106 | 83 | 47 | 31 | Q | 9 | Q | 23.21 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

NC No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

**Table 34. Peak Electricity Demand Category for Floorspace
(Million Square Feet)**

| Building Characteristics | Demand-Metered Buildings | 10 kW or Less | 11 to 25 kW | 26 to 50 kW | 51 to 100 kW | 101 to 250 kW | 251 to 1,000 kW | Over 1,000 kW | RSE Row Factor |
|--|--------------------------|---------------|-------------|-------------|--------------|---------------|-----------------|---------------|----------------|
| | RSE Column Factor: | 0.615 | 0.879 | 1.102 | 1.205 | 1.121 | 0.980 | 0.902 | |
| All Buildings | 43,532 | 2,130 | 4,225 | 5,758 | 5,294 | 7,249 | 10,287 | 8,589 | 9.15 |
| Building Floorspace (Square Feet) | | | | | | | | | |
| 1,001 to 5,000 | 2,777 | 748 | 1,070 | 606 | 275 | Q | Q | NC | 11.86 |
| 5,001 to 10,000 | 3,469 | 428 | 1,068 | 1,099 | 561 | 238 | Q | Q | 16.18 |
| 10,001 to 25,000 | 6,649 | 349 | 1,213 | 1,721 | 1,527 | 1,490 | 339 | Q | 16.60 |
| 25,001 to 50,000 | 6,309 | 463 | Q | 865 | 1,440 | 1,960 | 1,120 | Q | 17.99 |
| 50,001 to 100,000 | 6,707 | 140 | Q | Q | 875 | 1,812 | 2,611 | Q | 16.80 |
| 100,001 to 200,000 | 6,768 | 3 | Q | Q | Q | 942 | 3,993 | 690 | 19.99 |
| 200,001 to 500,000 | 5,103 | NC | NC | Q | Q | Q | 1,451 | 2,796 | 21.64 |
| Over 500,000 | 5,751 | NC | NC | Q | Q | Q | Q | 4,618 | 30.10 |
| Year Constructed | | | | | | | | | |
| 1899 or Before | 970 | 111 | Q | Q | Q | Q | Q | Q | 44.88 |
| 1900 to 1919 | 2,129 | 119 | 406 | 363 | Q | Q | Q | Q | 32.49 |
| 1920 to 1945 | 5,547 | 317 | 611 | 994 | 851 | 753 | 1,112 | 909 | 24.32 |
| 1946 to 1959 | 6,837 | 493 | 794 | 1,234 | 714 | 844 | 1,169 | Q | 21.98 |
| 1960 to 1969 | 8,835 | 473 | 812 | 788 | 1,091 | 2,060 | 2,292 | 1,320 | 15.93 |
| 1970 to 1979 | 9,940 | 380 | 764 | 1,250 | 1,043 | 1,733 | 2,877 | 1,892 | 16.53 |
| 1980 to 1983 | 3,343 | 92 | 245 | 369 | 471 | 501 | 867 | 799 | 22.77 |
| 1984 to 1986 | 3,607 | 110 | 233 | 293 | 308 | 668 | 958 | Q | 24.88 |
| 1987 to 1989 | 2,324 | 35 | 170 | 190 | 333 | Q | 584 | 647 | 29.41 |
| BUILDING USE | | | | | | | | | |
| Principal Building Activity | | | | | | | | | |
| Assembly | 4,086 | 231 | 407 | 1,169 | 677 | 680 | 791 | Q | 26.17 |
| Education | 6,122 | 82 | 221 | 472 | 852 | 1,403 | 2,259 | Q | 18.81 |
| Food Sales | 662 | Q | Q | Q | Q | Q | Q | Q | 50.12 |
| Food Service | 935 | Q | 121 | 360 | 209 | Q | Q | NC | 26.66 |
| Health Care | 1,642 | Q | Q | Q | Q | Q | 360 | 1,016 | 21.84 |
| Lodging | 2,834 | Q | Q | 241 | 563 | 709 | 637 | Q | 27.10 |
| Mercantile and Service | 7,948 | 461 | 1,346 | 1,211 | 864 | 1,062 | 1,732 | Q | 17.42 |
| Office | 9,291 | 312 | 541 | 527 | 754 | 1,270 | 2,424 | 3,462 | 16.12 |
| Parking Garage | 756 | Q | Q | Q | Q | Q | Q | Q | 48.24 |
| Public Order and Safety | 473 | NC | Q | Q | Q | Q | Q | Q | 62.32 |
| Warehouse | 6,202 | 755 | 771 | 1,237 | 925 | 1,030 | 908 | Q | 26.05 |
| Other | 964 | Q | Q | Q | Q | Q | Q | Q | 70.71 |
| Vacant | 1,618 | Q | 365 | Q | Q | Q | Q | Q | 32.17 |
| Weekly Operating Hours | | | | | | | | | |
| 39 or Fewer | 2,388 | 346 | 444 | 533 | 358 | 352 | Q | Q | 24.00 |
| 40 to 48 | 9,571 | 496 | 1,193 | 1,516 | 1,441 | 1,739 | 2,220 | 966 | 17.85 |
| 49 to 60 | 9,208 | 533 | 1,218 | 1,650 | 1,215 | 1,432 | 1,459 | 1,702 | 18.43 |
| 61 to 84 | 8,114 | 234 | 567 | 929 | 822 | 1,236 | 2,062 | 2,263 | 19.59 |
| 85 to 167 | 6,784 | 344 | 348 | 778 | 693 | 978 | 2,255 | Q | 20.44 |
| 168 (Open Continuously) | 7,467 | 177 | 455 | 352 | 764 | 1,513 | 2,002 | 2,205 | 18.33 |
| Weekly Operating Schedule | | | | | | | | | |
| Open 1 to 23 Hours | | | | | | | | | |
| Monday through Friday | 12,937 | 402 | 1,201 | 1,491 | 2,017 | 2,776 | 3,255 | 1,794 | 13.86 |
| Monday through Saturday | 7,802 | 535 | 1,392 | 1,334 | 801 | 987 | 1,407 | 1,345 | 17.44 |
| Monday through Sunday | 8,743 | 330 | 534 | 1,303 | 1,035 | 1,046 | 1,984 | 2,511 | 20.66 |
| Open 24 Hours (Continuously) | 7,467 | 177 | 455 | 352 | 764 | 1,513 | 2,002 | 2,205 | 18.33 |
| Other | 6,583 | 685 | 642 | 1,278 | 677 | 928 | 1,638 | 735 | 21.17 |
| Workers | | | | | | | | | |
| 4 or Fewer | 6,639 | 1,227 | 2,009 | 1,534 | 945 | 701 | Q | Q | 16.89 |
| 5 to 9 | 5,240 | 468 | 1,294 | 1,751 | 698 | 725 | Q | Q | 20.24 |
| 10 to 19 | 4,212 | 201 | 571 | 1,131 | 1,043 | 832 | 425 | Q | 20.01 |
| 20 to 49 | 7,400 | 164 | Q | 1,159 | 1,725 | 2,596 | 1,333 | Q | 19.67 |
| 50 to 99 | 5,830 | 44 | Q | Q | 784 | 1,722 | 2,854 | Q | 21.07 |
| 100 to 249 | 5,461 | 27 | NC | Q | Q | 587 | 3,864 | 856 | 20.01 |
| 250 or More | 8,750 | NC | Q | Q | Q | Q | 1,349 | 7,229 | 23.42 |

See footnote at end of table.

ELECTRICITY
Table 34. Peak Electricity Demand Category for Floorspace (Continued)
 (Million Square Feet)

| Building Characteristics | Demand-Metered Buildings | 10 kW or Less | 11 to 25 kW | 26 to 50 kW | 51 to 100 kW | 101 to 250 kW | 251 to 1,000 kW | Over 1,000 kW | RSE Row Factor |
|---|--------------------------|---------------|-------------|-------------|--------------|---------------|-----------------|---------------|----------------|
| PEI Column Factor | 0.515 | 0.871 | 1.102 | 1.246 | 1.121 | 0.909 | 0.992 | 1.005 | |
| Ownership and Occupancy | | | | | | | | | |
| Nongovernment Owned | 32,539 | 1,836 | 3,661 | 5,009 | 4,080 | 5,179 | 6,917 | 5,857 | 10.58 |
| Owner Occupied | 24,146 | 1,212 | 2,592 | 3,913 | 3,013 | 3,707 | 4,761 | 4,948 | 11.57 |
| Single Establishment | 17,742 | 1,011 | 2,298 | 3,246 | 2,683 | 2,914 | 3,241 | 2,350 | 12.80 |
| Multiple Establishment | 6,404 | 201 | 293 | 667 | 330 | 794 | 1,520 | 2,599 | 22.17 |
| Nonowner Occupied | 8,393 | 624 | 1,069 | 1,096 | 1,067 | 1,472 | 2,156 | 908 | 19.90 |
| Single Establishment | 4,350 | 393 | 740 | 812 | 564 | 683 | 874 | Q | 24.00 |
| Multiple Establishment | 3,611 | 168 | Q | Q | Q | 743 | 1,238 | 609 | 29.04 |
| Vacant | 431 | Q | Q | Q | Q | Q | Q | Q | 42.82 |
| Government Owned | 10,993 | 294 | 564 | 749 | 1,214 | 2,070 | 3,370 | 2,732 | 16.96 |
| Federal | Q | Q | Q | Q | Q | Q | Q | Q | b |
| State | 3,011 | 106 | Q | 232 | Q | 778 | 978 | 551 | 33.27 |
| Local | 6,234 | 176 | 414 | 431 | 844 | 1,220 | 2,238 | 910 | 19.58 |
| Percent Vacant at Least Three Months | | | | | | | | | |
| 0 | 30,238 | 1,588 | 3,239 | 4,606 | 3,992 | 5,704 | 6,907 | 4,201 | 10.00 |
| 1 to 50 | 9,084 | 311 | 370 | 474 | 749 | 967 | 2,492 | 3,722 | 21.60 |
| 51 to 99 | 2,288 | 69 | Q | Q | Q | Q | Q | Q | 43.01 |
| 100 | 1,922 | 162 | 371 | 310 | 310 | Q | 491 | Q | 27.47 |
| Months in Use Out of Past 12 Months | | | | | | | | | |
| 0 to 8 | 2,298 | 254 | 451 | Q | 290 | Q | Q | Q | 31.26 |
| 9 to 11 | 2,571 | 93 | 185 | 369 | 405 | 648 | 825 | Q | 27.67 |
| 12 | 38,662 | 1,783 | 3,588 | 4,833 | 4,599 | 6,347 | 9,092 | 8,419 | 9.71 |
| LOCATION | | | | | | | | | |
| Census Region | | | | | | | | | |
| Northeast | 10,052 | 419 | 860 | 1,749 | 1,070 | 1,349 | 2,260 | 2,344 | 19.66 |
| Midwest | 11,040 | 478 | 1,029 | 972 | 1,332 | 1,876 | 3,268 | 2,084 | 16.59 |
| South | 15,179 | 984 | 1,541 | 2,199 | 1,953 | 2,710 | 3,120 | 2,673 | 16.47 |
| West | 7,262 | 249 | 794 | 838 | 999 | 1,313 | 1,639 | Q | 19.26 |
| Census Division | | | | | | | | | |
| Northeast | | | | | | | | | |
| New England | 2,069 | 82 | 222 | Q | 385 | 344 | 454 | Q | 27.91 |
| Middle Atlantic | 7,983 | 337 | 639 | 1,527 | 685 | 1,005 | 1,806 | 1,984 | 23.81 |
| Midwest | | | | | | | | | |
| East North Central | 7,277 | 359 | 837 | 512 | 729 | 1,099 | 2,264 | 1,477 | 20.27 |
| West North Central | 3,762 | 119 | 192 | 460 | 604 | 777 | 1,004 | 607 | 26.51 |
| South | | | | | | | | | |
| South Atlantic | 7,244 | 277 | 778 | 971 | 963 | 1,329 | 1,761 | 1,164 | 22.02 |
| East South Central | 2,880 | Q | 252 | 341 | 445 | 398 | 523 | Q | 26.01 |
| West South Central | 5,056 | 347 | 511 | 887 | 544 | 983 | 836 | Q | 29.03 |
| West | | | | | | | | | |
| Mountain | 3,412 | 90 | 464 | 559 | 557 | 422 | 620 | Q | 30.66 |
| Pacific | 3,849 | 160 | 331 | 279 | 382 | 891 | 1,019 | 788 | 25.93 |
| Metropolitan Status | | | | | | | | | |
| Metropolitan | 36,288 | 1,512 | 3,239 | 4,089 | 4,319 | 5,812 | 9,098 | 8,219 | 10.65 |
| Nonmetropolitan | 7,244 | 618 | 986 | 1,669 | 975 | 1,437 | 1,189 | Q | 20.08 |
| Climate Zone: 45-Year Average | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | |
| Over 7,000 HDD | 3,340 | 48 | Q | 625 | 536 | 685 | 903 | Q | 24.74 |
| 5,500-7,000 HDD | 13,034 | 528 | 1,621 | 1,511 | 1,570 | 2,052 | 3,134 | 2,619 | 17.31 |
| 4,000-5,499 HDD | 10,682 | 470 | 740 | 1,333 | 1,059 | 1,457 | 2,764 | 2,859 | 21.38 |
| Under 4,000 HDD | 8,353 | 398 | 834 | 922 | 936 | 1,488 | 1,838 | Q | 24.58 |
| 2,000 CDD or More and -- | | | | | | | | | |
| Under 4,000 HDD | 8,123 | 686 | 869 | 1,367 | 1,193 | 1,568 | 1,649 | 790 | 24.10 |

See footnote at end of table.

Table 34. Peak Electricity Demand Category for Floorspace (Continued)
 (Million Square Feet)

| Building Characteristics | Demand-Metered Buildings | 10 kW or Less | 11 to 25 kW | 26 to 50 kW | 51 to 100 kW | 101 to 250 kW | 251 to 1,000 kW | Over 1,000 kW | RSE Row Factor |
|--|--------------------------|---------------|-------------|-------------|--------------|---------------|-----------------|---------------|----------------|
| RSE Column Factor: | 0.515 | 0.870 | 1.102 | 1.246 | 1.121 | 0.900 | 0.992 | 1.605 | |
| ENERGY SOURCES AND END USES* | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | |
| Electricity | 43,532 | 2,130 | 4,225 | 5,758 | 5,294 | 7,249 | 10,287 | 8,589 | 9.26 |
| Natural Gas | 29,768 | 1,076 | 2,647 | 4,262 | 3,511 | 4,352 | 7,441 | 6,479 | 11.75 |
| Fuel Oil | 9,536 | 237 | 745 | 803 | 893 | 993 | 2,691 | 3,173 | 21.24 |
| District Heat | 5,529 | 85 | Q | Q | Q | Q | 1,436 | 2,778 | 30.66 |
| District Chilled Water | 1,462 | Q | Q | Q | Q | Q | Q | Q | 89.34 |
| Propane | 3,338 | 110 | 317 | 299 | 434 | 462 | 647 | Q | 26.44 |
| Other | 1,188 | Q | Q | Q | Q | Q | Q | Q | 48.30 |
| Energy End Uses (Solely or in Combination) | | | | | | | | | |
| Heated Buildings | 41,371 | 1,614 | 3,831 | 5,476 | 5,049 | 6,901 | 9,998 | 8,501 | 9.38 |
| Air-Conditioned Buildings | 37,841 | 1,064 | 3,315 | 4,643 | 4,436 | 6,120 | 9,822 | 8,441 | 9.89 |
| Buildings with Water Heating | 38,953 | 1,196 | 3,302 | 5,079 | 4,707 | 6,479 | 9,772 | 8,418 | 8.50 |
| Buildings with Cooking | 18,464 | 119 | 727 | 1,772 | 1,506 | 2,802 | 5,041 | 6,497 | 14.90 |
| Buildings with Manufacturing | 4,497 | 87 | 204 | 394 | Q | 595 | 1,109 | Q | 31.10 |
| Energy End-Use Combinations | | | | | | | | | |
| Heated Buildings | | | | | | | | | |
| With Air Conditioning | | | | | | | | | |
| With Water Heating and Cooking | 16,371 | 68 | 445 | 1,417 | 1,219 | 2,287 | 4,582 | 6,352 | 16.34 |
| With Water Heating, Without Cooking | 18,173 | 745 | 2,204 | 2,637 | 2,766 | 3,239 | 4,679 | 1,904 | 13.75 |
| Without Water Heating or Cooking | 2,263 | 206 | 535 | 443 | 360 | 396 | Q | Q | 29.30 |
| Without Air Conditioning | | | | | | | | | |
| With Water Heating and Cooking | 1,407 | Q | Q | Q | Q | Q | Q | Q | 38.84 |
| With Water Heating, Without Cooking | 2,209 | 307 | 296 | 610 | 383 | Q | Q | Q | 22.80 |
| Without Water Heating or Cooking | 768 | 247 | Q | Q | Q | Q | Q | Q | 26.86 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 1,185 | 463 | 235 | Q | Q | Q | Q | Q | 37.60 |
| All Other Combinations | 1,156 | 58 | 171 | Q | Q | Q | Q | Q | 34.78 |
| Space-Heating Energy Source | | | | | | | | | |
| Electricity | 13,674 | 485 | 994 | 1,491 | 1,699 | 2,679 | 3,652 | 2,674 | 14.91 |
| Main | 10,049 | 230 | 611 | 940 | 1,246 | 2,088 | 2,719 | 2,216 | 16.93 |
| With Secondary | 1,603 | Q | Q | Q | Q | Q | 495 | Q | 33.13 |
| Natural Gas Only | 858 | Q | Q | Q | Q | Q | Q | Q | 50.49 |
| Other Energy Sources or Combinations | 720 | Q | Q | Q | Q | Q | Q | Q | 62.97 |
| With No Secondary | 8,447 | 169 | 532 | 832 | 1,101 | 1,814 | 2,224 | 1,775 | 17.06 |
| Secondary | 3,625 | 255 | 384 | 551 | 453 | 591 | 933 | Q | 24.47 |
| Other Excluding Electricity | 27,696 | 1,129 | 2,836 | 3,985 | 3,350 | 4,223 | 6,346 | 5,827 | 11.36 |
| Building Not Heated | 2,162 | 516 | 394 | 282 | 244 | 348 | Q | Q | 28.50 |
| Main Space-Heating Energy Source | | | | | | | | | |
| Electricity | 10,049 | 230 | 611 | 940 | 1,246 | 2,088 | 2,719 | 2,216 | 16.93 |
| Natural Gas | 21,618 | 952 | 2,343 | 3,475 | 2,744 | 3,538 | 5,133 | 3,433 | 12.73 |
| Fuel Oil | 3,775 | 198 | 583 | 700 | 702 | 468 | 744 | 380 | 26.24 |
| District Heat | 4,987 | 85 | Q | 249 | 251 | 567 | 1,308 | 2,417 | 32.23 |
| Propane | 614 | Q | Q | Q | Q | Q | Q | Q | 81.70 |
| Other | 563 | Q | Q | Q | Q | Q | Q | NC | 56.69 |

See footnote at end of table.

ELECTRICITY
Table 34. Peak Electricity Demand Category for Floorspace (Continued)
 (Million Square Feet)

| Building Characteristics | Demand-Metered Buildings | 10 kW or Less | 11 to 25 kW | 26 to 50 kW | 51 to 100 kW | 101 to 250 kW | 251 to 1,000 kW | Over 1,000 kW | RSE Row Factor |
|--|--------------------------|---------------|-------------|-------------|--------------|---------------|-----------------|---------------|----------------|
| RSE Column Factor | 0.918 | 0.979 | 1.192 | 1.246 | 1.121 | 0.900 | 0.992 | 1.005 | |
| Air-Conditioning Energy Source | | | | | | | | | |
| Electricity | 34,836 | 1,000 | 3,149 | 4,508 | 4,169 | 5,876 | 9,054 | 7,080 | 10.09 |
| Other Excluding Electricity | 3,005 | 64 | Q | Q | 267 | Q | 768 | Q | 31.42 |
| Air-Conditioning Not Performed | 5,691 | 1,066 | 910 | 1,115 | 858 | 1,129 | 465 | Q | 18.79 |
| Water-Heating Energy Source | | | | | | | | | |
| Electricity | 15,716 | 550 | 1,445 | 1,879 | 1,778 | 2,816 | 3,846 | 3,402 | 12.50 |
| Other Excluding Electricity | 23,236 | 646 | 1,857 | 3,199 | 2,929 | 3,663 | 5,926 | 5,015 | 12.20 |
| Water Heating Not Performed | 4,580 | 934 | 923 | 679 | 587 | 771 | 515 | Q | 21.29 |
| Cooking Energy Source | | | | | | | | | |
| Electricity | 9,034 | 20 | 312 | 793 | 816 | 1,422 | 2,720 | 2,951 | 21.30 |
| Other Excluding Electricity | 9,431 | 99 | 416 | 979 | 690 | 1,380 | 2,322 | 3,545 | 18.74 |
| Cooking Not Performed | 25,068 | 2,011 | 3,497 | 3,986 | 3,788 | 4,447 | 5,246 | 2,092 | 11.78 |
| Manufacturing Energy Source | | | | | | | | | |
| Electricity | 3,560 | 57 | Q | 296 | Q | Q | 876 | Q | 35.32 |
| Other Excluding Electricity | 937 | 30 | Q | Q | Q | Q | Q | Q | 33.97 |
| Manufacturing Not Performed | 39,035 | 2,043 | 4,020 | 5,364 | 4,820 | 6,654 | 9,178 | 6,956 | 9.23 |
| HEATING AND COOLING | | | | | | | | | |
| Percent Heated | | | | | | | | | |
| Not Heated | 2,231 | 530 | 427 | 286 | 263 | 348 | Q | Q | 28.50 |
| 1 to 50 | 6,107 | 488 | 1,065 | 1,205 | 901 | 1,286 | 731 | Q | 22.14 |
| 51 to 99 | 6,378 | 115 | 435 | 732 | 723 | 646 | 1,614 | 2,114 | 18.73 |
| 100 | 28,816 | 997 | 2,298 | 3,535 | 3,408 | 4,969 | 7,652 | 5,957 | 10.75 |
| Percent Cooled | | | | | | | | | |
| Not Cooled | 5,691 | 1,066 | 910 | 1,115 | 858 | 1,129 | 465 | Q | 18.79 |
| 1 to 50 | 12,102 | 546 | 1,701 | 2,128 | 1,850 | 2,228 | 2,607 | 1,040 | 16.42 |
| 51 to 99 | 10,209 | 195 | 416 | 1,147 | 852 | 1,252 | 2,983 | 3,364 | 15.88 |
| 100 | 15,531 | 323 | 1,197 | 1,367 | 1,734 | 2,640 | 4,232 | 4,037 | 14.63 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | |
| Present in Building | 13,844 | 17 | Q | 449 | 703 | 1,594 | 4,703 | 6,205 | 15.88 |
| Not Present | 29,688 | 2,113 | 4,052 | 5,309 | 4,591 | 5,655 | 5,584 | 2,384 | 11.05 |
| LIGHTING AND REFRIGERATION | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | |
| Not Lit | 416 | Q | Q | Q | Q | Q | Q | Q | 43.34 |
| 1 to 50 | 6,714 | 952 | 1,518 | 1,545 | 1,098 | 766 | 604 | Q | 23.00 |
| 51 to 99 | 12,254 | 447 | 692 | 1,881 | 1,451 | 2,044 | 2,759 | 2,980 | 15.88 |
| 100 | 24,148 | 655 | 1,892 | 2,278 | 2,719 | 4,364 | 6,871 | 5,369 | 11.99 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | |
| Commercial | | | | | | | | | |
| Refrigeration Units | 19,032 | 214 | 585 | 1,454 | 1,579 | 2,773 | 5,496 | 6,930 | 13.30 |
| Freezers | 17,318 | 140 | 367 | 1,033 | 1,218 | 2,489 | 5,184 | 6,888 | 14.71 |
| Residential | | | | | | | | | |
| Refrigerators | 31,880 | 1,004 | 2,654 | 3,856 | 3,912 | 5,273 | 7,882 | 7,298 | 10.21 |
| Freezers | 9,409 | 130 | 592 | 1,530 | 866 | 1,600 | 1,949 | 2,742 | 19.61 |
| Ice-Making Machines | 18,531 | 172 | 468 | 1,212 | 1,410 | 2,852 | 5,159 | 7,259 | 14.08 |
| Refrigerated Vending Machines | 30,229 | 460 | 1,539 | 2,490 | 3,197 | 5,139 | 9,155 | 8,250 | 10.82 |
| Water Coolers | 32,822 | 720 | 2,012 | 3,780 | 3,605 | 5,575 | 9,044 | 8,085 | 10.73 |
| Other | 1,149 | Q | Q | Q | Q | Q | 425 | Q | 39.88 |

See footnote at end of table.

Table 34. Peak Electricity Demand Category for Floorspace (Continued)
 (Million Square Feet)

| Building Characteristics | Demand-Metered Buildings | 10 kW or Less | 11 to 25 kW | 26 to 50 kW | 51 to 100 kW | 101 to 250 kW | 251 to 1,000 kW | Over 1,000 kW | RSE Row Factor |
|--|--------------------------|---------------|-------------|-------------|--------------|---------------|-----------------|---------------|-------------------|
| RSE Column Factor: | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | |
| ENERGY MANAGEMENT | | | | | | | | | |
| Occupant Control | | | | | | | | | |
| Any Control of Heating | 17,469 | 1,000 | 2,014 | 3,373 | 2,112 | 2,691 | 3,437 | 2,842 | 0.11 |
| With Thermostats | 16,064 | 863 | 1,828 | 3,069 | 1,875 | 2,507 | 3,121 | 2,801 | 0.09 |
| Any Control of Cooling | 17,866 | 717 | 1,902 | 3,027 | 2,053 | 3,115 | 3,888 | 3,164 | 0.09 |
| With Thermostats | 16,343 | 546 | 1,712 | 2,613 | 1,886 | 2,851 | 3,625 | 3,109 | 0.09 |
| Reduced Use During Off-Hours | | | | | | | | | |
| Heating Only | 4,318 | 534 | 522 | 902 | 744 | 877 | 582 | Q | 0.22 |
| Cooling Only | 3,023 | 82 | 266 | Q | 360 | 608 | 663 | Q | 0.35 |
| Heating and Cooling | 27,698 | 860 | 2,657 | 3,485 | 3,266 | 3,912 | 6,696 | 6,823 | 0.06 |
| Computerized Energy Management and Control System | | | | | | | | | |
| Present in Building | 11,750 | 39 | 104 | 327 | 673 | 1,435 | 3,757 | 5,415 | 0.39 |
| Controls Heating and Cooling | 11,259 | 39 | 100 | 303 | 635 | 1,411 | 3,396 | 5,375 | 0.47 |
| Controls Lighting | 3,115 | 8 | Q | Q | Q | Q | 1,032 | 1,679 | 0.10 |
| Controls Other | 2,050 | NC | NC | Q | Q | Q | 725 | 927 | 1.20 |
| ELECTRICITY DEMAND | | | | | | | | | |
| Annual Consumption (kilowatthours) | | | | | | | | | |
| 10,000 or Less | 1,612 | 1,073 | 367 | Q | Q | NC | NC | NC | 0.11 |
| 10,001 to 25,000 | 2,505 | 859 | 1,179 | 386 | Q | Q | Q | Q | 0.17 |
| 25,001 to 50,000 | 3,099 | 190 | 1,767 | 880 | 182 | Q | Q | Q | 0.34 |
| 50,001 to 100,000 | 4,592 | 6 | 796 | 3,022 | 678 | Q | Q | NC | 0.70 |
| 100,001 to 500,000 | 10,441 | 2 | Q | 1,342 | 4,244 | 4,080 | 650 | Q | 4.20 |
| 500,001 to 1,000,000 | 4,927 | NC | Q | NC | Q | 2,747 | 1,994 | Q | 0.17 |
| 1,000,001 to 2,000,000 | 4,211 | NC | NC | NC | NC | Q | 3,775 | Q | 0.26 |
| 2,000,001 to 5,000,000 | 5,098 | NC | NC | NC | NC | Q | 3,777 | 1,294 | 0.72 |
| Over 5,000,000 | 7,047 | NC | NC | NC | NC | Q | Q | 6,984 | 0.09 |
| Season of Peak Electricity Demand | | | | | | | | | |
| Summer Peaking | 25,125 | 688 | 2,396 | 3,102 | 2,779 | 3,772 | 5,867 | 6,522 | 4.40 |
| Winter Peaking | 13,907 | 798 | 1,236 | 1,597 | 2,042 | 2,855 | 3,613 | 1,766 | 5.71 |
| Summer and Winter Peaking | 4,500 | 643 | 593 | 1,059 | 473 | Q | 808 | Q | 10.22 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

NC No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

ELECTRICITY

Table 35. Distribution of Peak Watts per Square Foot

| Building Characteristics | All Demand-Metered Buildings | | | Peak Watts per Square Foot | | |
|--|--------------------------------|--|--|----------------------------|--------|-----------------|
| | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | 25th Percentile | Median | 75th Percentile |
| All Buildings | 2,217 | 43,532 | 661 | 2.26 | 4.64 | 8.60 |
| Building Floorspace (Square Feet) | | | | | | |
| 1,001 to 5,000 | 999 | 2,777 | 60 | 3.67 | 6.32 | 11.88 |
| 5,001 to 10,000 | 468 | 3,469 | 53 | 2.17 | 3.80 | 6.90 |
| 10,001 to 25,000 | 406 | 6,649 | 89 | 1.53 | 3.00 | 6.21 |
| 25,001 to 50,000 | 176 | 6,309 | 79 | 1.27 | 2.81 | 6.16 |
| 50,001 to 100,000 | 94 | 6,707 | 108 | 1.17 | 2.93 | 5.66 |
| 100,001 to 200,000 | 49 | 6,768 | 94 | 1.23 | 3.16 | 5.03 |
| 200,001 to 500,000 | 17 | 5,103 | 95 | 1.90 | 3.89 | 5.78 |
| Over 500,000 | 7 | 5,751 | 85 | 1.38 | 3.30 | 5.07 |
| Year Constructed | | | | | | |
| 1899 or Before | 65 | 970 | 5 | .95 | 2.42 | 5.14 |
| 1900 to 1919 | 101 | 2,129 | 16 | 1.50 | 3.07 | 5.33 |
| 1920 to 1945 | 284 | 5,547 | 50 | 2.13 | 3.75 | 6.90 |
| 1946 to 1959 | 400 | 6,837 | 88 | 1.90 | 4.00 | 7.83 |
| 1960 to 1969 | 420 | 8,835 | 141 | 2.56 | 4.82 | 8.75 |
| 1970 to 1979 | 514 | 9,940 | 175 | 2.45 | 5.33 | 9.81 |
| 1980 to 1983 | 189 | 3,343 | 73 | 3.00 | 5.83 | 11.20 |
| 1984 to 1986 | 143 | 3,607 | 72 | 3.00 | 5.45 | 9.89 |
| 1987 to 1989 | 100 | 2,324 | 39 | 3.08 | 5.09 | 13.17 |
| BUILDING USE | | | | | | |
| Principal Building Activity | | | | | | |
| Assembly | 263 | 4,086 | 42 | 2.22 | 4.77 | 9.33 |
| Education | 167 | 6,122 | 52 | 2.03 | 4.15 | 7.45 |
| Food Sales | 69 | 662 | 28 | 6.40 | 9.67 | 16.50 |
| Food Service | 164 | 935 | 25 | 5.71 | 11.33 | 21.67 |
| Health Care | 35 | 1,642 | 39 | 4.88 | 6.43 | 8.60 |
| Lodging | 94 | 2,834 | 35 | 2.39 | 3.82 | 6.50 |
| Mercantile and Service | 604 | 7,948 | 119 | 2.40 | 4.38 | 7.59 |
| Office | 384 | 9,291 | 193 | 3.38 | 6.07 | 9.69 |
| Parking Garage | 27 | 756 | 4 | .83 | 3.40 | 5.31 |
| Public Order and Safety | 19 | 473 | 7 | 2.26 | 4.00 | 6.04 |
| Warehouse | 274 | 6,202 | 58 | 1.09 | 1.86 | 3.67 |
| Other | 37 | 964 | 50 | 2.50 | 8.75 | 16.54 |
| Vacant | 81 | 1,618 | 9 | 1.33 | 2.55 | 3.50 |
| Weekly Operating Hours | | | | | | |
| 39 or Fewer | 236 | 2,388 | 13 | 1.68 | 3.75 | 6.86 |
| 40 to 48 | 561 | 9,571 | 105 | 2.08 | 4.13 | 7.50 |
| 49 to 60 | 505 | 9,208 | 114 | 2.00 | 3.75 | 6.67 |
| 61 to 84 | 355 | 8,114 | 120 | 2.55 | 5.08 | 9.77 |
| 85 to 167 | 316 | 6,784 | 118 | 3.25 | 6.35 | 12.00 |
| 168 (Open Continuously) | 244 | 7,467 | 192 | 2.87 | 6.12 | 13.17 |
| Workers | | | | | | |
| 4 or Fewer | 966 | 6,639 | 56 | 2.00 | 4.29 | 8.33 |
| 5 to 9 | 494 | 5,240 | 54 | 2.33 | 4.77 | 9.20 |
| 10 to 19 | 301 | 4,212 | 51 | 2.55 | 4.78 | 9.00 |
| 20 to 49 | 268 | 7,400 | 95 | 2.41 | 4.71 | 7.89 |
| 50 to 99 | 101 | 5,830 | 84 | 2.37 | 4.81 | 7.85 |
| 100 to 249 | 61 | 5,461 | 121 | 3.41 | 5.28 | 8.10 |
| 250 or More | 27 | 8,750 | 200 | 3.92 | 5.78 | 7.19 |

See footnotes at end of table.

Table 35. Distribution of Peak Watts per Square Foot (Continued)

| Building Characteristics | All Demand-Metered Buildings | | | Peak Watts per Square Foot | | |
|---|--------------------------------|--|--|----------------------------|--------|-----------------|
| | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | 25th Percentile | Median | 75th Percentile |
| Ownership and Occupancy | | | | | | |
| Nongovernment Owned | 1,881 | 32,539 | 493 | 2.27 | 4.67 | 8.96 |
| Owner Occupied | 1,368 | 24,146 | 375 | 2.31 | 4.77 | 9.29 |
| Single Establishment | 1,192 | 17,742 | 282 | 2.39 | 4.92 | 9.65 |
| Multiple Establishment | 176 | 6,404 | 93 | 2.12 | 4.17 | 6.90 |
| Nonowner Occupied | 513 | 8,393 | 118 | 2.22 | 4.39 | 8.22 |
| Single Establishment | 336 | 4,350 | 58 | 2.27 | 4.72 | 9.33 |
| Multiple Establishment | 140 | 3,611 | 59 | 2.22 | 4.62 | 7.22 |
| Vacant | 38 | 431 | 2 | 1.72 | 2.73 | 3.75 |
| Government Owned | 336 | 10,993 | 168 | 2.10 | 4.40 | 7.45 |
| Federal | 28 | 1,748 | 34 | 2.57 | 4.72 | 7.75 |
| State | 85 | 3,011 | 62 | 2.31 | 4.65 | 6.92 |
| Local | 222 | 6,234 | 72 | 1.93 | 4.35 | 7.73 |
| Percent Vacant at Least Three Months | | | | | | |
| 0 | 1,818 | 30,238 | 493 | 2.39 | 4.95 | 9.20 |
| 1 to 50 | 192 | 9,084 | 137 | 1.79 | 3.52 | 6.00 |
| 51 to 99 | 54 | 2,288 | 17 | .75 | 2.50 | 3.73 |
| 100 | 153 | 1,922 | 14 | 1.92 | 3.33 | 7.80 |
| Months in Use Out of Past 12 Months | | | | | | |
| 0 to 8 | 165 | 2,298 | 17 | 1.72 | 3.33 | 7.80 |
| 9 to 11 | 135 | 2,571 | 17 | 2.25 | 4.00 | 7.83 |
| 12 | 1,917 | 38,662 | 627 | 2.30 | 4.75 | 8.75 |
| LOCATION | | | | | | |
| Census Region | | | | | | |
| Northeast | 446 | 10,052 | 143 | 2.16 | 4.08 | 7.15 |
| Midwest | 482 | 11,040 | 151 | 1.82 | 4.00 | 7.22 |
| South | 942 | 15,179 | 239 | 2.62 | 5.39 | 9.67 |
| West | 347 | 7,262 | 129 | 2.06 | 4.21 | 8.40 |
| Census Division | | | | | | |
| Northeast | | | | | | |
| New England | 109 | 2,069 | 27 | 2.13 | 4.17 | 7.15 |
| Middle Atlantic | 336 | 7,983 | 116 | 2.20 | 4.07 | 7.15 |
| Midwest | | | | | | |
| East North Central | 336 | 7,277 | 99 | 1.69 | 3.73 | 6.67 |
| West North Central | 146 | 3,762 | 52 | 2.12 | 4.27 | 8.06 |
| South | | | | | | |
| South Atlantic | 394 | 7,244 | 109 | 2.40 | 5.00 | 8.80 |
| East South Central | 200 | 2,880 | 54 | 2.93 | 5.44 | 10.29 |
| West South Central | 349 | 5,056 | 76 | 2.82 | 5.45 | 10.00 |
| West | | | | | | |
| Mountain | 167 | 3,412 | 46 | 1.77 | 3.07 | 6.57 |
| Pacific | 180 | 3,849 | 83 | 2.67 | 5.00 | 9.86 |
| Metropolitan Status | | | | | | |
| Metropolitan | 1,630 | 36,288 | 568 | 2.22 | 4.57 | 8.59 |
| Nonmetropolitan | 586 | 7,244 | 93 | 2.36 | 4.75 | 8.75 |
| Climate Zone: 45-Year Average | | | | | | |
| Under 2,000 CDD and -- | | | | | | |
| Over 7,000 HDD | 145 | 3,340 | 52 | 2.12 | 4.55 | 8.00 |
| 5,500-7,000 HDD | 635 | 13,034 | 171 | 1.85 | 4.00 | 6.70 |
| 4,000-5,499 HDD | 410 | 10,682 | 170 | 2.22 | 4.61 | 8.97 |
| Under 4,000 HDD | 454 | 8,353 | 147 | 2.42 | 5.42 | 9.27 |
| 2,000 CDD or More and -- | | | | | | |
| Under 4,000 HDD | 572 | 8,123 | 121 | 2.63 | 5.22 | 9.67 |

See footnotes at end of table.

ELECTRICITY

Table 35. Distribution of Peak Watts per Square Foot (Continued)

| Building Characteristics | All Demand-Metered Buildings | | | Peak Watts per Square Foot | | |
|--|--------------------------------|--|--|----------------------------|--------|-----------------|
| | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | 25th Percentile | Median | 75th Percentile |
| ENERGY SOURCES AND END USES * | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | |
| Electricity | 2,217 | 43,532 | 661 | 2.26 | 4.64 | 8.60 |
| Natural Gas | 1,311 | 29,768 | 428 | 2.28 | 4.50 | 7.83 |
| Fuel Oil | 305 | 9,536 | 164 | 2.13 | 3.59 | 6.13 |
| District Heat | 76 | 5,529 | 116 | 2.05 | 4.39 | 7.47 |
| District Chilled Water | 17 | 1,462 | 40 | 3.21 | 4.19 | 6.90 |
| Propane | 173 | 3,338 | 51 | 2.55 | 4.75 | 8.24 |
| Other | 55 | 1,188 | 11 | 1.11 | 2.44 | 4.68 |
| Energy End Uses (Solely or in Combination) | | | | | | |
| Heated Buildings | 2,035 | 41,371 | 637 | 2.40 | 4.78 | 8.77 |
| Air-Conditioned Buildings | 1,770 | 37,841 | 614 | 2.78 | 5.22 | 9.33 |
| Buildings with Water Heating | 1,787 | 38,953 | 624 | 2.51 | 5.00 | 9.26 |
| Buildings with Cooking | 553 | 18,464 | 338 | 3.13 | 6.25 | 11.59 |
| Buildings with Manufacturing | 120 | 4,497 | 76 | 2.09 | 4.17 | 7.68 |
| Energy End-Use Combinations | | | | | | |
| Heated Buildings | | | | | | |
| With Air Conditioning | | | | | | |
| With Water Heating and Cooking | 446 | 16,371 | 309 | 3.75 | 6.75 | 11.93 |
| With Water Heating, Without Cooking | 1,059 | 18,173 | 262 | 2.57 | 4.85 | 8.77 |
| Without Water Heating or Cooking | 193 | 2,263 | 21 | 2.00 | 4.09 | 7.65 |
| Without Air Conditioning | | | | | | |
| With Water Heating and Cooking | 62 | 1,407 | 16 | 1.90 | 3.00 | 5.71 |
| With Water Heating, Without Cooking | 150 | 2,209 | 20 | 1.08 | 2.29 | 4.21 |
| Without Water Heating or Cooking | 115 | 768 | 5 | 1.75 | 2.50 | 5.71 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 97 | 1,185 | 5 | .67 | 1.25 | 4.06 |
| All Other Combinations | 93 | 1,156 | 23 | 2.62 | 3.92 | 10.80 |
| Space-Heating Energy Source | | | | | | |
| Electricity | 720 | 13,674 | 250 | 3.25 | 6.57 | 11.33 |
| Main | 533 | 10,049 | 193 | 4.00 | 7.50 | 13.21 |
| With Secondary | 55 | 1,603 | 29 | 2.71 | 5.14 | 8.67 |
| Natural Gas Only | 34 | 858 | 14 | 3.92 | 5.82 | 10.00 |
| Other Energy Sources or Combinations | 19 | 720 | 15 | 1.67 | 4.00 | 6.17 |
| With No Secondary | 478 | 8,447 | 164 | 4.10 | 8.00 | 13.75 |
| Secondary | 187 | 3,625 | 57 | 2.24 | 4.00 | 7.04 |
| Other Excluding Electricity | 1,315 | 27,696 | 387 | 2.15 | 4.17 | 7.18 |
| Building Not Heated | 181 | 2,162 | 24 | 1.00 | 2.62 | 5.29 |
| Main Space-Heating Energy Source | | | | | | |
| Electricity | 533 | 10,049 | 193 | 4.00 | 7.50 | 13.21 |
| Natural Gas | 1,095 | 21,618 | 295 | 2.20 | 4.31 | 7.30 |
| Fuel Oil | 237 | 3,775 | 45 | 2.17 | 3.67 | 6.19 |
| District Heat | 72 | 4,987 | 90 | 2.05 | 4.37 | 7.47 |
| Propane | 74 | 614 | 12 | 2.79 | 4.78 | 8.00 |
| Other | 33 | 563 | 3 | 1.11 | 1.57 | 3.04 |
| Air-Conditioning Energy Source | | | | | | |
| Electricity | 1,705 | 34,836 | 570 | 2.77 | 5.22 | 9.33 |
| Other Excluding Electricity | 66 | 3,005 | 44 | 2.92 | 5.08 | 9.33 |
| Air-Conditioning Not Performed | 446 | 5,691 | 47 | 1.19 | 2.40 | 5.00 |

See footnotes at end of table.

Table 35. Distribution of Peak Watts per Square Foot (Continued)

| Building Characteristics | All Demand-Metered Buildings | | | Peak Watts per Square Foot | | |
|--|--------------------------------|--|--|----------------------------|--------|-----------------|
| | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | 25th Percentile | Median | 75th Percentile |
| Water-Heating Energy Source | | | | | | |
| Electricity | 863 | 15,716 | 276 | 2.73 | 5.32 | 10.00 |
| Other Excluding Electricity | 923 | 23,236 | 348 | 2.40 | 4.72 | 8.00 |
| Water Heating Not Performed | 430 | 4,580 | 37 | 1.27 | 3.17 | 6.22 |
| Cooking Energy Source | | | | | | |
| Electricity | 239 | 9,034 | 153 | 3.53 | 6.21 | 11.67 |
| Other Excluding Electricity | 314 | 9,431 | 185 | 2.90 | 6.32 | 11.51 |
| Cooking Not Performed | 1,664 | 25,068 | 324 | 2.00 | 4.14 | 7.68 |
| Manufacturing Energy Source | | | | | | |
| Electricity | 90 | 3,560 | 56 | 1.61 | 4.04 | 8.75 |
| Other Excluding Electricity | 30 | 937 | 20 | 2.24 | 4.17 | 6.72 |
| Manufacturing Not Performed | 2,097 | 39,035 | 586 | 2.27 | 4.67 | 8.64 |
| HEATING AND COOLING | | | | | | |
| Percent Heated | | | | | | |
| Not Heated | 187 | 2,231 | 24 | 1.00 | 2.50 | 5.23 |
| 1 to 50 | 327 | 6,107 | 46 | 1.50 | 2.60 | 4.72 |
| 51 to 99 | 272 | 6,378 | 118 | 2.76 | 5.55 | 9.81 |
| 100 | 1,430 | 28,816 | 473 | 2.75 | 5.33 | 9.27 |
| Percent Cooled | | | | | | |
| Not Cooled | 446 | 5,691 | 47 | 1.19 | 2.40 | 5.00 |
| 1 to 50 | 565 | 12,102 | 108 | 1.77 | 3.06 | 5.29 |
| 51 to 99 | 361 | 10,209 | 194 | 3.47 | 5.85 | 10.42 |
| 100 | 844 | 15,531 | 313 | 4.07 | 6.80 | 10.95 |
| Computer Area with Separate Air-Conditioning System | | | | | | |
| Present in Building | 194 | 13,844 | 306 | 2.96 | 5.26 | 8.75 |
| Not Present | 2,023 | 29,688 | 355 | 2.22 | 4.55 | 8.58 |
| LIGHTING AND REFRIGERATION | | | | | | |
| Percent Lit When Open | | | | | | |
| Not Lit | 28 | 416 | 1 | .55 | 1.25 | 2.50 |
| 1 to 50 | 496 | 6,714 | 44 | 1.50 | 3.00 | 5.38 |
| 51 to 99 | 493 | 12,254 | 188 | 2.53 | 5.00 | 9.33 |
| 100 | 1,200 | 24,148 | 428 | 2.71 | 5.42 | 9.38 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | |
| Commercial | | | | | | |
| Refrigeration Units | 592 | 19,032 | 367 | 3.50 | 6.80 | 13.33 |
| Freezers | 471 | 17,318 | 352 | 3.83 | 7.30 | 16.67 |
| Residential | | | | | | |
| Refrigerators | 1,320 | 31,880 | 494 | 2.33 | 4.50 | 7.69 |
| Freezers | 343 | 9,409 | 152 | 2.86 | 5.28 | 9.38 |
| Ice-Making Machines | 539 | 18,531 | 385 | 3.50 | 7.00 | 13.97 |
| Refrigerated Vending Machines | 950 | 30,229 | 521 | 2.67 | 5.01 | 9.00 |
| Water Coolers | 1,064 | 32,822 | 533 | 2.26 | 4.50 | 7.92 |
| Other | 35 | 1,149 | 52 | 7.02 | 13.71 | 23.19 |
| ENERGY MANAGEMENT | | | | | | |
| Occupant Control | | | | | | |
| Any Control of Heating | 1,160 | 17,469 | 242 | 2.50 | 5.00 | 8.89 |
| With Thermostats | 1,026 | 16,064 | 224 | 2.50 | 5.00 | 8.77 |
| Any Control of Cooling | 1,037 | 17,866 | 255 | 2.78 | 5.08 | 9.26 |
| With Thermostats | 925 | 16,343 | 235 | 2.86 | 5.17 | 9.20 |

See footnotes at end of table.

Table 35. Distribution of Peak Watts per Square Foot (Continued)

| Building Characteristics | All Demand-Metered Buildings | | | Peak Watts per Square Foot | | |
|--|--------------------------------|--|--|----------------------------|--------|-----------------|
| | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | 25th Percentile | Median | 75th Percentile |
| Reduced Use During Off-Hours | | | | | | |
| Heating Only | 334 | 4,318 | 46 | 1.70 | 3.08 | 6.67 |
| Cooling Only | 155 | 3,023 | 51 | 2.79 | 4.77 | 10.25 |
| Heating and Cooling | 1,275 | 27,698 | 393 | 2.50 | 4.85 | 8.54 |
| Computerized Energy Management and Control System | | | | | | |
| Present in Building | 184 | 11,750 | 221 | 3.37 | 5.47 | 8.40 |
| Controls Heating and Cooling | 175 | 11,259 | 213 | 3.47 | 5.50 | 8.40 |
| Controls Lighting | 39 | 3,115 | 53 | 4.00 | 6.76 | 9.21 |
| Controls Other | 27 | 2,050 | 41 | 3.80 | 5.32 | 7.75 |
| ELECTRICITY DEMAND | | | | | | |
| Annual Consumption (kilowatthours) | | | | | | |
| 10,000 or less | 281 | 1,612 | 1 | .76 | 1.82 | 3.33 |
| 10,001 to 25,000 | 375 | 2,505 | 6 | 1.80 | 3.43 | 5.64 |
| 25,001 to 50,000 | 394 | 3,099 | 14 | 2.23 | 4.17 | 6.67 |
| 50,001 to 100,000 | 390 | 4,592 | 28 | 2.92 | 5.47 | 9.13 |
| 100,001 to 500,000 | 557 | 10,441 | 120 | 3.62 | 6.90 | 15.67 |
| 500,001 to 1,000,000 | 104 | 4,927 | 72 | 4.00 | 6.70 | 10.47 |
| 1,000,001 to 2,000,000 | 57 | 4,211 | 78 | 4.53 | 7.38 | 14.40 |
| 2,000,001 to 5,000,000 | 43 | 5,098 | 133 | 4.54 | 6.55 | 11.41 |
| Over 5,000,000 | 16 | 7,047 | 207 | 4.73 | 5.93 | 10.05 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

Note: • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 36. Distribution of Electricity Load Factors

| Building Characteristics | All Demand-Metered Buildings | | | Load Factor | | |
|--|--------------------------------|--|--|-----------------|--------|-----------------|
| | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | 25th Percentile | Median | 75th Percentile |
| All Buildings | 2,217 | 43,532 | 661 | .163 | 0.241 | 0.355 |
| Building Floorspace (Square Feet) | | | | | | |
| 1,001 to 5,000 | 999 | 2,777 | 60 | .144 | .211 | .334 |
| 5,001 to 10,000 | 468 | 3,469 | 53 | .157 | .240 | .322 |
| 10,001 to 25,000 | 406 | 6,649 | 89 | .184 | .254 | .349 |
| 25,001 to 50,000 | 176 | 6,309 | 79 | .209 | .282 | .385 |
| 50,001 to 100,000 | 94 | 6,707 | 108 | .230 | .338 | .444 |
| 100,001 to 200,000 | 49 | 6,768 | 94 | .271 | .372 | .479 |
| 200,001 to 500,000 | 17 | 5,103 | 95 | .368 | .458 | .551 |
| Over 500,000 | 7 | 5,751 | 85 | .400 | .506 | .628 |
| Year Constructed | | | | | | |
| 1899 or Before | 65 | 970 | 5 | .178 | .228 | .318 |
| 1900 to 1919 | 101 | 2,129 | 16 | .128 | .186 | .291 |
| 1920 to 1945 | 284 | 5,547 | 50 | .164 | .228 | .323 |
| 1946 to 1959 | 400 | 6,837 | 88 | .151 | .217 | .316 |
| 1960 to 1969 | 420 | 8,835 | 141 | .162 | .243 | .349 |
| 1970 to 1979 | 514 | 9,940 | 175 | .179 | .259 | .409 |
| 1980 to 1983 | 189 | 3,343 | 73 | .163 | .252 | .384 |
| 1984 to 1986 | 143 | 3,607 | 72 | .182 | .262 | .383 |
| 1987 to 1989 | 100 | 2,324 | 39 | .219 | .299 | .429 |
| BUILDING USE | | | | | | |
| Principal Building Activity | | | | | | |
| Assembly | 263 | 4,086 | 42 | .085 | .137 | .220 |
| Education | 167 | 6,122 | 52 | .149 | .202 | .261 |
| Food Sales | 69 | 662 | 28 | .445 | .503 | .600 |
| Food Service | 164 | 935 | 25 | .301 | .351 | .420 |
| Health Care | 35 | 1,642 | 39 | .206 | .235 | .402 |
| Lodging | 94 | 2,834 | 35 | .253 | .341 | .437 |
| Mercantile and Service | 604 | 7,948 | 119 | .183 | .238 | .354 |
| Office | 384 | 9,291 | 193 | .204 | .264 | .357 |
| Parking Garage | 27 | 756 | 4 | .147 | .235 | .402 |
| Public Order and Safety | 19 | 473 | 7 | .180 | .210 | .414 |
| Warehouse | 274 | 6,202 | 58 | .134 | .208 | .274 |
| Other | 37 | 964 | 50 | .219 | .266 | .463 |
| Vacant | 81 | 1,618 | 9 | .091 | .150 | .230 |
| Weekly Operating Hours | | | | | | |
| 39 or Fewer | 236 | 2,388 | 13 | .072 | .125 | .186 |
| 40 to 48 | 561 | 9,571 | 105 | .144 | .205 | .268 |
| 49 to 60 | 505 | 9,208 | 114 | .172 | .227 | .282 |
| 61 to 84 | 355 | 8,114 | 120 | .215 | .295 | .365 |
| 85 to 167 | 316 | 6,784 | 118 | .240 | .342 | .445 |
| 168 (Open Continuously) | 244 | 7,467 | 192 | .278 | .413 | .529 |
| Workers | | | | | | |
| 4 or Fewer | 966 | 6,639 | 56 | .132 | .193 | .301 |
| 5 to 9 | 494 | 5,240 | 54 | .174 | .243 | .338 |
| 10 to 19 | 301 | 4,212 | 51 | .211 | .264 | .359 |
| 20 to 49 | 268 | 7,400 | 95 | .216 | .282 | .408 |
| 50 to 99 | 101 | 5,830 | 84 | .258 | .357 | .459 |
| 100 to 249 | 61 | 5,461 | 121 | .325 | .414 | .501 |
| 250 or More | 27 | 8,750 | 200 | .402 | .458 | .589 |

See footnotes at end of table.

Table 36. Distribution of Electricity Load Factors (Continued)

| Building Characteristics | All Demand-Metered Buildings | | | Load Factor | | |
|---|--------------------------------|--|--|-----------------|--------|-----------------|
| | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | 25th Percentile | Median | 75th Percentile |
| Ownership and Occupancy | | | | | | |
| Nongovernment Owned | 1,881 | 32,539 | 493 | .164 | 0.241 | 0.355 |
| Owner Occupied | 1,368 | 24,146 | 375 | .166 | .250 | .361 |
| Single Establishment | 1,192 | 17,742 | 282 | .163 | .247 | .364 |
| Multiple Establishment | 176 | 6,404 | 93 | .207 | .259 | .353 |
| Nonowner Occupied | 513 | 8,393 | 118 | .161 | .225 | .341 |
| Single Establishment | 336 | 4,350 | 58 | .160 | .216 | .330 |
| Multiple Establishment | 140 | 3,611 | 59 | .207 | .262 | .425 |
| Vacant | 38 | 431 | 2 | .082 | .145 | .173 |
| Government Owned | 336 | 10,993 | 168 | .157 | .234 | .347 |
| Federal | 28 | 1,748 | 34 | .236 | .409 | .608 |
| State | 85 | 3,011 | 62 | .155 | .305 | .418 |
| Local | 222 | 6,234 | 72 | .150 | .215 | .284 |
| Percent Vacant at Least Three Months | | | | | | |
| 0 | 1,818 | 30,238 | 493 | .168 | .246 | .364 |
| 1 to 50 | 192 | 9,084 | 137 | .186 | .255 | .385 |
| 51 to 99 | 54 | 2,288 | 17 | .122 | .203 | .295 |
| 100 | 153 | 1,922 | 14 | .118 | .162 | .255 |
| Months in Use Out of Past 12 Months | | | | | | |
| 0 to 8 | 165 | 2,298 | 17 | .123 | .178 | .279 |
| 9 to 11 | 135 | 2,571 | 17 | .126 | .164 | .228 |
| 12 | 1,917 | 38,662 | 627 | .173 | .251 | .371 |
| LOCATION | | | | | | |
| Census Region | | | | | | |
| Northeast | 446 | 10,052 | 143 | .182 | .251 | .385 |
| Midwest | 482 | 11,040 | 151 | .164 | .239 | .340 |
| South | 942 | 15,179 | 239 | .148 | .233 | .349 |
| West | 347 | 7,262 | 129 | .174 | .255 | .386 |
| Census Division | | | | | | |
| Northeast | | | | | | |
| New England | 109 | 2,069 | 27 | .165 | .212 | .341 |
| Middle Atlantic | 336 | 7,983 | 116 | .193 | .258 | .391 |
| Midwest | | | | | | |
| East North Central | 336 | 7,277 | 99 | .150 | .233 | .329 |
| West North Central | 146 | 3,762 | 52 | .186 | .261 | .369 |
| South | | | | | | |
| South Atlantic | 394 | 7,244 | 109 | .139 | .232 | .344 |
| East South Central | 200 | 2,880 | 54 | .173 | .244 | .392 |
| West South Central | 349 | 5,056 | 76 | .145 | .223 | .342 |
| West | | | | | | |
| Mountain | 167 | 3,412 | 46 | .166 | .244 | .355 |
| Pacific | 180 | 3,849 | 83 | .188 | .284 | .421 |
| Metropolitan Status | | | | | | |
| Metropolitan | 1,630 | 36,288 | 568 | .168 | .249 | .362 |
| Nonmetropolitan | 586 | 7,244 | 93 | .148 | .219 | .337 |
| Climate Zone: 45-Year Average | | | | | | |
| Under 2,000 CDD and -- | | | | | | |
| Over 7,000 HDD | 145 | 3,340 | 52 | .203 | .244 | .380 |
| 5,500-7,000 HDD | 635 | 13,034 | 171 | .165 | .245 | .357 |
| 4,000-5,499 HDD | 410 | 10,682 | 170 | .163 | .239 | .359 |
| Under 4,000 HDD | 454 | 8,353 | 147 | .161 | .241 | .355 |
| 2,000 CDD or More and -- | | | | | | |
| Under 4,000 HDD | 572 | 8,123 | 121 | .150 | .232 | .343 |

See footnotes at end of table.

Table 36. Distribution of Electricity Load Factors (Continued)

| Building Characteristics | All Demand-Metered Buildings | | | Load Factor | | |
|--|--------------------------------|--|--|-----------------|--------|-----------------|
| | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | 25th Percentile | Median | 75th Percentile |
| ENERGY SOURCES AND END USES * | | | | | | |
| Energy Sources | | | | | | |
| (Solely or in Combination) | | | | | | |
| Electricity | 2,217 | 43,532 | 661 | .163 | .241 | .355 |
| Natural Gas | 1,311 | 29,768 | 428 | .168 | .244 | .352 |
| Fuel Oil | 305 | 9,536 | 164 | .173 | .251 | .358 |
| District Heat | 76 | 5,529 | 116 | .264 | .432 | .550 |
| District Chilled Water | 17 | 1,462 | 40 | .257 | .372 | .535 |
| Propane | 173 | 3,338 | 51 | .152 | .257 | .416 |
| Other | 55 | 1,188 | 11 | .123 | .210 | .273 |
| Energy End Uses | | | | | | |
| (Solely or in Combination) | | | | | | |
| Heated Buildings | 2,035 | 41,371 | 637 | .165 | .243 | .354 |
| Air-Conditioned Buildings | 1,770 | 37,841 | 614 | .176 | .254 | .371 |
| Buildings with Water Heating | 1,787 | 38,953 | 624 | .177 | .255 | .368 |
| Buildings with Cooking | 553 | 18,464 | 338 | .206 | .313 | .433 |
| Buildings with Manufacturing | 120 | 4,497 | 76 | .185 | .249 | .378 |
| Energy End-Use Combinations | | | | | | |
| Heated Buildings | | | | | | |
| With Air Conditioning | | | | | | |
| With Water Heating and Cooking | | | | | | |
| With Water Heating and Cooking | 446 | 16,371 | 309 | .208 | .322 | .444 |
| With Water Heating, Without Cooking | 1,059 | 18,173 | 262 | .174 | .246 | .337 |
| Without Water Heating or Cooking | 193 | 2,263 | 21 | .135 | .205 | .268 |
| Without Air Conditioning | | | | | | |
| With Water Heating and Cooking | | | | | | |
| With Water Heating and Cooking | 62 | 1,407 | 16 | .137 | .212 | .293 |
| With Water Heating, Without Cooking | 150 | 2,209 | 20 | .134 | .207 | .299 |
| Without Water Heating or Cooking | 115 | 768 | 5 | .125 | .176 | .213 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 97 | 1,185 | 5 | .109 | .169 | .263 |
| All Other Combinations | 93 | 1,156 | 23 | .208 | .319 | .449 |
| Space-Heating Energy Source | | | | | | |
| Electricity | | | | | | |
| Main | 720 | 13,674 | 250 | .164 | .253 | .363 |
| With Secondary | 533 | 10,049 | 193 | .177 | .253 | .363 |
| Natural Gas Only | 55 | 1,603 | 29 | .171 | .274 | .349 |
| Other Energy Sources or Combinations | 34 | 858 | 14 | .227 | .275 | .371 |
| With No Secondary | 19 | 720 | 15 | .102 | .266 | .342 |
| Secondary | 478 | 8,447 | 164 | .177 | .253 | .364 |
| Other Excluding Electricity | 187 | 3,625 | 57 | .150 | .239 | .364 |
| Building Not Heated | 1,315 | 27,696 | 387 | .166 | .239 | .351 |
| Building Not Heated | 181 | 2,162 | 24 | .132 | .216 | .375 |
| Main Space-Heating Energy Source | | | | | | |
| Electricity | | | | | | |
| Natural Gas | 533 | 10,049 | 193 | .177 | .253 | .363 |
| Fuel Oil | 1,095 | 21,618 | 295 | .162 | .235 | .344 |
| District Heat | 237 | 3,775 | 45 | .169 | .240 | .316 |
| Propane | 72 | 4,987 | 90 | .253 | .432 | .560 |
| Other | 74 | 614 | 12 | .116 | .201 | .413 |
| Other | 33 | 563 | 3 | .123 | .179 | .266 |
| Air-Conditioning Energy Source | | | | | | |
| Electricity | | | | | | |
| Other Excluding Electricity | 1,705 | 34,836 | 570 | .175 | .253 | .367 |
| Air-Conditioning Not Performed | 66 | 3,005 | 44 | .220 | .291 | .398 |
| Air-Conditioning Not Performed | 446 | 5,691 | 47 | .126 | .186 | .273 |

See footnotes at end of table.

ELECTRICITY
Table 36. Distribution of Electricity Load Factors (Continued)

| Building Characteristics | All Demand-Metered Buildings | | | Load Factor | | |
|--|--------------------------------|--|--|-----------------|--------|-----------------|
| | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | 25th Percentile | Median | 75th Percentile |
| Water-Heating Energy Source | | | | | | |
| Electricity | 863 | 15,716 | 276 | .170 | .250 | .352 |
| Other Excluding Electricity | 923 | 23,236 | 348 | .182 | .264 | .383 |
| Water Heating Not Performed | 430 | 4,580 | 37 | .131 | .186 | .262 |
| Cooking Energy Source | | | | | | |
| Electricity | 239 | 9,034 | 153 | .205 | .320 | .475 |
| Other Excluding Electricity | 314 | 9,431 | 185 | .206 | .313 | .420 |
| Cooking Not Performed | 1,664 | 25,068 | 324 | .151 | .224 | .316 |
| Manufacturing Energy Source | | | | | | |
| Electricity | 90 | 3,560 | 56 | .199 | .255 | .371 |
| Other Excluding Electricity | 30 | 937 | 20 | .170 | .234 | .446 |
| Manufacturing Not Performed | 2,097 | 39,035 | 586 | .162 | .240 | .354 |
| HEATING AND COOLING | | | | | | |
| Percent Heated | | | | | | |
| Not Heated | 187 | 2,231 | 24 | .122 | .210 | .360 |
| 1 to 50 | 327 | 6,107 | 46 | .140 | .220 | .303 |
| 51 to 99 | 272 | 6,378 | 118 | .209 | .270 | .417 |
| 100 | 1,430 | 28,816 | 473 | .166 | .243 | .355 |
| Percent Cooled | | | | | | |
| Not Cooled | 446 | 5,691 | 47 | .126 | .186 | .273 |
| 1 to 50 | 565 | 12,102 | 108 | .168 | .235 | .332 |
| 51 to 99 | 361 | 10,209 | 194 | .211 | .281 | .420 |
| 100 | 844 | 15,531 | 313 | .175 | .256 | .381 |
| Computer Area with Separate Air-Conditioning System | | | | | | |
| Present in Building | 194 | 13,844 | 306 | .262 | .365 | .465 |
| Not Present | 2,023 | 29,688 | 355 | .155 | .230 | .341 |
| LIGHTING AND REFRIGERATION | | | | | | |
| Percent Lit When Open | | | | | | |
| Not Lit | 28 | 416 | 1 | .087 | .095 | .224 |
| 1 to 50 | 496 | 6,714 | 44 | .132 | .198 | .282 |
| 51 to 99 | 493 | 12,254 | 188 | .190 | .255 | .367 |
| 100 | 1,200 | 24,148 | 428 | .176 | .253 | .383 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | |
| Commercial | | | | | | |
| Refrigeration Units | 592 | 19,032 | 367 | .231 | .354 | .466 |
| Freezers | 471 | 17,318 | 352 | .250 | .372 | .480 |
| Residential | | | | | | |
| Refrigerators | 1,320 | 31,880 | 494 | .173 | .250 | .348 |
| Freezers | 343 | 9,409 | 152 | .185 | .266 | .392 |
| Ice-Making Machines | 539 | 18,531 | 385 | .235 | .341 | .456 |
| Refrigerated Vending Machines | 950 | 30,229 | 521 | .211 | .293 | .414 |
| Water Coolers | 1,064 | 32,822 | 533 | .182 | .253 | .362 |
| Other | 35 | 1,149 | 52 | .316 | .441 | .528 |
| ENERGY MANAGEMENT | | | | | | |
| Occupant Control | | | | | | |
| Any Control of Heating | 1,160 | 17,469 | 242 | .162 | .234 | .339 |
| With Thermostats | 1,026 | 16,064 | 224 | .165 | .237 | .343 |
| Any Control of Cooling | 1,037 | 17,866 | 255 | .171 | .248 | .355 |
| With Thermostats | 925 | 16,343 | 235 | .175 | .251 | .355 |

See footnotes at end of table.

Table 36. Distribution of Electricity Load Factors (Continued)

| Building Characteristics | All Demand-Metered Buildings | | | Load Factor | | |
|--|--------------------------------|--|--|-----------------|--------|-----------------|
| | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | 25th Percentile | Median | 75th Percentile |
| Reduced Use During Off-Hours | | | | | | |
| Heating Only | 334 | 4,318 | 46 | .039 | .203 | .293 |
| Cooling Only | 155 | 3,023 | 51 | .208 | .295 | .411 |
| Heating and Cooling | 1,275 | 27,698 | 393 | .161 | .235 | .327 |
| Computerized Energy Management and Control System | | | | | | |
| Present in Building | 184 | 11,750 | 221 | .239 | .338 | .470 |
| Controls Heating and Cooling | 175 | 11,259 | 213 | .236 | .337 | .467 |
| Controls Lighting | 39 | 3,115 | 53 | .264 | .384 | .466 |
| Controls Other | 27 | 2,050 | 41 | .253 | .349 | .507 |
| ELECTRICITY DEMAND | | | | | | |
| Annual Consumption (kilowatthours) | | | | | | |
| 10,000 or less | 281 | 1,612 | 1 | .074 | .129 | .180 |
| 10,001 to 25,000 | 375 | 2,505 | 6 | .119 | .163 | .212 |
| 25,001 to 50,000 | 394 | 3,099 | 14 | .169 | .220 | .281 |
| 50,001 to 100,000 | 390 | 4,592 | 28 | .204 | .265 | .342 |
| 100,001 to 500,000 | 557 | 10,441 | 120 | .244 | .330 | .436 |
| 500,001 to 1,000,000 | 104 | 4,927 | 72 | .296 | .381 | .480 |
| 1,000,001 to 2,000,000 | 57 | 4,211 | 78 | .341 | .448 | .534 |
| 2,000,001 to 5,000,000 | 43 | 5,098 | 133 | .438 | .497 | .630 |
| Over 5,000,000 | 16 | 7,047 | 207 | .409 | .530 | .623 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

Note: • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

ELECTRICITY

Table 37. Electricity Conditional Energy Intensity and Distribution of Building-Level Intensities

| Building Characteristics | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | Total Consumed per Square Foot (thousand kWh) | Distribution of Building-Level Intensities (kWh/sq. ft.) | | |
|--|--------------------------------|--|--|---|--|--------|-----------------|
| | | | | | 25th Percentile | Median | 75th Percentile |
| All Buildings | 4,294 | 61,563 | 813 | 13.2 | 3.6 | 8.6 | 19.6 |
| Building Floorspace (Square Feet) | | | | | | | |
| 1,001 to 5,000 | 2,360 | 6,409 | 95 | 14.9 | 4.5 | 11.3 | 26.9 |
| 5,001 to 10,000 | 855 | 6,297 | 72 | 11.5 | 3.4 | 7.8 | 15.0 |
| 10,001 to 25,000 | 622 | 9,989 | 112 | 11.2 | 2.7 | 6.6 | 15.3 |
| 25,001 to 50,000 | 243 | 8,671 | 97 | 11.2 | 2.4 | 6.7 | 17.0 |
| 50,001 to 100,000 | 125 | 8,918 | 127 | 14.2 | 2.8 | 8.2 | 17.9 |
| 100,001 to 200,000 | 60 | 8,222 | 113 | 13.8 | 2.9 | 10.2 | 19.6 |
| 200,001 to 500,000 | 23 | 6,996 | 107 | 15.3 | 5.5 | 14.3 | 21.5 |
| Over 500,000 | 7 | 6,062 | 89 | 14.7 | 3.2 | 13.4 | 21.4 |
| Year Constructed | | | | | | | |
| 1899 or Before | 162 | 1,568 | 7 | 4.7 | 1.8 | 4.7 | 9.8 |
| 1900 to 1919 | 223 | 3,849 | 22 | 5.7 | 2.7 | 4.7 | 9.5 |
| 1920 to 1945 | 631 | 7,880 | 62 | 7.8 | 2.8 | 6.6 | 17.0 |
| 1946 to 1959 | 823 | 10,185 | 111 | 10.9 | 3.0 | 7.4 | 15.3 |
| 1960 to 1969 | 775 | 11,921 | 173 | 14.5 | 4.2 | 8.6 | 18.4 |
| 1970 to 1979 | 855 | 13,172 | 214 | 16.2 | 4.5 | 10.6 | 25.5 |
| 1980 to 1983 | 309 | 4,209 | 86 | 20.5 | 5.5 | 11.3 | 33.0 |
| 1984 to 1986 | 315 | 5,628 | 89 | 15.8 | 5.0 | 12.0 | 24.8 |
| 1987 to 1989 | 202 | 3,150 | 49 | 15.5 | 4.9 | 13.9 | 32.0 |
| BUILDING USE | | | | | | | |
| Principal Building Activity | | | | | | | |
| Assembly | 614 | 6,851 | 55 | 8.0 | 2.1 | 5.7 | 12.4 |
| Education | 282 | 8,070 | 64 | 7.9 | 3.6 | 7.1 | 12.1 |
| Food Sales | 102 | 792 | 31 | 39.0 | 28.7 | 46.2 | 72.5 |
| Food Service | 241 | 1,167 | 33 | 28.3 | 16.6 | 31.4 | 55.9 |
| Health Care | 80 | 2,054 | 45 | 22.0 | 7.0 | 18.2 | 23.1 |
| Lodging | 140 | 3,476 | 40 | 11.6 | 7.0 | 10.7 | 19.3 |
| Mercantile and Service | 1,276 | 12,361 | 161 | 13.0 | 3.9 | 8.5 | 17.9 |
| Office | 679 | 11,796 | 229 | 19.4 | 7.7 | 13.3 | 24.2 |
| Parking Garage | 45 | 983 | 5 | 5.3 | 2.2 | 5.1 | 8.4 |
| Public Order and Safety | 50 | 608 | 8 | 13.8 | 4.2 | 5.1 | 21.6 |
| Warehouse | 543 | 8,850 | 71 | 8.0 | 1.4 | 3.5 | 7.1 |
| Other | 62 | 1,528 | 59 | 38.5 | 1.8 | 12.7 | 49.8 |
| Vacant | 182 | 3,027 | 11 | 3.8 | 1.5 | 3.1 | 6.2 |
| Weekly Operating Hours | | | | | | | |
| 39 or Fewer | 687 | 4,747 | 21 | 4.4 | 1.4 | 3.5 | 8.1 |
| 40 to 48 | 1,100 | 13,810 | 129 | 9.3 | 3.0 | 7.1 | 13.1 |
| 49 to 60 | 978 | 13,349 | 140 | 10.5 | 3.5 | 6.9 | 14.1 |
| 61 to 84 | 621 | 10,751 | 153 | 14.2 | 5.0 | 13.2 | 26.2 |
| 85 to 167 | 513 | 9,377 | 142 | 15.1 | 8.0 | 17.6 | 37.2 |
| 168 (Open Continuously) | 395 | 9,529 | 228 | 23.9 | 7.2 | 18.5 | 40.6 |
| Workers | | | | | | | |
| 4 or Fewer | 2,261 | 13,550 | 86 | 6.4 | 2.7 | 6.5 | 15.8 |
| 5 to 9 | 903 | 7,926 | 76 | 9.5 | 4.0 | 8.9 | 21.5 |
| 10 to 19 | 507 | 6,443 | 70 | 10.8 | 4.5 | 10.6 | 21.5 |
| 20 to 49 | 381 | 9,665 | 117 | 12.1 | 5.8 | 11.3 | 21.1 |
| 50 to 99 | 132 | 7,389 | 102 | 13.8 | 6.0 | 14.5 | 26.3 |
| 100 to 249 | 79 | 6,771 | 140 | 20.7 | 11.2 | 18.3 | 32.0 |
| 250 or More | 32 | 9,818 | 222 | 22.6 | 15.1 | 21.4 | 29.4 |

See footnotes at end of table.

Table 37. Electricity Conditional Energy Intensity and Distribution of Building-Level Intensities (Continued)

| Building Characteristics | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | Total Consumed per Square Foot (thousand kWh) | Distribution of Building-Level Intensities (kWh/sq. ft.) | | |
|---|--------------------------------|--|--|---|--|--------|-----------------|
| | | | | | 25th Percentile | Median | 75th Percentile |
| Ownership and Occupancy | | | | | | | |
| Nongovernment Owned | 3,736 | 47,550 | 619 | 13.0 | 3.6 | 8.6 | 20.5 |
| Owner Occupied | 2,733 | 35,437 | 462 | 13.0 | 3.6 | 8.9 | 21.4 |
| Single Establishment | 2,366 | 26,590 | 347 | 13.0 | 3.6 | 9.0 | 23.1 |
| Multiple Establishment | 367 | 8,847 | 115 | 13.0 | 4.0 | 8.6 | 18.4 |
| Nonowner Occupied | 1,002 | 12,113 | 157 | 13.0 | 3.5 | 7.9 | 17.7 |
| Single Establishment | 658 | 6,179 | 78 | 12.6 | 3.6 | 7.9 | 19.6 |
| Multiple Establishment | 256 | 5,227 | 78 | 14.8 | 4.3 | 11.3 | 19.0 |
| Vacant | 89 | 707 | 2 | 3.3 | 1.7 | 2.7 | 5.2 |
| Government Owned | 559 | 14,013 | 194 | 13.8 | 3.7 | 8.7 | 17.2 |
| Federal | 38 | 1,900 | 39 | 20.4 | 9.3 | 13.5 | 26.9 |
| State | 131 | 3,870 | 70 | 18.2 | 5.2 | 10.3 | 18.7 |
| Local | 390 | 8,243 | 84 | 10.2 | 3.0 | 7.7 | 13.6 |
| Percent Vacant at Least Three Months | | | | | | | |
| 0 | 3,507 | 42,697 | 604 | 14.2 | 3.9 | 9.2 | 21.2 |
| 1 to 50 | 374 | 12,416 | 171 | 13.8 | 2.9 | 7.9 | 15.4 |
| 51 to 99 | 98 | 3,446 | 19 | 5.5 | 1.3 | 3.7 | 8.0 |
| 100 | 315 | 3,005 | 19 | 6.2 | 2.5 | 6.0 | 11.3 |
| Months in Use Out of Past 12 Months | | | | | | | |
| 0 to 8 | 310 | 3,308 | 24 | 7.2 | 2.1 | 5.7 | 13.5 |
| 9 to 11 | 270 | 3,775 | 22 | 5.9 | 3.3 | 6.9 | 10.2 |
| 12 | 3,715 | 54,480 | 767 | 14.1 | 3.7 | 9.2 | 21.0 |
| LOCATION | | | | | | | |
| Census Region | | | | | | | |
| Northeast | 751 | 13,326 | 172 | 12.9 | 3.6 | 7.9 | 17.6 |
| Midwest | 1,001 | 15,704 | 178 | 11.4 | 2.8 | 7.5 | 17.5 |
| South | 1,723 | 21,215 | 286 | 13.5 | 3.9 | 9.3 | 21.1 |
| West | 819 | 11,318 | 177 | 15.6 | 3.6 | 9.5 | 24.0 |
| Census Division | | | | | | | |
| Northeast | | | | | | | |
| New England | 177 | 3,127 | 34 | 10.8 | 3.9 | 7.9 | 15.3 |
| Middle Atlantic | 574 | 10,199 | 138 | 13.5 | 3.5 | 8.0 | 19.1 |
| Midwest | | | | | | | |
| East North Central | 656 | 10,527 | 117 | 11.1 | 2.7 | 6.9 | 15.9 |
| West North Central | 345 | 5,177 | 61 | 11.9 | 3.5 | 9.4 | 21.0 |
| South | | | | | | | |
| South Atlantic | 692 | 9,628 | 122 | 12.7 | 3.5 | 8.7 | 20.4 |
| East South Central | 381 | 4,218 | 63 | 15.0 | 4.8 | 10.3 | 21.4 |
| West South Central | 651 | 7,369 | 101 | 13.7 | 5.1 | 10.0 | 21.3 |
| West | | | | | | | |
| Mountain | 300 | 4,172 | 52 | 12.6 | 2.8 | 6.9 | 20.5 |
| Pacific | 519 | 7,146 | 125 | 17.4 | 4.5 | 12.0 | 27.0 |
| Metropolitan Status | | | | | | | |
| Metropolitan | 2,946 | 49,835 | 693 | 13.9 | 3.7 | 9.0 | 20.2 |
| Nonmetropolitan | 1,349 | 11,728 | 119 | 10.2 | 3.2 | 7.6 | 18.2 |
| Climate Zone: 45-Year Average | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | |
| Over 7,000 HDD | 333 | 4,983 | 62 | 12.4 | 3.6 | 8.8 | 21.0 |
| 5,500-7,000 HDD | 1,074 | 17,496 | 196 | 11.2 | 3.0 | 7.5 | 17.2 |
| 4,000-5,499 HDD | 917 | 15,045 | 207 | 13.8 | 3.4 | 8.8 | 20.3 |
| Under 4,000 HDD | 982 | 12,573 | 194 | 15.5 | 3.8 | 10.7 | 24.1 |
| 2,000 CDD or More and -- | | | | | | | |
| Under 4,000 HDD | 989 | 11,466 | 154 | 13.4 | 4.0 | 9.1 | 20.4 |

See footnotes at end of table.

Table 37. Electricity Conditional Energy Intensity and Distribution of Building-Level Intensities (Continued)

| Building Characteristics | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | Total Consumed per Square Foot (thousand kWh) | Distribution of Building-Level Intensities (kWh/sq. ft.) | | | | | | |
|--|--------------------------------|--|--|---|--|--------|-----------------|--|--|--|--|
| | | | | | 25th Percentile | Median | 75th Percentile | | | | |
| ENERGY SOURCES AND END USES * | | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | | |
| Electricity | 4,294 | 61,563 | 813 | 13.2 | 3.6 | 8.6 | 19.6 | | | | |
| Natural Gas | 2,417 | 41,115 | 534 | 13.0 | 3.6 | 8.5 | 19.0 | | | | |
| Fuel Oil | 580 | 12,579 | 194 | 15.4 | 3.5 | 6.9 | 15.9 | | | | |
| District Heat | 98 | 6,578 | 130 | 19.8 | 5.7 | 12.2 | 32.8 | | | | |
| District Chilled Water | 24 | 1,927 | 47 | 24.6 | 9.3 | 16.5 | 18.9 | | | | |
| Propane | 348 | 4,695 | 59 | 12.5 | 3.6 | 10.2 | 24.1 | | | | |
| Other | 129 | 1,537 | 13 | 8.6 | 1.5 | 4.3 | 7.9 | | | | |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | | |
| Heated Buildings | 3,872 | 57,826 | 784 | 13.6 | 3.8 | 9.0 | 20.1 | | | | |
| Air-Conditioned Buildings | 3,182 | 51,757 | 749 | 14.5 | 4.7 | 10.5 | 22.3 | | | | |
| Buildings with Water Heating | 3,180 | 53,569 | 762 | 14.2 | 4.3 | 10.1 | 21.9 | | | | |
| Buildings with Cooking | 864 | 23,662 | 390 | 16.5 | 6.8 | 16.1 | 32.7 | | | | |
| Buildings with Manufacturing | 205 | 5,595 | 85 | 15.3 | 3.6 | 8.0 | 21.5 | | | | |
| Energy End-Use Combinations | | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | | |
| With Water Heating and Cooking | 660 | 20,781 | 358 | 17.2 | 7.6 | 17.9 | 35.2 | | | | |
| With Water Heating, Without Cooking | 1,906 | 25,896 | 338 | 13.0 | 4.4 | 9.4 | 18.8 | | | | |
| Without Water Heating or Cooking | 484 | 3,641 | 28 | 7.7 | 2.9 | 6.5 | 11.4 | | | | |
| Without Air Conditioning | | | | | | | | | | | |
| With Water Heating and Cooking | 138 | 2,079 | 19 | 8.9 | 3.0 | 4.5 | 10.7 | | | | |
| With Water Heating, Without Cooking | 373 | 3,700 | 30 | 8.1 | 1.4 | 3.7 | 9.1 | | | | |
| Without Water Heating or Cooking | 291 | 1,509 | 8 | 5.2 | 2.3 | 3.9 | 7.4 | | | | |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 269 | 2,282 | 7 | 2.9 | .7 | 1.6 | 4.5 | | | | |
| All Other Combinations | 174 | 1,675 | 26 | 15.4 | 4.1 | 10.7 | 26.0 | | | | |
| Space-Heating Energy Source | | | | | | | | | | | |
| Electricity | 1,283 | 18,702 | 305 | 16.3 | 5.7 | 12.3 | 26.6 | | | | |
| Main | 957 | 13,448 | 234 | 17.4 | 6.8 | 14.8 | 29.7 | | | | |
| With Secondary | 93 | 1,997 | 35 | 17.3 | 4.3 | 8.4 | 24.4 | | | | |
| Natural Gas Only | 54 | 1,142 | 17 | 14.7 | 6.5 | 13.5 | 33.7 | | | | |
| Other Energy Sources or Combinations | 36 | 787 | 16 | 20.2 | 2.8 | 4.3 | 13.8 | | | | |
| With No Secondary | 864 | 11,451 | 200 | 17.5 | 6.9 | 15.3 | 31.2 | | | | |
| Secondary | 326 | 5,254 | 70 | 13.3 | 3.5 | 7.5 | 18.4 | | | | |
| Other Excluding Electricity | 2,589 | 39,124 | 480 | 12.3 | 3.3 | 7.8 | 17.3 | | | | |
| Building Not Heated | 422 | 3,737 | 29 | 7.6 | 1.2 | 4.1 | 12.8 | | | | |
| Main Space-Heating Energy Source | | | | | | | | | | | |
| Electricity | 957 | 13,448 | 234 | 17.4 | 6.8 | 14.8 | 29.7 | | | | |
| Natural Gas | 2,078 | 31,102 | 377 | 12.1 | 3.3 | 8.0 | 17.5 | | | | |
| Fuel Oil | 473 | 5,577 | 53 | 9.5 | 3.5 | 6.8 | 14.9 | | | | |
| District Heat | 93 | 6,020 | 104 | 17.3 | 5.7 | 11.9 | 32.8 | | | | |
| Propane | 208 | 1,230 | 14 | 11.6 | 3.1 | 7.3 | 24.0 | | | | |
| Other | 68 | 761 | 4 | 5.4 | 1.5 | 3.2 | 6.0 | | | | |
| Air-Conditioning Energy Source | | | | | | | | | | | |
| Electricity | 3,072 | 47,905 | 695 | 14.5 | 4.7 | 10.4 | 22.0 | | | | |
| Other Excluding Electricity | 111 | 3,852 | 53 | 13.8 | 5.5 | 11.0 | 27.5 | | | | |
| Air-Conditioning Not Performed | 1,112 | 9,806 | 64 | 6.5 | 1.5 | 3.6 | 8.5 | | | | |

See footnotes at end of table.

Table 37. Electricity Conditional Energy Intensity and Distribution of Building-Level Intensities (Continued)

| Building Characteristics | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | Total Consumed per Square Foot (thousand kWh) | Distribution of Building-Level Intensities (kWh/sq. ft.) | | |
|--|--------------------------------|--|--|---|--|--------|-----------------|
| | | | | | 25th Percentile | Median | 75th Percentile |
| Water-Heating Energy Source | | | | | | | |
| Electricity | 1,554 | 21,493 | 333 | 15.5 | 4.3 | 10.5 | 23.1 |
| Other Excluding Electricity | 1,626 | 32,076 | 430 | 13.4 | 4.1 | 9.9 | 21.0 |
| Water Heating Not Performed | 1,115 | 7,994 | 50 | 6.3 | 1.9 | 4.5 | 9.7 |
| Cooking Energy Source | | | | | | | |
| Electricity | 387 | 10,850 | 174 | 16.0 | 7.6 | 16.9 | 37.2 |
| Other Excluding Electricity | 477 | 12,812 | 216 | 16.9 | 5.9 | 15.5 | 31.7 |
| Cooking Not Performed | 3,431 | 37,901 | 423 | 11.1 | 3.1 | 7.4 | 15.9 |
| Manufacturing Energy Source | | | | | | | |
| Electricity | 163 | 4,406 | 64 | 14.5 | 3.2 | 8.0 | 21.4 |
| Other Excluding Electricity | 42 | 1,190 | 21 | 18.0 | 4.5 | 8.5 | 24.3 |
| Manufacturing Not Performed | 4,090 | 55,968 | 727 | 13.0 | 3.6 | 8.8 | 19.6 |
| HEATING AND COOLING | | | | | | | |
| Percent Heated | | | | | | | |
| Not Heated | 433 | 3,839 | 29 | 7.5 | 1.2 | 4.0 | 12.6 |
| 1 to 50 | 630 | 9,314 | 61 | 6.6 | 2.4 | 4.4 | 9.0 |
| 51 to 99 | 496 | 8,668 | 146 | 16.8 | 5.5 | 12.7 | 31.4 |
| 100 | 2,735 | 39,742 | 577 | 14.5 | 4.5 | 10.2 | 21.7 |
| Percent Cooled | | | | | | | |
| Not Cooled | 1,112 | 9,806 | 64 | 6.5 | 1.5 | 3.6 | 8.5 |
| 1 to 50 | 1,037 | 17,821 | 135 | 7.6 | 2.9 | 6.0 | 11.1 |
| 51 to 99 | 597 | 13,133 | 230 | 17.5 | 6.5 | 14.6 | 30.9 |
| 100 | 1,548 | 20,803 | 384 | 18.5 | 7.3 | 14.0 | 26.2 |
| Computer Area with Separate Air-Conditioning System | | | | | | | |
| Present in Building | 264 | 16,678 | 350 | 21.0 | 8.0 | 15.7 | 28.3 |
| Not Present | 4,030 | 44,885 | 463 | 10.3 | 3.5 | 8.2 | 18.6 |
| LIGHTING AND REFRIGERATION | | | | | | | |
| Percent Lit When Open | | | | | | | |
| Not Lit | 75 | 757 | 2 | 3.1 | .7 | 1.1 | 2.4 |
| 1 to 50 | 999 | 10,864 | 56 | 5.2 | 2.4 | 4.5 | 9.1 |
| 51 to 99 | 951 | 16,950 | 238 | 14.1 | 4.9 | 10.8 | 21.7 |
| 100 | 2,268 | 32,992 | 516 | 15.6 | 4.5 | 10.8 | 24.1 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | |
| Commercial | | | | | | | |
| Refrigeration Units | 908 | 24,605 | 438 | 17.8 | 8.5 | 18.8 | 42.1 |
| Freezers | 707 | 21,627 | 417 | 19.3 | 9.6 | 21.9 | 49.6 |
| Residential | | | | | | | |
| Refrigerators | 2,471 | 44,179 | 602 | 13.6 | 4.0 | 8.7 | 18.2 |
| Freezers | 617 | 12,406 | 191 | 15.4 | 5.8 | 10.5 | 22.8 |
| Ice-Making Machines | 771 | 23,401 | 451 | 19.3 | 8.1 | 18.8 | 40.8 |
| Refrigerated Vending Machines | 1,513 | 38,810 | 622 | 16.0 | 5.7 | 12.5 | 24.9 |
| Water Coolers | 1,745 | 42,781 | 629 | 14.7 | 4.1 | 8.9 | 19.2 |
| Other | 56 | 1,408 | 54 | 38.7 | 21.8 | 40.6 | 91.3 |
| ENERGY MANAGEMENT | | | | | | | |
| Occupant Control | | | | | | | |
| Any Control of Heating | 2,399 | 27,033 | 315 | 11.6 | 3.9 | 8.7 | 19.2 |
| With Thermostats | 2,100 | 24,762 | 289 | 11.7 | 3.9 | 8.8 | 19.2 |
| Any Control of Cooling | 1,977 | 26,303 | 321 | 12.2 | 4.5 | 9.6 | 20.8 |
| With Thermostats | 1,756 | 24,032 | 296 | 12.3 | 4.5 | 9.7 | 20.4 |

See footnotes at end of table.

ELECTRICITY

Table 37. Electricity Conditional Energy Intensity and Distribution of Building-Level Intensities (Continued)

| Building Characteristics | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Electricity Consumed (billion kWh) | Total Consumed per Square Foot (thousand kWh) | Distribution of Building-Level Intensities (kWh/sq. ft.) | | |
|--|--------------------------------|--|--|---|--|--------|-----------------|
| | | | | | 25th Percentile | Median | 75th Percentile |
| Reduced Use During Off-Hours | | | | | | | |
| Heating Only | 790 | 7,126 | 63 | 8.9 | 2.6 | 5.3 | 12.7 |
| Cooling Only | 283 | 4,112 | 59 | 14.4 | 4.7 | 11.4 | 26.2 |
| Heating and Cooling | 2,397 | 38,683 | 490 | 12.7 | 4.1 | 8.8 | 18.3 |
| Computerized Energy Management and Control System | | | | | | | |
| Present in Building | 263 | 14,310 | 263 | 18.3 | 8.2 | 15.9 | 27.8 |
| Controls Heating and Cooling | 251 | 13,767 | 254 | 18.4 | 8.2 | 15.9 | 27.5 |
| Controls Lighting | 51 | 3,835 | 65 | 17.1 | 13.4 | 17.6 | 33.7 |
| Controls Other | 32 | 2,316 | 47 | 20.3 | 10.7 | 19.8 | 26.1 |
| ELECTRICITY DEMAND | | | | | | | |
| Annual Consumption (kilowatthours) | | | | | | | |
| 10,000 or Less | 1,019 | 4,582 | 5 | 1.1 | .6 | 1.5 | 3.1 |
| 10,001 to 25,000 | 913 | 5,413 | 15 | 2.8 | 2.5 | 4.1 | 7.4 |
| 25,001 to 50,000 | 702 | 5,544 | 25 | 4.6 | 4.0 | 7.2 | 13.4 |
| 50,001 to 100,000 | 639 | 7,052 | 46 | 6.5 | 6.5 | 11.6 | 22.1 |
| 100,001 to 500,000 | 762 | 14,099 | 160 | 11.4 | 9.0 | 18.3 | 41.0 |
| 500,001 to 1,000,000 | 122 | 5,901 | 85 | 14.4 | 12.7 | 21.0 | 37.1 |
| 1,000,001 to 2,000,000 | 69 | 5,022 | 95 | 18.9 | 14.4 | 24.1 | 57.5 |
| 2,000,001 to 5,000,000 | 50 | 6,263 | 156 | 24.8 | 19.6 | 29.8 | 54.8 |
| Over 5,000,000 | 18 | 7,688 | 225 | 29.3 | 20.7 | 29.1 | 46.9 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

Note: * See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 38. Natural Gas Consumption

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Consumption | | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|-------------------------|----------------------------|------------------------------------|------------------------------|----------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | |
| | RSE Column Factor: | 0.761 | 0.692 | 0.763 | 1.233 | 1.233 | 1.119 | 0.969 | 1.103 |
| All Buildings | 2,420 | 41,143 | 17.0 | 2,073 | 2,015 | 833 | 49.0 | 42.0 | 6.00 |
| Building Floorspace (Square Feet) | | | | | | | | | |
| 1,001 to 5,000 | 1,225 | 3,423 | 2.8 | 302 | 294 | 240 | 85.8 | 51.7 | 5.24 |
| 5,001 to 10,000 | 532 | 3,955 | 7.4 | 265 | 258 | 485 | 65.2 | 55.2 | 8.04 |
| 10,001 to 25,000 | 355 | 5,752 | 16.2 | 278 | 270 | 760 | 46.9 | 47.6 | 5.89 |
| 25,001 to 50,000 | 153 | 5,451 | 35.7 | 309 | 300 | 1,966 | 55.1 | 52.8 | 6.21 |
| 50,001 to 100,000 | 88 | 6,207 | 70.8 | 249 | 242 | 2,758 | 38.9 | 37.6 | 8.44 |
| 100,001 to 200,000 | 45 | 6,018 | 134.6 | 238 | 231 | 5,175 | 38.5 | 40.9 | 12.61 |
| 200,001 to 500,000 | 17 | 5,054 | 301.6 | 228 | 222 | 13,239 | 43.9 | 39.4 | 20.16 |
| Over 500,000 | 6 | 5,284 | 865.1 | 203 | 198 | 32,366 | 37.4 | 23.1 | 24.23 |
| Year Constructed | | | | | | | | | |
| 1899 or Before | 98 | 1,004 | 10.3 | 53 | 51 | 523 | 50.8 | 77.4 | 20.66 |
| 1900 to 1919 | 152 | 3,068 | 20.1 | 123 | 120 | 787 | 39.1 | 54.8 | 25.53 |
| 1920 to 1945 | 396 | 5,741 | 14.5 | 244 | 237 | 598 | 41.3 | 44.9 | 14.48 |
| 1946 to 1959 | 512 | 7,238 | 14.1 | 411 | 399 | 780 | 55.2 | 49.8 | 11.71 |
| 1960 to 1969 | 454 | 8,467 | 18.7 | 458 | 445 | 980 | 52.5 | 48.9 | 9.47 |
| 1970 to 1979 | 420 | 8,103 | 19.3 | 441 | 428 | 1,021 | 52.9 | 40.4 | 12.10 |
| 1980 to 1983 | 138 | 2,189 | 15.9 | 117 | 114 | 826 | 52.1 | 40.4 | 13.96 |
| 1984 to 1986 | 148 | 3,460 | 23.4 | 141 | 138 | 929 | 39.7 | 23.5 | 15.74 |
| 1987 to 1989 | 102 | 1,873 | 18.3 | 85 | 83 | 808 | 44.1 | 23.9 | 19.32 |
| BUILDING USE | | | | | | | | | |
| Principal Building Activity | | | | | | | | | |
| Assembly | 345 | 4,304 | 12.5 | 174 | 169 | 489 | 39.2 | 78.1 | 10.37 |
| Education | 199 | 6,640 | 33.4 | 323 | 314 | 1,583 | 47.3 | 55.7 | 13.52 |
| Food Sales | 60 | 548 | 9.2 | 27 | 27 | 444 | 48.4 | 43.0 | 19.71 |
| Food Service | 188 | 818 | 4.4 | 128 | 124 | 662 | 152.0 | 83.2 | 10.53 |
| Health Care | 40 | 1,602 | 39.7 | 186 | 181 | 4,487 | 113.1 | 57.4 | 20.82 |
| Lodging | 101 | 2,541 | 25.1 | 187 | 182 | 1,796 | 71.7 | 69.1 | 15.24 |
| Mercantile and Service | 732 | 8,790 | 12.0 | 417 | 405 | 554 | 46.1 | 44.7 | 9.40 |
| Office | 394 | 7,220 | 18.3 | 238 | 231 | 587 | 32.0 | 13.4 | 10.12 |
| Parking Garage | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Public Order and Safety | 28 | 440 | 15.7 | 25 | 24 | 850 | 54.2 | 37.1 | 30.30 |
| Warehouse | 207 | 5,135 | 24.8 | 206 | 201 | 971 | 39.1 | 78.3 | 18.09 |
| Other | 26 | 932 | 35.3 | 102 | 99 | 3,742 | 106.1 | 62.3 | 26.28 |
| Vacant | 84 | 1,891 | 22.6 | 49 | 48 | 569 | Q | 47.7 | 38.88 |
| Weekly Operating Hours | | | | | | | | | |
| 39 or Fewer | 323 | 2,620 | 8.1 | 100 | 97 | 300 | 37.0 | 51.6 | 10.40 |
| 40 to 48 | 650 | 9,163 | 14.1 | 388 | 377 | 580 | 41.1 | 37.9 | 7.75 |
| 49 to 60 | 560 | 8,481 | 15.1 | 326 | 317 | 566 | 37.4 | 32.0 | 9.01 |
| 61 to 84 | 377 | 7,952 | 21.1 | 342 | 332 | 882 | 41.8 | 32.9 | 10.11 |
| 85 to 167 | 297 | 6,574 | 22.1 | 360 | 350 | 1,178 | 53.3 | 56.0 | 15.47 |
| 168 (Open Continuously) | 213 | 6,353 | 29.9 | 557 | 541 | 2,547 | 85.2 | 54.8 | 12.00 |
| Workers | | | | | | | | | |
| 4 or Fewer | 1,113 | 6,720 | 6.0 | 300 | 291 | 262 | 43.3 | 113.2 | 6.31 |
| 5 to 9 | 556 | 5,180 | 9.3 | 218 | 212 | 381 | 40.8 | 50.9 | 8.64 |
| 10 to 19 | 352 | 4,457 | 12.7 | 248 | 241 | 686 | 54.1 | 53.5 | 6.14 |
| 20 to 49 | 242 | 6,618 | 27.3 | 332 | 323 | 1,333 | 48.8 | 48.3 | 6.18 |
| 50 to 99 | 82 | 5,352 | 65.6 | 253 | 246 | 3,017 | 46.0 | 48.1 | 13.10 |
| 100 to 249 | 53 | 5,043 | 95.9 | 358 | 348 | 6,611 | 69.0 | 46.6 | 13.72 |
| 250 or More | 23 | 7,773 | 333.9 | 364 | 354 | 15,213 | 45.6 | 20.3 | 16.58 |

See footnote at end of table.

Table 38. Natural Gas Consumption (Continued)

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Consumption | | | | |
|---|---------------------------------|----------------------------------|--|-------------------------|----------------------------|------------------------------------|------------------------------|----------------------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) |
| TYPE OF BUILDING | | | | | | | | |
| Office Buildings | 2,104 | 31,713 | 15.1 | 1,601 | 1,556 | 740 | 49.1 | 42.3 |
| Owner Occupied | 1,561 | 23,640 | 15.1 | 1,292 | 1,256 | 804 | 53.1 | 46.2 |
| Single Establishment | 1,318 | 17,151 | 13.0 | 1,083 | 1,052 | 798 | 61.3 | 61.9 |
| Multiple Establishment | 244 | 6,490 | 26.6 | 210 | 204 | 838 | 31.4 | 20.0 |
| Nonowner Occupied | 543 | 8,072 | 14.9 | 309 | 300 | 553 | 37.2 | 31.3 |
| Single Establishment | 363 | 4,279 | 11.8 | 176 | 171 | 470 | 39.9 | 37.0 |
| Multiple Establishment | 146 | 3,515 | 24.0 | 102 | 99 | 677 | 28.2 | 21.1 |
| Vacant | 33 | 278 | 8.4 | Q | Q | Q | Q | 113.8 |
| Government Owned | 316 | 9,431 | 29.9 | 472 | 459 | 1,452 | 48.6 | 40.9 |
| Federal | 13 | Q | 72.1 | Q | Q | Q | 74.1 | 40.7 |
| State | 78 | 2,317 | 29.8 | 112 | 109 | 1,399 | 47.0 | 29.2 |
| Local | 225 | 6,202 | 27.5 | 290 | 282 | 1,252 | 45.5 | 48.4 |
| Ownership and Occupancy | | | | | | | | |
| Nongovernment Owned | 2,104 | 31,713 | 15.1 | 1,601 | 1,556 | 740 | 49.1 | 42.3 |
| Owner Occupied | 1,561 | 23,640 | 15.1 | 1,292 | 1,256 | 804 | 53.1 | 46.2 |
| Single Establishment | 1,318 | 17,151 | 13.0 | 1,083 | 1,052 | 798 | 61.3 | 61.9 |
| Multiple Establishment | 244 | 6,490 | 26.6 | 210 | 204 | 838 | 31.4 | 20.0 |
| Nonowner Occupied | 543 | 8,072 | 14.9 | 309 | 300 | 553 | 37.2 | 31.3 |
| Single Establishment | 363 | 4,279 | 11.8 | 176 | 171 | 470 | 39.9 | 37.0 |
| Multiple Establishment | 146 | 3,515 | 24.0 | 102 | 99 | 677 | 28.2 | 21.1 |
| Vacant | 33 | 278 | 8.4 | Q | Q | Q | Q | 113.8 |
| Government Owned | 316 | 9,431 | 29.9 | 472 | 459 | 1,452 | 48.6 | 40.9 |
| Federal | 13 | Q | 72.1 | Q | Q | Q | 74.1 | 40.7 |
| State | 78 | 2,317 | 29.8 | 112 | 109 | 1,399 | 47.0 | 29.2 |
| Local | 225 | 6,202 | 27.5 | 290 | 282 | 1,252 | 45.5 | 48.4 |
| Multibuilding Facility | | | | | | | | |
| Not on Multibuilding Facility | 1,755 | 26,127 | 14.9 | 1,168 | 1,135 | 647 | 43.4 | 39.7 |
| Part of Multibuilding Facility | 665 | 15,016 | 22.6 | 905 | 880 | 1,322 | 58.6 | 45.4 |
| On Facility with Central Plant | 77 | 4,626 | 59.8 | 423 | 411 | 5,311 | 88.9 | 52.6 |
| Percent Vacant at Least Three Months | | | | | | | | |
| 0 | 2,009 | 27,476 | 13.7 | 1,562 | 1,518 | 755 | 55.2 | 48.9 |
| 1 to 50 | 208 | 9,223 | 44.3 | 324 | 315 | 1,512 | 34.2 | 22.6 |
| 51 to 99 | 63 | 2,854 | 45.0 | Q | Q | 1,608 | 35.7 | 63.5 |
| 100 | 139 | 1,590 | 11.4 | 82 | 80 | 573 | 50.1 | 55.9 |
| Months in Use Out of Past 12 Months | | | | | | | | |
| 0 to 8 | 126 | 1,744 | 13.8 | 72 | 70 | 554 | 40.1 | 50.2 |
| 9 to 11 | 152 | 2,640 | 17.3 | 138 | 135 | 883 | 51.0 | 59.6 |
| 12 | 2,141 | 36,759 | 17.2 | 1,863 | 1,810 | 845 | 49.2 | 40.8 |
| LOCATION | | | | | | | | |
| Census Region | | | | | | | | |
| Northeast | 355 | 8,517 | 24.0 | 353 | 343 | 967 | 40.3 | 33.6 |
| Midwest | 734 | 12,815 | 17.5 | 831 | 808 | 1,100 | 63.0 | 65.0 |
| South | 806 | 11,660 | 14.5 | 498 | 484 | 600 | 41.5 | 36.1 |
| West | 525 | 8,151 | 15.5 | 391 | 380 | 725 | 46.7 | 31.9 |
| Census Division | | | | | | | | |
| Northeast | | | | | | | | |
| New England | 53 | 1,236 | 23.5 | 39 | 38 | 727 | 31.0 | 26.2 |
| Middle Atlantic | 302 | 7,281 | 24.1 | 314 | 305 | 1,009 | 41.9 | 34.8 |
| Midwest | | | | | | | | |
| East North Central | 499 | 8,797 | 17.6 | 561 | 545 | 1,093 | 62.0 | 68.5 |
| West North Central | 236 | 4,018 | 17.0 | 270 | 262 | 1,113 | 65.3 | 58.9 |
| South | | | | | | | | |
| South Atlantic | 187 | 4,235 | 22.7 | 198 | 192 | 1,029 | 45.4 | 39.2 |
| East South Central | 168 | 2,034 | 12.1 | 126 | 122 | 726 | 60.1 | 40.7 |
| West South Central | 451 | 5,391 | 12.0 | 174 | 169 | 375 | 31.4 | 30.8 |
| West | | | | | | | | |
| Mountain | 204 | 3,121 | 15.3 | 197 | 191 | 935 | 61.2 | 57.1 |
| Pacific | 320 | 5,030 | 15.7 | 195 | 189 | 590 | 37.6 | 22.0 |
| Metropolitan Status | | | | | | | | |
| Metropolitan | 1,738 | 34,274 | 19.7 | 1,608 | 1,562 | 899 | 45.6 | 37.7 |
| Nonmetropolitan | 682 | 6,869 | 10.1 | 465 | 452 | 663 | 65.8 | 69.5 |

See footnote at end of table.

Table 38. Natural Gas Consumption (Continued)

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Consumption | | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|-------------------------|----------------------------|------------------------------------|------------------------------|----------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | |
| RSE Column Factor | 0.781 | 0.882 | 0.783 | 1.233 | 1.233 | 1.119 | 0.989 | 1.103 | |
| Climate Zone: 45-Year Average | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | |
| Over 7,000 HDD | 188 | 3,064 | 16.3 | 252 | 245 | 1,303 | 80.1 | 72.3 | 13.21 |
| 5,500-7,000 HDD | 726 | 13,903 | 19.1 | 850 | 827 | 1,138 | 59.5 | 60.2 | 9.54 |
| 4,000-5,499 HDD | 444 | 9,668 | 21.8 | 407 | 396 | 892 | 40.9 | 33.0 | 16.71 |
| Under 4,000 HDD | 555 | 8,436 | 15.2 | 350 | 340 | 612 | 40.3 | 26.8 | 14.95 |
| 2,000 CDD or More and -- | | | | | | | | | |
| Under 4,000 HDD | 507 | 6,073 | 12.0 | 213 | 207 | 409 | 34.1 | 33.6 | 14.30 |
| 1989 Degree-Days | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | |
| Over 7,000 HDD | 313 | 5,123 | 16.4 | 375 | 365 | 1,166 | 71.2 | 62.7 | 11.87 |
| 5,500-7,000 HDD | 809 | 16,611 | 20.5 | 953 | 926 | 1,145 | 55.8 | 58.6 | 10.79 |
| 4,000-5,499 HDD | 282 | 5,961 | 21.1 | 209 | 203 | 721 | 34.1 | 22.8 | 15.38 |
| Under 4,000 HDD | 559 | 7,906 | 14.2 | 339 | 329 | 589 | 41.6 | 27.8 | 15.30 |
| 2,000 CDD or More and -- | | | | | | | | | |
| Under 4,000 HDD | 457 | 5,542 | 12.1 | 197 | 191 | 418 | 34.5 | 34.1 | 14.86 |
| STRUCTURE | | | | | | | | | |
| Floors | | | | | | | | | |
| 1 | 1,397 | 13,819 | 9.9 | 732 | 711 | 509 | 51.5 | 53.0 | 7.83 |
| 2 | 635 | 10,979 | 17.3 | 560 | 545 | 857 | 49.6 | 47.3 | 9.21 |
| 3 | 272 | 5,721 | 21.0 | 252 | 245 | 903 | 42.9 | 40.1 | 10.83 |
| 4 to 6 | 101 | 6,046 | 59.9 | 331 | 322 | 3,192 | 53.3 | 43.1 | 16.48 |
| 7 or More | 15 | 4,578 | 298.7 | 197 | 192 | 12,493 | 41.8 | 20.3 | 22.00 |
| Wall Materials | | | | | | | | | |
| Masonry | 1,718 | 29,332 | 17.1 | 1,509 | 1,466 | 853 | 50.0 | 45.2 | 6.45 |
| Siding or Shingles | 348 | 2,353 | 6.8 | 120 | 117 | 335 | 49.6 | 48.8 | 12.96 |
| Metal Panels | 205 | 2,657 | 13.0 | 185 | 180 | 878 | 67.7 | 68.0 | 21.06 |
| Concrete Panels | 109 | 4,894 | 44.9 | 180 | 175 | 1,609 | 35.8 | 27.2 | 21.46 |
| Window Glass | 15 | 1,239 | 81.3 | 49 | 47 | 3,093 | Q | Q | 35.94 |
| Other | 25 | 668 | 27.0 | 30 | 29 | 1,184 | 43.9 | 23.0 | 31.33 |
| Roof Materials | | | | | | | | | |
| Built-Up | 992 | 21,965 | 22.2 | 1,052 | 1,022 | 1,031 | 46.5 | 36.8 | 8.29 |
| Shingles (Not Wood) | 733 | 7,011 | 9.6 | 333 | 324 | 442 | 46.2 | 51.0 | 10.40 |
| Metal Surfacing | 334 | 3,801 | 11.4 | 226 | 220 | 658 | 57.9 | 60.0 | 17.69 |
| Synthetic or Rubber | 142 | 4,428 | 31.3 | 259 | 251 | 1,775 | 56.8 | 42.2 | 11.88 |
| Slate or Tile | 125 | 1,857 | 14.8 | 86 | 84 | 670 | 45.2 | 64.2 | 16.52 |
| Concrete | 19 | 1,036 | 53.3 | 23 | 22 | 1,149 | Q | Q | 31.50 |
| Wooden Materials | 53 | 483 | 9.2 | 29 | 28 | 529 | 57.7 | 65.1 | 20.88 |
| Other | 22 | 562 | 25.6 | Q | Q | Q | 112.4 | 110.3 | 28.90 |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | |
| Roof or Ceiling Insulation | 1,732 | 29,746 | 17.2 | 1,571 | 1,527 | 882 | 51.3 | 40.3 | 6.60 |
| Wall Insulation | 1,114 | 19,641 | 17.6 | 1,096 | 1,065 | 956 | 54.2 | 40.6 | 8.34 |
| Storm or Multiple Glazing | 854 | 17,079 | 20.0 | 959 | 932 | 1,091 | 54.6 | 41.7 | 7.05 |
| Tinted, Reflective, or Shading Glass | 552 | 15,468 | 28.0 | 769 | 747 | 1,354 | 48.3 | 32.3 | 9.33 |
| Exterior or Interior Shadings or Awnings | 905 | 18,408 | 20.3 | 878 | 853 | 943 | 46.3 | 34.2 | 9.08 |
| Weather Stripping or Caulking | 1,590 | 30,246 | 19.0 | 1,553 | 1,509 | 949 | 49.9 | 39.8 | 6.42 |
| None of the Above | 260 | 3,880 | 14.9 | 141 | 138 | 529 | 35.4 | 62.1 | 20.82 |

See footnote at end of table.

NATURAL GAS

Table 38. Natural Gas Consumption (Continued)

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Consumption | | | | | RSE Flow Factor |
|--|---------------------------------|----------------------------------|--|-------------------------|----------------------------|------------------------------------|------------------------------|----------------------------------|-----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | |
| RSE Column Factor: | 0.781 | 0.552 | 0.789 | 1,239 | 1,236 | 1,110 | 0.368 | 1,103 | |
| ENERGY SOURCES AND END USES^a | | | | | | | | | |
| Energy Sources | | | | | | | | | |
| (Solely or In Combination) | | | | | | | | | |
| Electricity | 2,417 | 41,115 | 17.0 | 2,068 | 2,010 | 832 | 48.9 | 41.9 | 6.01 |
| Natural Gas | 2,420 | 41,143 | 17.0 | 2,073 | 2,015 | 833 | 49.0 | 42.0 | 6.00 |
| Fuel Oil | 142 | 7,865 | 55.2 | 427 | 415 | 2,914 | 52.8 | 36.5 | 16.58 |
| District Heat | 27 | 3,415 | 127.2 | Q | Q | 5,948 | 46.8 | 25.9 | 34.82 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | 31 | 1,615 | 51.7 | 145 | 141 | Q | 87.0 | 88.4 | 33.03 |
| Other | 36 | 775 | 21.6 | 29 | 28 | 779 | 36.1 | 42.8 | 25.94 |
| Energy End Uses | | | | | | | | | |
| (Solely or In Combination) | | | | | | | | | |
| Heated Buildings | 2,392 | 40,802 | 17.1 | 2,051 | 1,994 | 833 | 48.9 | 41.9 | 6.03 |
| Air-Conditioned Buildings | 1,969 | 36,677 | 18.6 | 1,780 | 1,730 | 879 | 47.2 | 38.7 | 6.44 |
| Buildings with Water Heating | 2,029 | 38,433 | 18.9 | 1,960 | 1,905 | 939 | 49.6 | 41.7 | 6.00 |
| Buildings with Cooking | 582 | 18,868 | 32.4 | 975 | 947 | 1,629 | 50.2 | 40.8 | 7.06 |
| Buildings with Manufacturing | 121 | 3,777 | 31.2 | 286 | 278 | 2,296 | 73.7 | 66.2 | 21.47 |
| Energy End-Use Combinations | | | | | | | | | |
| Heated Buildings | | | | | | | | | |
| With Air Conditioning | | | | | | | | | |
| With Water Heating and | | | | | | | | | |
| Cooking | | | | | | | | | |
| With Water Heating and | 472 | 16,906 | 35.8 | 845 | 821 | 1,738 | 48.5 | 37.8 | 8.81 |
| With Water Heating, Without Cooking | 1,225 | 17,389 | 14.2 | 851 | 827 | 675 | 47.6 | 40.0 | 8.03 |
| Without Water Heating or Cooking | 247 | 1,976 | 8.0 | 67 | 65 | 265 | 33.1 | 36.3 | 19.08 |
| Without Air Conditioning | | | | | | | | | |
| With Water Heating and | | | | | | | | | |
| Cooking | | | | | | | | | |
| With Water Heating, Without Cooking | 83 | 1,575 | 18.9 | 119 | 115 | 1,386 | 73.3 | 111.6 | 27.67 |
| Without Water Heating or Cooking | 223 | 2,242 | 10.1 | 125 | 121 | 546 | 54.2 | 66.3 | 11.04 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 130 | 543 | 4.2 | 41 | 40 | 306 | 73.1 | 124.6 | 18.86 |
| All Other Combinations | Q | Q | Q | 25 | 24 | Q | Q | Q | b |
| 39 | 495 | 12.6 | | | 610 | 48.3 | 42.4 | | 25.64 |
| Space-Heating Energy Source | | | | | | | | | |
| Natural Gas | | | | | | | | | |
| Natural Gas | 2,158 | 33,017 | 15.3 | 1,856 | 1,804 | 836 | 54.6 | 49.1 | 6.07 |
| Main | 2,079 | 31,110 | 15.0 | 1,778 | 1,728 | 831 | 55.5 | 50.5 | 6.26 |
| With Secondary | 307 | 7,887 | 25.7 | 560 | 544 | 1,774 | 69.0 | 63.5 | 12.81 |
| Electricity Only | 224 | 3,620 | 16.2 | 156 | 152 | 677 | 41.9 | 47.4 | 15.22 |
| Other Energy Sources or Combinations | 80 | 4,134 | 51.5 | 360 | 349 | 4,350 | 84.5 | 66.3 | 10.47 |
| With No Secondary | 1,772 | 23,222 | 13.1 | 1,218 | 1,184 | 668 | 51.0 | 46.2 | 6.23 |
| Secondary | 79 | 1,907 | 24.1 | 78 | 76 | 961 | 39.9 | 30.2 | 21.74 |
| Other Excluding Natural Gas | 235 | 7,785 | 33.2 | 195 | 189 | 808 | 24.3 | 17.4 | 19.84 |
| Building Not Heated | 28 | 341 | 12.4 | 22 | 21 | 762 | 61.6 | 59.9 | 30.71 |
| Main Space-Heating Energy Source | | | | | | | | | |
| Electricity | | | | | | | | | |
| Electricity | 224 | 5,109 | 22.8 | 170 | 165 | 736 | 32.2 | 25.3 | 15.27 |
| Natural Gas | 2,079 | 31,110 | 15.0 | 1,778 | 1,728 | 831 | 55.5 | 50.5 | 6.25 |
| Fuel Oil | 74 | 1,985 | 26.9 | 25 | 24 | 322 | 12.0 | 11.6 | 19.25 |
| District Heat | 23 | 2,933 | 127.1 | Q | Q | Q | 36.5 | 19.7 | 33.41 |
| Propane | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b |

See footnote at end of table.

Table 38. Natural Gas Consumption (Continued)

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Consumption | | | | | RSE Row Factor |
|---|---------------------------------|----------------------------------|--|-------------------------|----------------------------|------------------------------------|------------------------------|----------------------------------|-------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | |
| RSE Column Factor: | 0.769 | 0.963 | 0.875 | 1.204 | 1.204 | 1.061 | 0.996 | 1.123 | |
| Air-Conditioning Energy Source | | | | | | | | | |
| Natural Gas | 97 | 1,976 | 20.5 | 128 | 124 | 1,284 | 62.8 | 56.9 | 14.63 |
| Other Excluding Natural Gas | 1,872 | 34,701 | 18.5 | 1,653 | 1,606 | 858 | 46.3 | 37.7 | 6.82 |
| Air-Conditioning Not Performed | 451 | 4,467 | 9.9 | 293 | 285 | 630 | 63.7 | 88.5 | 14.42 |
| Water-Heating Energy Source | | | | | | | | | |
| Natural Gas | 1,391 | 25,923 | 18.6 | 1,451 | 1,410 | 1,014 | 54.4 | 49.4 | 6.03 |
| Other Excluding Natural Gas | 637 | 12,510 | 19.6 | 509 | 494 | 776 | 39.5 | 28.9 | 12.62 |
| Water Heating Not Performed | 391 | 2,710 | 6.9 | 113 | 110 | 281 | 40.6 | 47.1 | 14.59 |
| Cooking Energy Source | | | | | | | | | |
| Natural Gas | 462 | 14,766 | 32.0 | 744 | 723 | 1,565 | 49.0 | 37.8 | 8.90 |
| Other Excluding Natural Gas | 120 | 4,103 | 34.3 | 231 | 225 | 1,877 | 54.7 | 54.4 | 21.05 |
| Cooking Not Performed | 1,838 | 22,275 | 12.1 | 1,098 | 1,067 | 581 | 47.9 | 43.1 | 7.26 |
| Manufacturing Energy Source | | | | | | | | | |
| Natural Gas | 23 | 838 | 36.1 | 116 | 113 | 4,875 | 135.0 | 113.5 | 26.53 |
| Other Excluding Natural Gas | 98 | 2,939 | 30.0 | 170 | 165 | 1,686 | 56.2 | 51.5 | 27.26 |
| Manufacturing Not Performed | 2,299 | 37,366 | 16.3 | 1,787 | 1,736 | 755 | 46.5 | 39.7 | 5.44 |
| HEATING AND COOLING | | | | | | | | | |
| Percent Heated | | | | | | | | | |
| Not Heated | 33 | 401 | 12.2 | 23 | 22 | 671 | 55.2 | 58.5 | 28.47 |
| 1 to 50 | 358 | 5,980 | 16.7 | 128 | 125 | 348 | 20.8 | 42.1 | 11.25 |
| 51 to 99 | 296 | 5,948 | 20.1 | 274 | 267 | 900 | 44.8 | 34.1 | 14.25 |
| 100 | 1,732 | 28,814 | 16.6 | 1,648 | 1,601 | 924 | 55.6 | 43.5 | 6.08 |
| Percent Cooled | | | | | | | | | |
| Not Cooled | 451 | 4,467 | 9.9 | 293 | 285 | 630 | 63.7 | 88.5 | 14.42 |
| 1 to 50 | 667 | 13,220 | 19.8 | 616 | 599 | 899 | 45.3 | 64.6 | 10.91 |
| 51 to 99 | 363 | 9,160 | 25.2 | 424 | 412 | 1,134 | 45.0 | 33.0 | 9.31 |
| 100 | 939 | 14,296 | 15.2 | 740 | 719 | 766 | 50.3 | 31.3 | 9.55 |
| Heating Equipment (Solely or in Combination) | | | | | | | | | |
| Furnaces | 1,168 | 12,529 | 10.7 | 680 | 661 | 566 | 52.7 | 52.0 | 8.46 |
| Boilers | 505 | 16,302 | 32.3 | 1,043 | 1,014 | 2,007 | 62.2 | 48.6 | 7.90 |
| Individual Space Heaters | 835 | 16,297 | 19.5 | 787 | 765 | 917 | 47.0 | 48.7 | 10.49 |
| Packaged Heating Units | 564 | 11,970 | 21.2 | 593 | 576 | 1,022 | 48.1 | 39.9 | 9.75 |
| Heat Pumps | 168 | 4,909 | 29.3 | 248 | 241 | 1,437 | 49.1 | 33.8 | 16.39 |
| Air Ducts | 1,284 | 27,108 | 21.1 | 1,367 | 1,328 | 1,035 | 49.0 | 38.0 | 7.58 |
| Heating or Reheating Coils | 132 | 11,399 | 86.2 | 629 | 611 | 4,621 | 53.6 | 32.7 | 11.74 |
| Fan-Coil Units | 130 | 9,696 | 74.4 | 551 | 536 | 4,114 | 55.3 | 39.7 | 12.02 |
| Steam or Hot Water Radiators or Baseboards | 321 | 12,380 | 38.6 | 776 | 754 | 2,352 | 60.9 | 50.0 | 12.06 |
| Other | 44 | 1,106 | 25.3 | Q | Q | Q | 74.3 | 55.4 | 32.32 |
| Cooling Equipment (Solely or in Combination) | | | | | | | | | |
| Central Chillers | 139 | 11,068 | 79.6 | 574 | 558 | 4,012 | 50.4 | 31.0 | 13.25 |
| Individual Air Conditioners | 668 | 14,486 | 21.7 | 719 | 699 | 1,047 | 48.2 | 49.0 | 10.00 |
| Packaged Cooling Units | 1,366 | 26,434 | 19.3 | 1,257 | 1,222 | 894 | 46.2 | 36.6 | 7.36 |
| Heat Pumps | 145 | 4,551 | 31.3 | 239 | 233 | 1,601 | 51.1 | 35.6 | 16.58 |
| Air Ducts | 1,092 | 25,146 | 23.0 | 1,268 | 1,232 | 1,128 | 49.0 | 37.3 | 7.97 |
| Fan-Coil Units | 75 | 8,245 | 109.8 | 452 | 439 | 5,854 | 53.3 | 30.0 | 15.20 |
| Other | 64 | 1,022 | Q | Q | Q | Q | 69.2 | 59.0 | 26.74 |

See footnotes at end of table.

NATURAL GAS
Table 38. Natural Gas Consumption (Continued)

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Consumption | | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|-------------------------|----------------------------|------------------------------------|------------------------------|----------------------------------|-------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | |
| RSE Column Factor: | 0.769 | 0.963 | 0.476 | 1,204 | 1,204 | 1,061 | 0.986 | 1.428 | |
| Year Main Central Chiller Installed | | | | | | | | | |
| 1959 or Before | 20 | 1,194 | 60.1 | 59 | 57 | 2,888 | 48.1 | 31.0 | 24.98 |
| 1960 to 1969 | 39 | 2,660 | 68.3 | 163 | 158 | 4,058 | 59.4 | 44.7 | 24.43 |
| 1970 to 1979 | 33 | 2,912 | 88.1 | 131 | 127 | 3,845 | 43.6 | 27.4 | 17.50 |
| 1980 to 1986 | 32 | 2,781 | 87.1 | 148 | 143 | 4,491 | 51.6 | 26.7 | 26.67 |
| 1987 to 1989 | 15 | 1,521 | 99.2 | 74 | 72 | 4,719 | 47.6 | 27.3 | 24.13 |
| Year Packaged Cooling System Installed | | | | | | | | | |
| 1959 or Before | 56 | 1,367 | 24.4 | 67 | 65 | 1,158 | 47.5 | 37.3 | 24.24 |
| 1960 to 1969 | 197 | 3,756 | 19.0 | 233 | 226 | 1,148 | 60.3 | 47.7 | 16.99 |
| 1970 to 1979 | 410 | 8,239 | 20.1 | 389 | 378 | 922 | 45.9 | 37.9 | 10.54 |
| 1980 to 1986 | 432 | 7,907 | 18.3 | 301 | 292 | 677 | 37.0 | 29.2 | 10.44 |
| 1987 to 1989 | 271 | 5,167 | 19.1 | 267 | 260 | 960 | 50.3 | 37.7 | 13.83 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | |
| Present in Building | 165 | 12,085 | 73.5 | 671 | 652 | 3,965 | 54.0 | 32.2 | 11.17 |
| Not Present | 2,255 | 29,059 | 12.9 | 1,402 | 1,362 | 604 | 46.9 | 49.1 | 8.06 |
| LIGHTING AND REFRIGERATION | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | 557 | 7,016 | 12.6 | 276 | 268 | 481 | 38.2 | 74.2 | 8.90 |
| 51 to 99 | 581 | 12,013 | 20.7 | 566 | 550 | 946 | 45.8 | 39.8 | 8.96 |
| 100 | 1,258 | 21,962 | 17.5 | 1,222 | 1,188 | 944 | 54.1 | 38.9 | 8.06 |
| Percent Lit When Closed | | | | | | | | | |
| Not Lit | 1,269 | 16,533 | 13.0 | 853 | 829 | 653 | 50.1 | 52.0 | 8.08 |
| 1 to 50 | 1,082 | 22,321 | 20.6 | 1,080 | 1,050 | 970 | 47.0 | 36.6 | 8.07 |
| 51 to 99 | 43 | 1,726 | 39.7 | 118 | 115 | 2,640 | 66.4 | 40.2 | 16.31 |
| 100 | 25 | 564 | 22.3 | 23 | 22 | 867 | 38.9 | 45.6 | 26.16 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | |
| Incandescent Lamps | 1,446 | 27,287 | 18.9 | 1,357 | 1,319 | 912 | 48.3 | 40.3 | 6.64 |
| Fluorescent Lamps | 2,291 | 40,313 | 17.6 | 2,018 | 1,961 | 856 | 48.7 | 41.3 | 6.96 |
| High-Intensity Discharge Lamps | 272 | 12,567 | 46.2 | 673 | 654 | 2,403 | 52.0 | 42.0 | 11.61 |
| Other Lamps | 20 | 418 | 20.8 | 16 | 16 | 783 | 37.7 | 21.3 | 22.81 |
| High-Efficiency Ballasts | 648 | 16,848 | 26.0 | 888 | 863 | 1,331 | 51.2 | 37.4 | 8.44 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | |
| Commercial | | | | | | | | | |
| Refrigeration Units | 609 | 19,667 | 32.3 | 998 | 970 | 1,591 | 49.3 | 38.8 | 8.50 |
| Freezers | 481 | 17,278 | 35.9 | 928 | 902 | 1,874 | 52.2 | 39.2 | 8.49 |
| Residential | | | | | | | | | |
| Refrigerators | 1,515 | 31,353 | 20.7 | 1,554 | 1,511 | 997 | 48.2 | 39.1 | 8.87 |
| Freezers | 391 | 9,179 | 23.5 | 544 | 529 | 1,354 | 57.6 | 43.5 | 11.88 |
| Ice-Making Machines | 501 | 17,624 | 35.2 | 991 | 963 | 1,922 | 54.6 | 38.3 | 9.01 |
| Refrigerated Vending Machines | 950 | 27,789 | 29.3 | 1,509 | 1,467 | 1,545 | 52.8 | 40.5 | 7.56 |
| Water Coolers | 1,051 | 30,128 | 28.7 | 1,509 | 1,467 | 1,396 | 48.7 | 39.5 | 7.13 |
| Other | 29 | 1,027 | 35.1 | 109 | 106 | 3,613 | 103.1 | 56.2 | 32.84 |
| ENERGY MANAGEMENT | | | | | | | | | |
| Occupant Control | | | | | | | | | |
| Any Control of Heating | 1,465 | 19,094 | 13.0 | 895 | 869 | 593 | 45.5 | 40.4 | 7.62 |
| With Thermostats | 1,296 | 17,503 | 13.5 | 825 | 802 | 619 | 45.8 | 40.6 | 7.07 |
| Any Control of Cooling | 1,220 | 18,989 | 15.6 | 868 | 843 | 691 | 44.4 | 38.8 | 7.07 |
| With Thermostats | 1,077 | 17,244 | 16.0 | 784 | 762 | 707 | 44.2 | 37.9 | 6.13 |

See footnotes at end of table.

Table 38. Natural Gas Consumption (Continued)

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Consumption | | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|-------------------------|----------------------------|------------------------------------|------------------------------|----------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | |
| RSE Column Factors | 0.799 | 0.863 | 0.876 | 1.204 | 1.204 | 1.001 | 0.994 | 1.123 | |
| Reduced Use During Off-Hours | | | | | | | | | |
| Heating Only | 432 | 4,388 | 10.2 | 279 | 271 | 628 | 61.8 | 78.5 | 12.97 |
| Cooling Only | 117 | 2,397 | 20.5 | 150 | 145 | 1,245 | 60.7 | 60.1 | 19.99 |
| Heating and Cooling | 1,565 | 28,312 | 18.1 | 1,214 | 1,180 | 754 | 41.7 | 35.4 | 7.47 |
| Computerized Energy Management and Control System | | | | | | | | | |
| Present in Building | 182 | 10,633 | 58.6 | 495 | 482 | 2,652 | 45.3 | 29.6 | 12.14 |
| Controls Heating and Cooling | 175 | 10,160 | 57.9 | 481 | 467 | 2,664 | 46.0 | 29.5 | 12.42 |
| Controls Lighting | 39 | 3,145 | 80.3 | 143 | 139 | 3,549 | 44.2 | 27.1 | 44.97 |
| Controls Other | 23 | 1,938 | 84.8 | 120 | 117 | 5,114 | 60.3 | 41.7 | 30.55 |
| Other Energy Management | | | | | | | | | |
| Regular HVAC Maintenance | 1,267 | 29,847 | 23.6 | 1,631 | 1,585 | 1,251 | 53.1 | 39.9 | 6.56 |
| Participated in Utility Conservation Program | 201 | 7,242 | 36.0 | 404 | 392 | 1,947 | 54.2 | 35.9 | 12.02 |
| NATURAL GAS DEMAND | | | | | | | | | |
| Annual Consumption (hundred cubic feet) | | | | | | | | | |
| 1,000 or Less | 663 | 4,170 | 6.3 | 34 | 33 | 50 | 7.9 | 7.5 | 5.86 |
| 1,001 to 5,000 | 1,046 | 9,967 | 9.5 | 262 | 254 | 243 | 25.5 | 27.7 | 6.37 |
| 5,001 to 10,000 | 348 | 6,485 | 18.6 | 248 | 241 | 692 | 37.1 | 28.9 | 6.29 |
| 10,001 to 25,000 | 238 | 7,326 | 30.8 | 354 | 344 | 1,443 | 46.9 | 44.7 | 6.21 |
| 25,001 to 50,000 | 71 | 5,017 | 70.9 | 248 | 241 | 3,401 | 48.0 | 34.9 | 11.02 |
| 50,001 to 100,000 | 28 | 2,808 | 100.8 | 191 | 185 | 6,652 | 66.0 | 54.9 | 9.42 |
| Over 100,000 | 26 | 5,370 | 208.9 | 737 | 717 | 27,881 | 133.5 | 88.3 | 14.77 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

† No applicable RSE row factor.

‡ Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

NATURAL GAS
Table 39. Natural Gas Expenditures

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Expenditures | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-----------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) | |
| RSE Column Factor: | 1.014 | 1.144 | 1.018 | 1.417 | 1.243 | 1.145 | 0.420 | |
| All Buildings | 2,420 | 41,143 | 17 | 9,204 | 3.8 | 0.22 | 4.57 | 4.68 |
| Building Floorspace (Square Feet) | | | | | | | | |
| 1,001 to 5,000 | 1,225 | 3,423 | 3 | 1,620 | 1.3 | .47 | 5.51 | 4.42 |
| 5,001 to 10,000 | 532 | 3,955 | 7 | 1,304 | 2.5 | .33 | 5.06 | 6.12 |
| 10,001 to 25,000 | 355 | 5,752 | 16 | 1,348 | 3.8 | .23 | 4.99 | 4.59 |
| 25,001 to 50,000 | 153 | 5,451 | 36 | 1,318 | 8.6 | .24 | 4.39 | 6.27 |
| 50,001 to 100,000 | 88 | 6,207 | 71 | 1,094 | 12.5 | .18 | 4.53 | 6.84 |
| 100,001 to 200,000 | 45 | 6,018 | 135 | 1,016 | 22.7 | .17 | 4.39 | 9.19 |
| 200,001 to 500,000 | 17 | 5,054 | 302 | 836 | 49.9 | .17 | 3.77 | 14.57 |
| Over 500,000 | 6 | 5,284 | 865 | 668 | 109.4 | .13 | 3.38 | 17.22 |
| Year Constructed | | | | | | | | |
| 1899 or Before | 98 | 1,004 | 10 | 270 | 2.8 | .27 | 5.29 | 18.28 |
| 1900 to 1919 | 152 | 3,068 | 20 | 527 | 3.5 | .17 | 4.40 | 19.83 |
| 1920 to 1945 | 396 | 5,741 | 14 | 1,135 | 2.9 | .20 | 4.79 | 10.50 |
| 1946 to 1959 | 512 | 7,238 | 14 | 1,809 | 3.5 | .25 | 4.53 | 9.22 |
| 1960 to 1969 | 454 | 8,467 | 19 | 1,975 | 4.4 | .23 | 4.44 | 7.21 |
| 1970 to 1979 | 420 | 8,103 | 19 | 1,939 | 4.6 | .24 | 4.52 | 9.18 |
| 1980 to 1983 | 138 | 2,189 | 16 | 502 | 3.6 | .23 | 4.40 | 11.49 |
| 1984 to 1986 | 148 | 3,460 | 23 | 665 | 4.5 | .19 | 4.84 | 11.38 |
| 1987 to 1989 | 102 | 1,873 | 18 | 382 | 3.7 | .20 | 4.62 | 15.25 |
| BUILDING USE | | | | | | | | |
| Principal Building Activity | | | | | | | | |
| Assembly | 345 | 4,304 | 12 | 809 | 2.3 | .19 | 4.79 | 6.67 |
| Education | 199 | 6,640 | 33 | 1,309 | 6.6 | .20 | 4.16 | 10.44 |
| Food Sales | 60 | 548 | 9 | 137 | 2.3 | .25 | 5.17 | 15.88 |
| Food Service | 188 | 818 | 4 | 675 | 3.6 | .83 | 5.43 | 8.46 |
| Health Care | 40 | 1,602 | 40 | 712 | 17.6 | .44 | 3.93 | 15.59 |
| Lodging | 101 | 2,541 | 25 | 818 | 8.1 | .32 | 4.49 | 12.02 |
| Mercantile and Service | 732 | 8,790 | 12 | 1,931 | 2.6 | .22 | 4.77 | 6.92 |
| Office | 394 | 7,220 | 18 | 1,128 | 2.9 | .16 | 4.88 | 7.43 |
| Parking Garage | Q | Q | Q | Q | Q | Q | Q | b |
| Public Order and Safety | 28 | 440 | 16 | 120 | 4.3 | .27 | 5.04 | 24.43 |
| Warehouse | 207 | 5,135 | 25 | 853 | 4.1 | .17 | 4.25 | 13.88 |
| Other | 26 | 932 | 35 | 420 | 15.9 | .45 | 4.25 | 19.55 |
| Vacant | 84 | 1,891 | 23 | 237 | 2.8 | .13 | 4.99 | 26.54 |
| Weekly Operating Hours | | | | | | | | |
| 39 or Fewer | 323 | 2,620 | 8 | 508 | 1.6 | .19 | 5.25 | 7.84 |
| 40 to 48 | 650 | 9,163 | 14 | 1,771 | 2.7 | .19 | 4.70 | 6.31 |
| 49 to 60 | 560 | 8,481 | 15 | 1,563 | 2.8 | .18 | 4.93 | 7.48 |
| 61 to 84 | 377 | 7,952 | 21 | 1,587 | 4.2 | .20 | 4.78 | 7.64 |
| 85 to 167 | 297 | 6,574 | 22 | 1,537 | 5.2 | .23 | 4.39 | 12.01 |
| 168 (Open Continuously) | 213 | 6,353 | 30 | 2,238 | 10.5 | .35 | 4.14 | 8.93 |
| Workers | | | | | | | | |
| 4 or Fewer | 1,113 | 6,720 | 6 | 1,564 | 1.4 | .23 | 5.37 | 6.89 |
| 5 to 9 | 556 | 5,180 | 9 | 1,087 | 2.0 | .21 | 5.14 | 6.87 |
| 10 to 19 | 352 | 4,457 | 13 | 1,177 | 3.3 | .26 | 4.88 | 6.91 |
| 20 to 49 | 242 | 6,618 | 27 | 1,538 | 6.4 | .23 | 4.77 | 6.97 |
| 50 to 99 | 82 | 5,352 | 66 | 1,070 | 13.1 | .20 | 4.35 | 9.85 |
| 100 to 249 | 53 | 5,043 | 96 | 1,417 | 26.9 | .28 | 4.07 | 10.60 |
| 250 or More | 23 | 7,773 | 334 | 1,350 | 58.0 | .17 | 3.81 | 12.39 |

See footnote at end of table.

Table 39. Natural Gas Expenditures (Continued)

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Expenditures | | | | RSE Row Factor |
|---|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-----------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) | |
| RSE Column Factor | 1.014 | 1.144 | 1.019 | 1.447 | 1.243 | 1.145 | 0.520 | |
| Ownership and Occupancy | | | | | | | | |
| Nongovernment Owned | 2,104 | 31,713 | 15 | 7,213 | 3.4 | 0.23 | 4.64 | 4.74 |
| Owner Occupied | 1,561 | 23,640 | 15 | 5,680 | 3.6 | .24 | 4.52 | 5.37 |
| Single Establishment | 1,318 | 17,151 | 13 | 4,713 | 3.6 | .27 | 4.48 | 6.18 |
| Multiple Establishment | 244 | 6,490 | 27 | 968 | 4.0 | .15 | 4.74 | 10.09 |
| Nonowner Occupied | 543 | 8,072 | 15 | 1,533 | 2.8 | .19 | 5.11 | 7.07 |
| Single Establishment | 363 | 4,279 | 12 | 850 | 2.3 | .20 | 4.98 | 10.14 |
| Multiple Establishment | 146 | 3,515 | 24 | 535 | 3.7 | .15 | 5.40 | 10.06 |
| Vacant | 33 | 278 | 8 | Q | Q | Q | 4.87 | 16.90 |
| Government Owned | 316 | 9,431 | 30 | 1,991 | 6.3 | .21 | 4.34 | 9.49 |
| Federal | 13 | Q | 72 | Q | Q | .24 | 3.19 | 23.51 |
| State | 78 | 2,317 | 30 | 504 | 6.5 | .22 | 4.63 | 16.53 |
| Local | 225 | 6,202 | 28 | 1,271 | 5.6 | .20 | 4.51 | 9.46 |
| Multibuilding Facility | | | | | | | | |
| Not on Multibuilding Facility | 1,755 | 26,127 | 15 | 5,426 | 3.1 | .21 | 4.78 | 4.90 |
| Part of Multibuilding Facility | 665 | 15,016 | 23 | 3,777 | 5.7 | .25 | 4.29 | 7.44 |
| On Facility with Central Plant | 77 | 4,626 | 60 | 1,554 | 20.1 | .34 | 3.78 | 16.48 |
| Percent Vacant at Least Three Months | | | | | | | | |
| 0 | 2,009 | 27,476 | 14 | 7,010 | 3.5 | .26 | 4.62 | 4.41 |
| 1 to 50 | 208 | 9,223 | 44 | 1,426 | 6.8 | .15 | 4.53 | 10.84 |
| 51 to 99 | 63 | 2,854 | 45 | 379 | 6.0 | .13 | 3.72 | 25.49 |
| 100 | 139 | 1,590 | 11 | 388 | 2.8 | .24 | 4.87 | 14.62 |
| Months in Use Out of Past 12 Months | | | | | | | | |
| 0 to 8 | 126 | 1,744 | 14 | 323 | 2.6 | .18 | 4.61 | 13.75 |
| 9 to 11 | 152 | 2,640 | 17 | 627 | 4.1 | .24 | 4.66 | 11.18 |
| 12 | 2,141 | 36,759 | 17 | 8,254 | 3.9 | .22 | 4.56 | 4.88 |
| LOCATION | | | | | | | | |
| Census Region | | | | | | | | |
| Northeast | 355 | 8,517 | 24 | 1,807 | 5.1 | .21 | 5.26 | 9.53 |
| Midwest | 734 | 12,815 | 17 | 3,361 | 4.6 | .26 | 4.19 | 7.69 |
| South | 806 | 11,660 | 14 | 2,293 | 2.8 | .20 | 4.74 | 6.92 |
| West | 525 | 8,151 | 16 | 1,724 | 3.3 | .21 | 4.53 | 8.87 |
| Census Division | | | | | | | | |
| Northeast | | | | | | | | |
| New England | 53 | 1,236 | 23 | 226 | 4.3 | .18 | 5.91 | 17.07 |
| Middle Atlantic | 302 | 7,281 | 24 | 1,580 | 5.2 | .22 | 5.18 | 10.67 |
| Midwest | | | | | | | | |
| East North Central | 499 | 8,797 | 18 | 2,386 | 4.8 | .27 | 4.38 | 10.03 |
| West North Central | 236 | 4,018 | 17 | 995 | 4.2 | .25 | 3.79 | 14.05 |
| South | | | | | | | | |
| South Atlantic | 187 | 4,235 | 23 | 894 | 4.8 | .21 | 4.65 | 14.18 |
| East South Central | 168 | 2,034 | 12 | 553 | 3.3 | .27 | 4.52 | 20.10 |
| West South Central | 451 | 5,391 | 12 | 846 | 1.9 | .16 | 5.00 | 10.96 |
| West | | | | | | | | |
| Mountain | 204 | 3,121 | 15 | 683 | 3.3 | .22 | 3.57 | 15.24 |
| Pacific | 320 | 5,030 | 16 | 1,040 | 3.2 | .21 | 5.50 | 9.37 |
| Metropolitan Status | | | | | | | | |
| Metropolitan | 1,738 | 34,274 | 20 | 7,185 | 4.1 | .21 | 4.60 | 5.01 |
| Nonmetropolitan | 682 | 6,869 | 10 | 2,019 | 3.0 | .29 | 4.46 | 9.59 |

See footnote at end of table.

NATURAL GAS
Table 39. Natural Gas Expenditures (Continued)

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Expenditures | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-----------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) | |
| RSE Column Factor: | 1.014 | 1.144 | 1.018 | 1.417 | 1.243 | 1.145 | 0.420 | |
| Climate Zone: 45-Year Average | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | |
| Over 7,000 HDD | 188 | 3,064 | 16 | 971 | 5.2 | 0.32 | 3.96 | 9.61 |
| 5,500-7,000 HDD | 726 | 13,903 | 19 | 3,627 | 5.0 | .26 | 4.39 | 8.35 |
| 4,000-5,499 HDD | 444 | 9,668 | 22 | 1,830 | 4.1 | .19 | 4.63 | 12.99 |
| Under 4,000 HDD | 555 | 8,436 | 15 | 1,677 | 3.0 | .20 | 4.93 | 10.83 |
| 2,000 CDD or More and -- | | | | | | | | |
| Under 4,000 HDD | 507 | 6,073 | 12 | 1,099 | 2.2 | .18 | 5.30 | 10.95 |
| 1989 Degree-Days | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | |
| Over 7,000 HDD | 313 | 5,123 | 16 | 1,595 | 5.1 | .31 | 4.37 | 10.06 |
| 5,500-7,000 HDD | 809 | 16,611 | 21 | 3,948 | 4.9 | .24 | 4.26 | 8.86 |
| 4,000-5,499 HDD | 282 | 5,961 | 21 | 1,028 | 3.6 | .17 | 5.06 | 11.92 |
| Under 4,000 HDD | 559 | 7,906 | 14 | 1,624 | 2.9 | .21 | 4.93 | 11.06 |
| 2,000 CDD or More and -- | | | | | | | | |
| Under 4,000 HDD | 457 | 5,542 | 12 | 1,009 | 2.2 | .18 | 5.28 | 11.35 |
| STRUCTURE | | | | | | | | |
| Floors | | | | | | | | |
| 1 | 1,397 | 13,819 | 10 | 3,474 | 2.5 | .25 | 4.89 | 6.20 |
| 2 | 635 | 10,979 | 17 | 2,462 | 3.9 | .22 | 4.52 | 6.78 |
| 3 | 272 | 5,721 | 21 | 1,171 | 4.3 | .20 | 4.77 | 6.79 |
| 4 to 6 | 101 | 6,046 | 60 | 1,355 | 13.4 | .22 | 4.21 | 12.98 |
| 7 or More | 15 | 4,578 | 299 | 741 | 48.3 | .16 | 3.87 | 15.64 |
| Wall Materials | | | | | | | | |
| Masonry | 1,718 | 29,332 | 17 | 6,773 | 3.9 | .23 | 4.62 | 5.00 |
| Siding or Shingles | 348 | 2,353 | 7 | 594 | 1.7 | .25 | 5.09 | 11.10 |
| Metal Panels | 205 | 2,657 | 13 | 755 | 3.7 | .28 | 4.20 | 15.20 |
| Concrete Panels | 109 | 4,894 | 45 | 721 | 6.6 | .15 | 4.11 | 15.64 |
| Window Glass | 15 | 1,239 | 81 | 208 | 13.7 | Q | 4.42 | 26.77 |
| Other | 25 | 668 | 27 | 151 | 6.1 | .23 | 5.17 | 23.89 |
| Roof Materials | | | | | | | | |
| Built-Up | 992 | 21,965 | 22 | 4,595 | 4.6 | .21 | 4.50 | 6.50 |
| Shingles (Not Wood) | 733 | 7,011 | 10 | 1,634 | 2.2 | .23 | 5.04 | 7.70 |
| Metal Surfacing | 334 | 3,801 | 11 | 980 | 2.9 | .26 | 4.45 | 12.29 |
| Synthetic or Rubber | 142 | 4,428 | 31 | 1,096 | 7.7 | .25 | 4.36 | 9.39 |
| Slate or Tile | 125 | 1,857 | 15 | 389 | 3.1 | .21 | 4.63 | 14.20 |
| Concrete | 19 | 1,036 | 53 | 111 | 5.7 | Q | 4.99 | 21.67 |
| Wooden Materials | 53 | 483 | 9 | 150 | 2.8 | .31 | 5.37 | 16.30 |
| Other | 22 | 562 | 26 | Q | Q | .44 | 3.94 | 22.81 |
| Building Shell Conservation | | | | | | | | |
| Features (Solely or in Combination) | | | | | | | | |
| Roof or Ceiling Insulation | 1,732 | 29,746 | 17 | 6,924 | 4.0 | .23 | 4.53 | 5.16 |
| Wall Insulation | 1,114 | 19,641 | 18 | 4,732 | 4.2 | .24 | 4.44 | 6.28 |
| Storm or Multiple Glazing | 854 | 17,079 | 20 | 4,218 | 4.9 | .25 | 4.52 | 6.63 |
| Tinted, Reflective, or Shading Glass | 552 | 15,468 | 28 | 3,236 | 5.9 | .21 | 4.33 | 7.01 |
| Exterior or Interior Shadings or Awnings | 905 | 18,408 | 20 | 3,836 | 4.2 | .21 | 4.50 | 6.20 |
| Weather Stripping or Caulking | 1,590 | 30,246 | 19 | 6,791 | 4.3 | .22 | 4.50 | 5.01 |
| None of the Above | 260 | 3,880 | 15 | 669 | 2.6 | .17 | 4.86 | 16.36 |

See footnote at end of table.

Table 39. Natural Gas Expenditures (Continued)

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Expenditures | | | | RISE Row Factor |
|--|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-----------------------------------|-----------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) | |
| RISE Column Factor | 1.014 | 1.144 | 1.019 | 1.417 | 1.248 | 1.146 | 0.420 | |
| ENERGY SOURCES AND END USES* | | | | | | | | |
| Energy Sources (Solely or In Combination) | | | | | | | | |
| Electricity | 2,417 | 41,115 | 17 | 9,187 | 3.8 | .22 | 4.57 | 4.85 |
| Natural Gas | 2,420 | 41,143 | 17 | 9,204 | 3.8 | .22 | 4.57 | 4.86 |
| Fuel Oil | 142 | 7,865 | 55 | 1,694 | 11.9 | .22 | 4.08 | 11.89 |
| District Heat | 27 | 3,415 | 127 | Q | 21.4 | .17 | 3.60 | 27.96 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | 31 | 1,615 | 52 | 481 | Q | .30 | 3.42 | 20.29 |
| Other | 36 | 775 | 22 | 126 | 3.5 | .16 | 4.50 | 21.06 |
| Energy End Uses (Solely or In Combination) | | | | | | | | |
| Heated Buildings | 2,392 | 40,802 | 17 | 9,113 | 3.8 | .22 | 4.57 | 4.86 |
| Air-Conditioned Buildings | 1,969 | 36,677 | 19 | 7,852 | 4.0 | .21 | 4.54 | 5.04 |
| Buildings with Water Heating | 2,029 | 38,433 | 19 | 8,648 | 4.3 | .23 | 4.54 | 4.74 |
| Buildings with Cooking | 582 | 18,868 | 32 | 4,164 | 7.2 | .22 | 4.39 | 6.28 |
| Buildings with Manufacturing | 121 | 3,777 | 31 | 1,049 | 8.7 | .28 | 3.77 | 16.43 |
| Energy End-Use Combinations | | | | | | | | |
| Heated Buildings | | | | | | | | |
| With Air Conditioning | | | | | | | | |
| With Water Heating and Cooking | 472 | 16,906 | 36 | 3,615 | 7.7 | .21 | 4.40 | 7.18 |
| With Water Heating, Without Cooking | 1,225 | 17,389 | 14 | 3,833 | 3.1 | .22 | 4.63 | 5.86 |
| Without Water Heating or Cooking | 247 | 1,976 | 8 | 332 | 1.3 | .17 | 5.07 | 13.85 |
| Without Air Conditioning | | | | | | | | |
| With Water Heating and Cooking | 83 | 1,575 | 19 | 488 | 5.9 | .31 | 4.22 | 18.87 |
| With Water Heating, Without Cooking | 223 | 2,242 | 10 | 627 | 2.8 | .28 | 5.16 | 8.02 |
| Without Water Heating or Cooking | 130 | 543 | 4 | 196 | 1.5 | .36 | 4.93 | 12.67 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | Q | Q | Q | Q | Q | Q | Q | b |
| All Other Combinations | 39 | 495 | 13 | 110 | 2.8 | .22 | 4.59 | 22.41 |
| Space-Heating Energy Source | | | | | | | | |
| Natural Gas | 2,158 | 33,017 | 15 | 8,281 | 3.8 | .25 | 4.59 | 4.75 |
| Main | 2,079 | 31,110 | 15 | 7,947 | 3.8 | .26 | 4.60 | 4.89 |
| With Secondary | 307 | 7,887 | 26 | 2,215 | 7.2 | .28 | 4.07 | 9.62 |
| Electricity Only | 224 | 3,620 | 16 | 718 | 3.2 | .20 | 4.74 | 11.27 |
| Other Energy Sources or Combinations | 80 | 4,134 | 51 | 1,352 | 16.8 | .33 | 3.87 | 13.08 |
| With No Secondary | 1,772 | 23,222 | 13 | 5,732 | 3.2 | .25 | 4.84 | 4.86 |
| Secondary | 79 | 1,907 | 24 | 334 | 4.2 | .18 | 4.39 | 16.82 |
| Other Excluding Natural Gas | 235 | 7,785 | 33 | 832 | 3.5 | .11 | 4.39 | 13.39 |
| Building Not Heated | 28 | 341 | 12 | 91 | 3.3 | .27 | 4.35 | 27.07 |
| Main Space-Heating Energy Source | | | | | | | | |
| Electricity | 224 | 5,109 | 23 | 778 | 3.5 | .15 | 4.72 | 12.18 |
| Natural Gas | 2,079 | 31,110 | 15 | 7,947 | 3.8 | .26 | 4.60 | 4.89 |
| Fuel Oil | 74 | 1,985 | 27 | 150 | 2.0 | .08 | 6.28 | 13.74 |
| District Heat | 23 | 2,933 | 127 | 371 | 16.1 | .13 | 3.46 | 26.08 |
| Propane | Q | Q | Q | Q | Q | Q | Q | b |
| Other | Q | Q | Q | Q | Q | Q | Q | b |

See footnote at end of table.

Table 39. Natural Gas Expenditures (Continued)

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Expenditures | | | | RSE Row Factor |
|---|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-----------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) | |
| RSE Column Factor: | 0.993 | 1.115 | 1.134 | 1.372 | 1.202 | 1.134 | 0.426 | |
| Air-Conditioning Energy Source | | | | | | | | |
| Natural Gas | 97 | 1,976 | 20 | 549 | 5.7 | 0.28 | 4.43 | 12.11 |
| Other Excluding Natural Gas | 1,872 | 34,701 | 19 | 7,304 | 3.9 | .21 | 4.55 | 5.30 |
| Air-Conditioning Not Performed | 451 | 4,467 | 10 | 1,352 | 3.0 | .30 | 4.75 | 8.70 |
| Water-Heating Energy Source | | | | | | | | |
| Natural Gas | 1,391 | 25,923 | 19 | 6,569 | 4.7 | .25 | 4.66 | 4.85 |
| Other Excluding Natural Gas | 637 | 12,510 | 20 | 2,080 | 3.3 | .17 | 4.21 | 9.28 |
| Water Heating Not Performed | 391 | 2,710 | 7 | 555 | 1.4 | .20 | 5.05 | 10.46 |
| Cooking Energy Source | | | | | | | | |
| Natural Gas | 462 | 14,766 | 32 | 3,244 | 7.0 | .22 | 4.49 | 7.17 |
| Other Excluding Natural Gas | 120 | 4,103 | 34 | 920 | 7.7 | .22 | 4.10 | 15.61 |
| Cooking Not Performed | 1,838 | 22,275 | 12 | 5,040 | 2.7 | .23 | 4.72 | 5.43 |
| Manufacturing Energy Source | | | | | | | | |
| Natural Gas | 23 | 838 | 36 | 395 | 17.0 | .47 | 3.50 | 19.96 |
| Other Excluding Natural Gas | 98 | 2,939 | 30 | 653 | 6.7 | .22 | 3.95 | 20.91 |
| Manufacturing Not Performed | 2,299 | 37,366 | 16 | 8,155 | 3.5 | .22 | 4.70 | 4.39 |
| HEATING AND COOLING | | | | | | | | |
| Percent Heated | | | | | | | | |
| Not Heated | 33 | 401 | 12 | 99 | 3.0 | .25 | 4.46 | 24.49 |
| 1 to 50 | 358 | 5,980 | 17 | 685 | 1.9 | .11 | 5.50 | 9.36 |
| 51 to 99 | 296 | 5,948 | 20 | 1,263 | 4.3 | .21 | 4.74 | 10.06 |
| 100 | 1,732 | 28,814 | 17 | 7,157 | 4.1 | .25 | 4.47 | 4.60 |
| Percent Cooled | | | | | | | | |
| Not Cooled | 451 | 4,467 | 10 | 1,352 | 3.0 | .30 | 4.75 | 9.70 |
| 1 to 50 | 667 | 13,220 | 20 | 2,721 | 4.1 | .21 | 4.54 | 8.74 |
| 51 to 99 | 363 | 9,160 | 25 | 1,862 | 5.1 | .20 | 4.52 | 7.37 |
| 100 | 939 | 14,296 | 15 | 3,269 | 3.5 | .23 | 4.55 | 7.25 |
| Heating Equipment (Solely or in Combination) | | | | | | | | |
| Furnaces | 1,168 | 12,529 | 11 | 3,185 | 2.7 | .25 | 4.82 | 6.15 |
| Boilers | 505 | 16,302 | 32 | 4,431 | 8.8 | .27 | 4.37 | 6.24 |
| Individual Space Heaters | 835 | 16,297 | 20 | 3,271 | 3.9 | .20 | 4.27 | 6.18 |
| Packaged Heating Units | 564 | 11,970 | 21 | 2,617 | 4.6 | .22 | 4.54 | 7.50 |
| Heat Pumps | 168 | 4,909 | 29 | 1,075 | 6.4 | .22 | 4.46 | 12.55 |
| Air Ducts | 1,284 | 27,108 | 21 | 5,956 | 4.6 | .22 | 4.48 | 5.72 |
| Heating or Reheating Coils | 132 | 11,399 | 86 | 2,461 | 18.6 | .22 | 4.03 | 8.80 |
| Fan-Coil Units | 130 | 9,696 | 74 | 2,120 | 16.3 | .22 | 3.96 | 9.32 |
| Steam or Hot Water Radiators or Baseboards | 321 | 12,380 | 39 | 3,110 | 9.7 | .25 | 4.12 | 9.19 |
| Other | 44 | 1,106 | 25 | Q | Q | .32 | 4.30 | 22.01 |
| Cooling Equipment (Solely or in Combination) | | | | | | | | |
| Central Chillers | 139 | 11,068 | 80 | 2,254 | 16.2 | .20 | 4.04 | 9.84 |
| Individual Air Conditioners | 668 | 14,486 | 22 | 3,097 | 4.6 | .21 | 4.43 | 8.28 |
| Packaged Cooling Units | 1,366 | 26,434 | 19 | 5,514 | 4.0 | .21 | 4.51 | 5.84 |
| Heat Pumps | 145 | 4,551 | 31 | 1,010 | 6.9 | .22 | 4.34 | 13.17 |
| Air Ducts | 1,092 | 25,146 | 23 | 5,474 | 5.0 | .22 | 4.44 | 5.93 |
| Fan-Coil Units | 75 | 8,245 | 110 | 1,743 | 23.2 | .21 | 3.97 | 10.88 |
| Other | 64 | 1,022 | Q | Q | Q | .23 | 3.39 | 24.90 |

See footnotes at end of table.

Table 39. Natural Gas Expenditures (Continued)

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Expenditures | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-----------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) | |
| RSE Column Factor | 0.003 | 1.116 | 1.134 | 1.372 | 1.202 | 1.134 | 0.426 | |
| Year Main Central Chiller Installed | | | | | | | | |
| 1959 or Before | 20 | 1,194 | 60 | 247 | 12.4 | 0.21 | 4.30 | 21.14 |
| 1960 to 1969 | 39 | 2,660 | 68 | 591 | 15.2 | .22 | 3.74 | 17.57 |
| 1970 to 1979 | 33 | 2,912 | 88 | 538 | 16.3 | .18 | 4.24 | 13.30 |
| 1980 to 1986 | 32 | 2,781 | 87 | 592 | 18.5 | .21 | 4.13 | 19.75 |
| 1987 to 1989 | 15 | 1,521 | 99 | 286 | 18.7 | .19 | 3.95 | 18.56 |
| Year Packaged Cooling System Installed | | | | | | | | |
| 1959 or Before | 56 | 1,367 | 24 | 297 | 5.3 | .22 | 4.57 | 17.01 |
| 1960 to 1969 | 197 | 3,756 | 19 | 922 | 4.7 | .25 | 4.08 | 13.00 |
| 1970 to 1979 | 410 | 8,239 | 20 | 1,700 | 4.1 | .21 | 4.50 | 8.26 |
| 1980 to 1986 | 432 | 7,907 | 18 | 1,416 | 3.3 | .18 | 4.84 | 7.83 |
| 1987 to 1989 | 271 | 5,167 | 19 | 1,178 | 4.4 | .23 | 4.53 | 9.88 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | |
| Present in Building | 165 | 12,085 | 73 | 2,593 | 15.8 | .21 | 3.97 | 8.63 |
| Not Present | 2,255 | 29,059 | 13 | 6,611 | 2.9 | .23 | 4.85 | 4.61 |
| LIGHTING AND REFRIGERATION | | | | | | | | |
| Percent Lit When Open | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | 557 | 7,016 | 13 | 1,322 | 2.4 | .19 | 4.93 | 8.08 |
| 51 to 99 | 581 | 12,013 | 21 | 2,513 | 4.3 | .21 | 4.57 | 7.37 |
| 100 | 1,258 | 21,962 | 17 | 5,325 | 4.2 | .24 | 4.48 | 6.19 |
| Percent Lit When Closed | | | | | | | | |
| Not Lit | 1,269 | 16,533 | 13 | 3,838 | 3.0 | .23 | 4.63 | 6.65 |
| 1 to 50 | 1,082 | 22,321 | 21 | 4,775 | 4.4 | .21 | 4.55 | 6.11 |
| 51 to 99 | 43 | 1,726 | 40 | 481 | 11.1 | .28 | 4.20 | 13.11 |
| 100 | 25 | 564 | 22 | 110 | 4.3 | .19 | 5.01 | 21.81 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | |
| Incandescent Lamps | 1,446 | 27,287 | 19 | 5,987 | 4.1 | .22 | 4.54 | 5.00 |
| Fluorescent Lamps | 2,291 | 40,313 | 18 | 8,925 | 3.9 | .22 | 4.55 | 4.61 |
| High-Intensity Discharge Lamps | 272 | 12,567 | 46 | 2,660 | 9.8 | .21 | 4.07 | 8.45 |
| Other Lamps | 20 | 418 | 21 | 68 | 3.4 | .16 | 4.29 | 20.54 |
| High-Efficiency Ballasts | 648 | 16,848 | 26 | 3,800 | 5.9 | .23 | 4.40 | 6.35 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | |
| Commercial | | | | | | | | |
| Refrigeration Units | 609 | 19,667 | 32 | 4,337 | 7.1 | .22 | 4.47 | 6.00 |
| Freezers | 481 | 17,278 | 36 | 4,010 | 8.3 | .23 | 4.45 | 6.79 |
| Residential | | | | | | | | |
| Refrigerators | 1,515 | 31,353 | 21 | 6,700 | 4.4 | .21 | 4.44 | 5.23 |
| Freezers | 391 | 9,179 | 23 | 2,322 | 5.9 | .25 | 4.39 | 6.72 |
| Ice-Making Machines | 501 | 17,624 | 35 | 4,192 | 8.4 | .24 | 4.35 | 6.85 |
| Refrigerated Vending Machines | 950 | 27,789 | 29 | 6,330 | 6.7 | .23 | 4.32 | 6.62 |
| Water Coolers | 1,051 | 30,128 | 29 | 6,343 | 6.0 | .21 | 4.32 | 6.52 |
| Other | 29 | 1,027 | 35 | 411 | 14.0 | .40 | 3.89 | 22.40 |
| ENERGY MANAGEMENT | | | | | | | | |
| Occupant Control | | | | | | | | |
| Any Control of Heating | 1,465 | 19,094 | 13 | 4,115 | 2.8 | .22 | 4.73 | 6.04 |
| With Thermostats | 1,296 | 17,503 | 14 | 3,796 | 2.9 | .22 | 4.73 | 6.14 |
| Any Control of Cooling | 1,220 | 18,989 | 16 | 3,954 | 3.2 | .21 | 4.69 | 6.08 |
| With Thermostats | 1,077 | 17,244 | 16 | 3,564 | 3.3 | .21 | 4.68 | 6.92 |

See footnotes at end of table.

NATURAL GAS

Table 39. Natural Gas Expenditures (Continued)

| Building Characteristics | All Buildings Using Natural Gas | | | Natural Gas Expenditures | | | | RSE Row Factor |
|--|---------------------------------|----------------------------------|--|--------------------------|---------------------------------|---------------------------|-----------------------------------|-------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) | |
| RSE Column Factor: | 0.894 | 1.110 | 1.134 | 1.373 | 1.203 | 1.134 | 0.420 | |
| Reduced Use During Off-Hours | | | | | | | | |
| Heating Only | 432 | 4,388 | 10 | 1,300 | 3.0 | 0.30 | 4.79 | 8.76 |
| Cooling Only | 117 | 2,397 | 21 | 592 | 5.1 | .25 | 4.07 | 15.24 |
| Heating and Cooling | 1,565 | 28,312 | 18 | 5,479 | 3.5 | .19 | 4.64 | 5.76 |
| Computerized Energy Management and Control System | | | | | | | | |
| Present in Building | 182 | 10,633 | 59 | 2,013 | 11.1 | .19 | 4.18 | 9.06 |
| Controls Heating and Cooling | 175 | 10,160 | 58 | 1,945 | 11.1 | .19 | 4.16 | 8.20 |
| Controls Lighting | 39 | 3,145 | 80 | 541 | 13.8 | .17 | 3.89 | 10.41 |
| Controls Other | 23 | 1,938 | 85 | 483 | 21.1 | .25 | 4.13 | 24.72 |
| Other Energy Management | | | | | | | | |
| Regular HVAC Maintenance | 1,267 | 29,847 | 24 | 7,019 | 5.5 | .24 | 4.43 | 6.01 |
| Participated in Utility Conservation Program | 201 | 7,242 | 36 | 1,647 | 8.2 | .23 | 4.20 | 9.12 |
| NATURAL GAS DEMAND | | | | | | | | |
| Annual Consumption (hundred cubic feet) | | | | | | | | |
| 1,000 or Less | 663 | 4,170 | 6 | 251 | .4 | .06 | 7.60 | 8.21 |
| 1,001 to 5,000 | 1,046 | 9,967 | 10 | 1,424 | 1.4 | .14 | 5.60 | 5.84 |
| 5,001 to 10,000 | 348 | 6,485 | 19 | 1,229 | 3.5 | .19 | 5.10 | 5.01 |
| 10,001 to 25,000 | 238 | 7,326 | 31 | 1,724 | 7.2 | .24 | 5.01 | 6.88 |
| 25,001 to 50,000 | 71 | 5,017 | 71 | 1,146 | 16.2 | .23 | 4.76 | 5.72 |
| 50,001 to 100,000 | 28 | 2,808 | 101 | 833 | 29.9 | .30 | 4.50 | 6.26 |
| Over 100,000 | 26 | 5,370 | 209 | 2,597 | 101.0 | .48 | 3.62 | 11.01 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

NC No cases in responding sample.

o Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 40. Natural Gas Consumption and Conditional Energy Intensity by Census Region

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | | RSE Row Factor |
|--|--|----------|-------|-------|---|----------|--------|-------|---|----------|-------|-------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.290 | 0.956 | 1.287 | 1.120 | 1.185 | 0.844 | 0.822 | 0.939 | 1.243 | 0.781 | 1.117 | 0.732 | |
| All Buildings | 344 | 808 | 485 | 381 | 8,517 | 12,815 | 11,660 | 8,151 | 40.3 | 63.0 | 41.6 | 46.7 | 11.50 |
| Building Floorspace (Square Feet) | | | | | | | | | | | | | |
| 1,001 to 5,000 | 45 | 111 | 72 | 67 | 438 | 1,077 | 1,145 | 763 | 101.7 | 103.2 | 63.2 | 88.0 | 12.44 |
| 5,001 to 10,000 | 38 | 71 | 99 | 50 | 620 | 1,119 | 1,298 | 918 | 61.9 | 63.6 | 76.0 | 54.5 | 16.10 |
| 10,001 to 25,000 | 41 | 119 | 60 | 50 | 1,008 | 1,700 | 1,816 | 1,227 | 41.0 | 70.1 | 32.9 | 40.7 | 13.63 |
| 25,001 to 50,000 | 51 | 136 | 60 | 53 | 861 | 1,664 | 1,836 | 1,090 | 59.2 | 81.7 | 32.8 | 49.0 | 18.79 |
| 50,001 to 100,000 | 24 | 104 | 55 | 58 | 827 | 1,920 | 2,127 | 1,333 | 29.6 | 54.4 | 25.8 | 43.4 | 20.19 |
| 100,001 to 200,000 | 38 | 103 | Q | 27 | 1,434 | 1,855 | 1,357 | 1,373 | 26.5 | 55.6 | 46.3 | 19.9 | 25.19 |
| 200,001 to 500,000 | Q | 75 | Q | 21 | 1,073 | 2,255 | 1,167 | 559 | 63.3 | 33.1 | Q | 37.5 | 34.26 |
| Over 500,000 | 38 | Q | 18 | Q | 2,256 | 1,225 | 914 | Q | 16.8 | 71.9 | Q | 60.8 | 30.00 |
| Year Constructed | | | | | | | | | | | | | |
| 1899 or Before | Q | 20 | 3 | Q | 334 | 368 | 194 | Q | 69.7 | 55.6 | 16.4 | Q | 30.20 |
| 1900 to 1919 | 28 | 41 | Q | 20 | 944 | 1,432 | 373 | 318 | 29.8 | 28.5 | Q | 63.9 | 20.79 |
| 1920 to 1945 | 47 | 124 | 33 | 33 | 1,616 | 2,055 | 1,429 | 641 | 29.0 | 60.6 | 22.8 | 52.0 | 23.40 |
| 1946 to 1959 | 52 | 124 | 114 | 109 | 1,479 | 1,792 | 2,245 | 1,722 | 34.9 | 69.3 | 51.0 | 63.5 | 21.96 |
| 1960 to 1969 | 106 | 188 | 78 | 74 | 1,850 | 2,783 | 2,360 | 1,475 | 57.3 | 67.4 | 33.0 | 49.9 | 17.86 |
| 1970 to 1979 | 47 | 180 | 124 | 78 | 1,014 | 2,490 | 2,493 | 2,106 | Q | 72.5 | 49.7 | 37.0 | 21.68 |
| 1980 to 1983 | 12 | 43 | 41 | 17 | 294 | 512 | 867 | 516 | 42.1 | 84.5 | 47.8 | 33.3 | 22.45 |
| 1984 to 1986 | 15 | 54 | 43 | 25 | Q | 1,002 | 1,000 | 824 | Q | 54.2 | 43.4 | 30.7 | 24.85 |
| 1987 to 1989 | Q | 32 | 17 | 19 | 352 | 380 | 700 | 440 | 39.7 | 85.0 | 24.4 | 44.0 | 28.30 |
| BUILDING USE | | | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | | | |
| Assembly | 23 | 66 | 36 | 43 | 806 | 1,154 | 1,401 | 942 | Q | 57.5 | 25.9 | 45.8 | 19.16 |
| Education | 42 | 120 | 61 | Q | 1,482 | 1,960 | 1,805 | 1,393 | 28.2 | 61.0 | 33.6 | 66.4 | 18.17 |
| Food Sales | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Food Service | 25 | 36 | 34 | 30 | 127 | 317 | 228 | 146 | 194.2 | 112.4 | 151.5 | 202.4 | 22.65 |
| Health Care | 24 | 116 | 25 | 16 | 327 | 744 | 304 | 226 | 74.0 | 156.4 | 82.0 | 69.1 | 27.72 |
| Lodging | 21 | 72 | 40 | 49 | 387 | 833 | 754 | 567 | 53.6 | 86.7 | 53.2 | 86.5 | 24.82 |
| Mercantile and Service | 108 | 164 | 84 | 49 | 1,722 | 2,647 | 2,860 | 1,561 | 62.9 | 62.1 | 29.4 | 31.1 | 17.88 |
| Office | 35 | 103 | 40 | 55 | 1,666 | 1,837 | 1,674 | 2,043 | 20.8 | 55.8 | 23.6 | 26.8 | 19.08 |
| Parking Garage | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Warehouse | 17 | 87 | 87 | 11 | Q | 1,847 | 1,575 | 637 | 15.8 | 47.1 | 55.0 | 16.7 | 28.29 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Vacant | Q | 11 | Q | Q | Q | Q | 360 | Q | Q | 11.1 | Q | Q | 36.75 |
| Weekly Operating Hours | | | | | | | | | | | | | |
| 39 or Fewer | Q | 38 | 27 | 20 | 374 | 686 | 1,117 | 444 | 33.8 | 55.0 | 24.6 | 44.2 | 20.25 |
| 40 to 48 | 55 | 142 | 123 | 58 | 1,772 | 2,216 | 3,731 | 1,444 | 30.8 | 64.2 | 32.8 | 40.2 | 15.81 |
| 49 to 60 | 69 | 127 | 64 | 58 | 1,559 | 2,689 | 2,251 | 1,982 | 44.3 | 47.3 | 28.3 | 29.1 | 18.24 |
| 61 to 84 | 61 | 143 | 74 | 55 | 2,394 | 2,405 | 1,835 | 1,319 | 25.4 | 59.3 | 40.6 | 41.6 | 18.37 |
| 85 to 167 | 49 | 130 | Q | 98 | 1,362 | 2,622 | 1,231 | 1,359 | 35.9 | 49.7 | 59.4 | 72.1 | 25.53 |
| 168 (Open Continuously) | 98 | 228 | 124 | 92 | 1,056 | 2,197 | 1,497 | 1,602 | 92.5 | 103.6 | 82.6 | 57.7 | 21.11 |
| Workers | | | | | | | | | | | | | |
| 4 or Fewer | 44 | 121 | 67 | 61 | 775 | 2,496 | 2,143 | 1,305 | 56.5 | 48.4 | 31.1 | 47.1 | 18.88 |
| 5 to 9 | 33 | 78 | 54 | 48 | 852 | 1,552 | 1,852 | 925 | Q | 50.0 | 29.0 | 51.7 | 18.87 |
| 10 to 19 | 33 | 87 | 74 | 47 | 839 | 1,259 | 1,413 | 946 | 39.2 | 69.0 | 52.7 | 49.8 | 18.66 |
| 20 to 49 | 55 | 136 | 73 | 58 | 1,622 | 1,987 | 1,852 | 1,158 | 33.9 | 68.7 | 39.6 | 50.2 | 17.54 |
| 50 to 99 | 36 | 112 | 64 | 34 | 1,145 | 1,865 | 1,449 | 893 | 31.6 | 60.2 | 44.1 | 38.0 | 21.13 |
| 100 to 249 | Q | 121 | 101 | 47 | 1,097 | 1,660 | 1,073 | 1,213 | 71.7 | 72.7 | 94.4 | 38.8 | 24.16 |
| 250 or More | 64 | 153 | 51 | Q | 2,188 | 1,996 | 1,878 | 1,711 | 29.4 | 76.8 | 27.4 | 49.8 | 29.32 |

See footnotes at end of table.

NATURAL GAS

Table 40. Natural Gas Consumption and Conditional Energy Intensity by Census Region (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | | RSE Row Factor |
|---|--|----------|-------|-------|---|----------|--------|-------|---|----------|-------|-------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor | 1.250 | 0.650 | 1.207 | 1.120 | 1.160 | 0.844 | 0.622 | 0.930 | 1.243 | 0.731 | 1.117 | 0.792 | |
| Ownership and Occupancy | | | | | | | | | | | | | |
| Nongovernment Owned | 286 | 650 | 378 | 244 | 6,257 | 10,269 | 9,067 | 6,119 | 45.6 | 63.3 | 41.7 | 39.9 | 12.12 |
| Owner Occupied | 247 | 545 | 270 | 195 | 5,013 | 8,174 | 6,366 | 4,088 | 49.4 | 66.7 | 42.4 | 47.7 | 13.26 |
| Single Establishment | 201 | 450 | 232 | 171 | 3,096 | 6,257 | 4,682 | 3,115 | 64.8 | 71.9 | 49.5 | 54.9 | 15.86 |
| Multiple Establishment | 47 | 95 | 38 | 24 | 1,916 | 1,917 | 1,684 | 973 | 24.3 | 49.7 | 22.7 | 24.7 | 21.89 |
| Nonowner Occupied | 38 | 105 | 108 | 49 | 1,245 | 2,096 | 2,702 | 2,031 | 30.7 | 50.3 | 39.9 | 24.3 | 18.04 |
| Single Establishment | 24 | 52 | Q | 28 | 610 | 992 | 1,789 | 889 | 39.3 | 52.0 | 37.8 | 31.4 | 20.84 |
| Multiple Establishment | 14 | 48 | 17 | 20 | 632 | 997 | 774 | 1,112 | 21.6 | 48.2 | 22.2 | 18.2 | 22.80 |
| Vacant | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Government Owned | 58 | 158 | 107 | 136 | 2,260 | 2,545 | 2,593 | 2,032 | 25.7 | 61.9 | 41.2 | 67.1 | 16.38 |
| Federal | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| State | Q | 28 | 43 | 24 | 632 | 579 | 716 | 390 | Q | 49.0 | 60.3 | 60.9 | 32.17 |
| Local | 42 | 124 | 59 | 58 | 1,574 | 1,914 | 1,710 | 1,004 | 26.5 | 64.8 | 34.3 | 57.6 | 16.46 |
| Multibuilding Facility | | | | | | | | | | | | | |
| Not on Multibuilding Facility | 186 | 489 | 285 | 176 | 5,951 | 8,692 | 7,390 | 4,094 | 31.3 | 56.3 | 38.5 | 43.0 | 10.76 |
| Part of Multibuilding Facility | 157 | 319 | 200 | 205 | 2,566 | 4,123 | 4,270 | 4,057 | 61.3 | 77.3 | 46.8 | 50.5 | 18.42 |
| On Facility with Central Plant | Q | 164 | 58 | Q | 849 | 1,427 | 1,014 | Q | 117.5 | 115.0 | 57.6 | 66.6 | 26.12 |
| Percent Vacant at Least Three Months | | | | | | | | | | | | | |
| 0 | 261 | 608 | 376 | 274 | 5,241 | 8,473 | 8,173 | 5,589 | 49.9 | 71.7 | 46.0 | 49.1 | 11.18 |
| 1 to 50 | 50 | 164 | 57 | 44 | 2,357 | 2,904 | 2,315 | 1,646 | 21.3 | 56.5 | 24.6 | 26.7 | 22.02 |
| 51 to 99 | Q | 20 | 9 | Q | 558 | 1,082 | 543 | Q | 43.9 | Q | 17.0 | 71.7 | 33.39 |
| 100 | 8 | 16 | Q | 14 | 361 | 355 | 629 | 245 | Q | 45.0 | Q | 58.3 | 30.74 |
| Months in Use Out of Past 12 Months | | | | | | | | | | | | | |
| 0 to 8 | Q | 24 | 18 | 21 | Q | 521 | 716 | 277 | Q | 45.5 | 24.5 | 75.2 | 33.14 |
| 9 to 11 | 24 | 37 | Q | 28 | 811 | 578 | 708 | 544 | 30.1 | 64.6 | 63.9 | 50.9 | 24.08 |
| 12 | 311 | 747 | 422 | 332 | 7,477 | 11,715 | 10,236 | 7,331 | 41.6 | 63.7 | 41.2 | 45.3 | 12.01 |
| LOCATION | | | | | | | | | | | | | |
| Metropolitan Status | | | | | | | | | | | | | |
| Metropolitan | 240 | 641 | 358 | 325 | 7,380 | 10,490 | 9,056 | 7,348 | 32.5 | 61.1 | 39.5 | 44.2 | 11.97 |
| Nonmetropolitan | 104 | 167 | 127 | 56 | 1,137 | 2,325 | 2,604 | 804 | 91.0 | 71.8 | 48.8 | 69.1 | 16.78 |
| Climate Zone: 45-Year Average | | | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | | | |
| Over 7,000 HDD | Q | 201 | NC | 44 | NC | 2,605 | NC | 459 | NC | 77.2 | NC | 96.7 | 18.76 |
| 5,500-7,000 HDD | 236 | 459 | NC | 132 | 4,076 | 7,791 | NC | 2,036 | 57.8 | 59.0 | NC | 64.8 | 16.76 |
| 4,000-5,499 HDD | 108 | 148 | 108 | 33 | 4,442 | 2,419 | 2,146 | 661 | 24.3 | 61.0 | 50.2 | 49.8 | 23.82 |
| Under 4,000 HDD | NC | NC | 192 | 149 | NC | NC | 4,178 | 4,258 | NC | NC | 45.9 | 34.9 | 18.21 |
| 2,000 CDD or More and -- | | | | | | | | | | | | | |
| Under 4,000 HDD | NC | NC | 185 | 23 | NC | NC | 5,336 | 737 | NC | NC | 34.7 | 31.0 | 23.52 |
| STRUCTURE | | | | | | | | | | | | | |
| Floors | | | | | | | | | | | | | |
| 1 | 66 | 252 | 265 | 130 | 2,221 | 3,602 | 5,181 | 2,816 | 29.8 | 69.8 | 51.2 | 46.1 | 15.10 |
| 2 | 114 | 211 | 130 | 90 | 1,786 | 3,266 | 3,654 | 2,273 | 63.9 | 64.6 | 35.5 | 39.7 | 16.56 |
| 3 | 70 | 98 | 31 | 46 | 1,367 | 2,375 | 1,025 | 954 | 51.3 | 41.3 | 30.3 | 48.3 | 17.45 |
| 4 to 6 | 68 | 132 | 37 | Q | 1,509 | 2,140 | 1,070 | 1,327 | 45.3 | 61.8 | 34.6 | 63.7 | 28.96 |
| 7 or More | 25 | 115 | 21 | 30 | 1,634 | 1,433 | 730 | 781 | Q | 80.4 | 29.4 | 38.6 | 29.13 |
| Wall Materials | | | | | | | | | | | | | |
| Masonry | 221 | 652 | 366 | 229 | 6,161 | 9,963 | 8,737 | 4,471 | 35.8 | 65.5 | 41.8 | 51.2 | 11.05 |
| Siding or Shingles | 23 | 40 | 20 | 34 | 613 | 639 | 491 | 610 | Q | 62.6 | 41.6 | 55.7 | 23.48 |
| Metal Panels | Q | 57 | 51 | 20 | 325 | 889 | 1,036 | 408 | Q | 63.9 | 49.5 | 48.0 | 27.71 |
| Concrete Panels | 21 | 29 | 42 | Q | 715 | 863 | 1,199 | 2,117 | 28.9 | 33.7 | 35.0 | 39.6 | 30.99 |
| Window Glass | Q | Q | Q | 6 | Q | Q | Q | 306 | Q | Q | Q | 20.7 | 31.25 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |

See footnotes at end of table.

Table 40. Natural Gas Consumption and Conditional Energy Intensity by Census Region (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | | RSE Row Factor | |
|--|--|----------|-------|-------|---|----------|--------|-------|---|----------|-------|---------|----------------|-------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | | |
| RSE Column Factor | 1.290 | 0.908 | 1.267 | 1.125 | 1.166 | 0.914 | 0.822 | 0.930 | 1.243 | 0.781 | 1.117 | 0.752 | | |
| Roof Materials | | | | | | | | | | | | | | |
| Built-Up | 126 | 386 | 295 | 216 | 3,586 | 6,959 | 6,840 | 4,579 | 35.2 | 55.4 | 43.1 | 47.2 | 15.06 | |
| Shingles (Not Wood) | 67 | 120 | 51 | 86 | 1,766 | 1,754 | 1,629 | 1,862 | 38.1 | 68.5 | 31.3 | 46.3 | 18.53 | |
| Metal Surfacing | Q | 66 | 69 | 21 | 862 | 1,004 | 1,371 | 565 | Q | 65.3 | 50.3 | 36.6 | 21.18 | |
| Synthetic or Rubber | 50 | 144 | 41 | 16 | 1,179 | 1,920 | 888 | 441 | 42.4 | 75.1 | 46.5 | 36.4 | 20.12 | |
| Slate or Tile | 17 | 25 | Q | 26 | 450 | 434 | 606 | 367 | 37.2 | 56.4 | 27.9 | 70.5 | 33.74 | |
| Concrete | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Wooden Materials | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | | | | | | |
| Roof or Ceiling Insulation | 194 | 653 | 394 | 287 | 5,274 | 9,575 | 8,647 | 6,250 | 36.8 | 68.2 | 45.6 | 46.0 | 12.42 | |
| Wall Insulation | 198 | 445 | 237 | 187 | 3,533 | 6,783 | 5,526 | 3,799 | 55.9 | 65.5 | 42.9 | 49.2 | 17.09 | |
| Storm or Multiple Glazing | 178 | 517 | 126 | 111 | 3,774 | 7,356 | 3,918 | 2,031 | 47.1 | 70.3 | 32.3 | 54.8 | 11.55 | |
| Tinted, Reflective, or Shading Glass | 118 | 303 | 158 | 168 | 2,701 | 4,032 | 4,853 | 3,881 | 43.9 | 75.3 | 32.6 | 43.2 | 17.39 | |
| Exterior or Interior Shadings or Awnings | 144 | 342 | 185 | 182 | 4,020 | 5,533 | 5,280 | 3,576 | 35.9 | 61.9 | 35.1 | 50.8 | 13.69 | |
| Weather Stripping or Caulking | 244 | 676 | 323 | 267 | 6,282 | 10,009 | 8,394 | 5,560 | 38.9 | 67.6 | 38.5 | 47.9 | 11.52 | |
| None of the Above | 17 | 46 | Q | 37 | 834 | Q | 917 | 695 | 20.3 | 32.0 | Q | 53.9 | 29.72 | |
| ENERGY SOURCES AND END USES * | | | | | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | | | | | |
| Electricity | 344 | 804 | 484 | 381 | 8,515 | 12,801 | 11,648 | 8,151 | 40.3 | 62.8 | 41.5 | 46.7 | 11.92 | |
| Natural Gas | 343 | 808 | 484 | 380 | 8,517 | 12,815 | 11,660 | 8,151 | 40.3 | 63.0 | 41.5 | 46.7 | 11.90 | |
| Fuel Oil | 72 | 189 | Q | Q | 2,444 | 2,452 | 1,788 | 1,181 | 29.6 | 77.0 | 57.7 | 43.3 | 27.70 | |
| District Heat | Q | Q | Q | Q | Q | 1,072 | Q | Q | Q | 69.9 | Q | Q | 39.92 | |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Propane | Q | 33 | Q | Q | Q | 530 | Q | Q | Q | 61.5 | Q | Q | 40.98 | |
| Other | Q | 18 | Q | Q | Q | 457 | Q | Q | Q | 40.3 | Q | Q | 35.22 | |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | | | | | |
| Heated Buildings | 343 | 803 | 473 | 377 | 8,484 | 12,774 | 11,411 | 8,133 | 40.4 | 62.8 | 41.4 | 46.3 | 11.64 | |
| Air-Conditioned Buildings | 248 | 718 | 462 | 303 | 7,198 | 11,509 | 11,000 | 6,969 | 34.5 | 62.4 | 42.0 | 43.5 | 11.80 | |
| Buildings with Water Heating | 337 | 771 | 437 | 361 | 8,343 | 12,253 | 10,237 | 7,600 | 40.3 | 62.9 | 42.7 | 47.5 | 11.89 | |
| Buildings with Cooking | 210 | 371 | 158 | 209 | 4,643 | 5,866 | 4,632 | 3,726 | 45.2 | 63.3 | 34.1 | 56.1 | 15.31 | |
| Buildings with Manufacturing | 28 | 99 | Q | Q | 747 | 1,347 | 733 | Q | 37.7 | 73.2 | 115.3 | 70.7 | 29.96 | |
| Energy End-Use Combinations | | | | | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | | | | | |
| With Air Conditioning | With Water Heating and Cooking | 148 | 349 | 148 | 176 | 3,978 | 5,434 | 4,339 | 3,155 | 37.3 | 64.1 | 34.2 | 55.7 | 16.47 |
| With Water Heating, Without Cooking | 96 | 350 | 268 | 114 | 3,120 | 5,700 | 5,226 | 3,343 | 30.8 | 61.4 | 51.3 | 34.0 | 14.47 | |
| Without Water Heating or Cooking | Q | 16 | 36 | 11 | Q | 363 | 1,128 | 400 | Q | 43.2 | 31.9 | 26.7 | 28.12 | |
| Without Air Conditioning | With Water Heating and Cooking | Q | 22 | Q | 32 | 639 | 430 | Q | 500 | Q | 51.5 | Q | 63.7 | 31.08 |
| With Water Heating, Without Cooking | 31 | 46 | 9 | 36 | 573 | 649 | 436 | 584 | 53.7 | 70.6 | 21.3 | 61.2 | 21.84 | |
| Without Water Heating or Cooking | Q | 21 | 8 | Q | Q | 198 | 185 | Q | Q | 105.2 | 41.8 | Q | 28.68 | |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | Q | Q | Q | Q | NC Q | NC Q | Q 322 | NC Q | NC Q | Q 42.2 | NC Q | Q 33.14 | b | |
| All Other Combinations | Q | Q | Q | 14 | Q | NC Q | NC Q | NC Q | NC Q | NC Q | NC Q | NC Q | NC Q | |

See footnotes at end of table.

NATURAL GAS

Table 40. Natural Gas Consumption and Conditional Energy Intensity by Census Region (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | | RGE Row Factor |
|--|--|----------|--------|--------|---|----------|--------|-------|---|----------|--------|--------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| | 1,290 | 6,950 | 12,871 | 11,186 | 1,165 | 6,564 | 8,822 | 9,930 | 1,243 | 6,731 | 11,117 | 10,752 | |
| Space-Heating Energy Source | | | | | | | | | | | | | |
| Natural Gas | 317 | 768 | 431 | 287 | 5,970 | 11,709 | 9,098 | 6,241 | 53.1 | 65.6 | 47.4 | 46.1 | 11.40 |
| Main | 298 | 757 | 392 | 281 | 5,319 | 11,352 | 8,609 | 5,830 | 56.0 | 66.7 | 45.6 | 48.1 | 11.50 |
| With Secondary | 109 | 232 | 140 | 63 | 1,129 | 3,032 | 2,385 | 1,341 | 96.3 | 76.4 | 58.9 | 47.3 | 22.42 |
| Electricity Only | 30 | 44 | Q | 30 | 539 | 976 | 1,324 | 781 | 55.8 | 44.6 | Q | 37.9 | 22.76 |
| Other Energy Sources or Combinations | 39 | 186 | 90 | 34 | 557 | 2,007 | 1,019 | 552 | 70.3 | 92.9 | 88.7 | 60.9 | 20.52 |
| With No Secondary | 189 | 526 | 252 | 217 | 4,190 | 8,320 | 6,224 | 4,489 | 45.1 | 63.2 | 40.5 | 48.4 | 10.80 |
| Secondary | 19 | 11 | 39 | Q | 651 | 357 | 489 | Q | 29.6 | 30.8 | 79.7 | Q | 31.07 |
| Other Excluding Natural Gas | 26 | 35 | 41 | Q | 2,515 | 1,065 | 2,313 | 1,892 | 10.4 | 32.5 | 17.8 | 47.2 | 25.43 |
| Building Not Heated | Q | Q | 12 | Q | Q | Q | 249 | Q | Q | Q | 49.2 | Q | 37.24 |
| Main Space-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 14 | 34 | 74 | 44 | 568 | 741 | 2,240 | 1,560 | 24.7 | 45.6 | 32.9 | 28.2 | 25.80 |
| Natural Gas | 298 | 757 | 392 | 281 | 5,319 | 11,352 | 8,609 | 5,830 | 56.0 | 66.7 | 45.6 | 48.1 | 11.50 |
| Fuel Oil | 18 | Q | Q | Q | 1,417 | Q | 413 | Q | 12.4 | Q | Q | Q | 20.37 |
| District Heat | Q | Q | Q | Q | 1,206 | 699 | Q | Q | Q | 44.4 | Q | 68.8 | 33.19 |
| Propane | Q | Q | Q | Q | NC | Q | Q | NC | NC | Q | Q | NC | b |
| Other | Q | Q | Q | Q | Q | Q | NC | Q | Q | Q | NC | Q | b |
| Air-Conditioning Energy Source | | | | | | | | | | | | | |
| Natural Gas | 36 | 53 | 19 | Q | 517 | 673 | 445 | 340 | 69.0 | 78.6 | 43.2 | 47.7 | 26.48 |
| Other Excluding Natural Gas | 212 | 665 | 442 | 287 | 6,681 | 10,836 | 10,555 | 6,629 | 31.8 | 61.4 | 41.9 | 43.3 | 12.87 |
| Air-Conditioning Not Performed | Q | 90 | 23 | 77 | 1,319 | 1,306 | 660 | 1,182 | 72.3 | 69.0 | 34.6 | 65.3 | 10.80 |
| Water-Heating Energy Source | | | | | | | | | | | | | |
| Natural Gas | 282 | 585 | 290 | 253 | 5,414 | 8,834 | 6,468 | 5,206 | 52.1 | 66.2 | 44.8 | 48.6 | 11.18 |
| Other Excluding Natural Gas | 54 | 186 | 147 | 108 | 2,928 | 3,419 | 3,769 | 2,394 | 18.5 | 54.4 | 38.9 | 45.0 | 23.00 |
| Water Heating Not Performed | 7 | 37 | 47 | 20 | 175 | 562 | 1,423 | 551 | 40.3 | 65.3 | 33.4 | 35.9 | 25.80 |
| Cooking Energy Source | | | | | | | | | | | | | |
| Natural Gas | 133 | 280 | 138 | 172 | 3,426 | 4,587 | 3,845 | 2,909 | 38.8 | 61.0 | 35.9 | 59.2 | 18.00 |
| Other Excluding Natural Gas | Q | 91 | 20 | 37 | 1,218 | 1,279 | 788 | 818 | Q | 71.3 | 25.3 | 44.9 | 29.73 |
| Cooking Not Performed | 134 | 437 | 327 | 172 | 3,874 | 6,949 | 7,028 | 4,425 | 34.6 | 62.9 | 46.5 | 38.8 | 13.07 |
| Manufacturing Energy Source | | | | | | | | | | | | | |
| Natural Gas | Q | 52 | Q | Q | Q | 308 | Q | Q | Q | 168.2 | Q | Q | 43.71 |
| Other Excluding Natural Gas | 17 | 47 | Q | Q | Q | 1,039 | 581 | Q | 33.8 | 45.0 | Q | 70.1 | 27.71 |
| Manufacturing Not Performed | 315 | 709 | 400 | 313 | 7,770 | 11,468 | 10,928 | 7,201 | 40.6 | 61.8 | 36.6 | 43.5 | 10.02 |
| HEATING AND COOLING | | | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | | | |
| Not Heated | Q | Q | 12 | Q | Q | Q | 272 | Q | Q | Q | 45.9 | Q | 34.80 |
| 1 to 50 | 19 | 41 | 38 | 27 | 1,243 | 1,900 | 1,788 | 1,049 | 15.7 | 21.5 | 21.0 | 25.8 | 23.82 |
| 51 to 99 | 28 | 92 | 90 | 56 | 641 | 1,601 | 2,013 | 1,693 | 44.0 | 57.7 | 44.8 | 33.2 | 21.06 |
| 100 | 295 | 669 | 345 | 293 | 6,582 | 9,254 | 7,587 | 5,391 | 44.8 | 72.3 | 45.4 | 54.4 | 12.47 |
| Percent Cooled | | | | | | | | | | | | | |
| Not Cooled | Q | 90 | 23 | 77 | 1,319 | 1,306 | 660 | 1,182 | 72.3 | 69.0 | 34.6 | 65.3 | 18.95 |
| 1 to 50 | 121 | 269 | 153 | 56 | 3,514 | 4,922 | 3,036 | 1,747 | 34.4 | 54.7 | 50.5 | 32.0 | 18.43 |
| 51 to 99 | 49 | 182 | 104 | 77 | 1,670 | 2,913 | 2,764 | 1,813 | 29.2 | 62.4 | 37.8 | 42.7 | 17.40 |
| 100 | 79 | 267 | 204 | 170 | 2,014 | 3,673 | 5,200 | 3,409 | 39.0 | 72.6 | 39.3 | 49.9 | 18.76 |

See footnotes at end of table.

Table 40. Natural Gas Consumption and Conditional Energy Intensity by Census Region (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | | RSE Row Factor |
|------------------------------|--|----------|-------|-------|---|----------|-------|-------|---|----------|-------|-------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor | 1.000 | 0.999 | 1.007 | 1.120 | 0.985 | 0.914 | 0.822 | 0.880 | 1.240 | 0.781 | 1.117 | 1.182 | |
| LIGHTING | | | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | 61 | 113 | 43 | 52 | 978 | 2,724 | 2,052 | 1,261 | 61.9 | 41.5 | 20.8 | 41.4 | 16.96 |
| 51 to 99 | 84 | 237 | 134 | 95 | 2,701 | 3,893 | 3,087 | 2,332 | 30.9 | 60.9 | 43.5 | 40.8 | 16.94 |
| 100 | 199 | 453 | 304 | 233 | 4,835 | 6,111 | 6,473 | 4,543 | 41.2 | 74.1 | 47.0 | 51.3 | 15.46 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

nc No cases in responding sample.

o Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

NATURAL GAS

Table 41. Natural Gas Expenditures by Census Region

| Building Characteristics | Total Natural Gas Expenditures (million dollars) | | | | Natural Gas Expenditures (dollars) | | | | | | | | RSE Row Factor |
|--|---|----------|-------|-------|---------------------------------------|----------|-------|-------|-----------------|----------|-------|-------|-------------------|
| | | | | | per Thousand Cubic Feet | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.764 | 1.442 | 1.864 | 1.605 | 0.489 | 0.504 | 0.493 | 0.449 | 1.798 | 1.135 | 1.528 | 0.974 | |
| All Buildings | 1,807 | 3,381 | 2,293 | 1,724 | 5.26 | 4.19 | 4.74 | 4.53 | 0.21 | 0.26 | 0.20 | 0.21 | 7.89 |
| Building Floorspace (Square Feet) | | | | | | | | | | | | | |
| 1,001 to 5,000 | 295 | 557 | 408 | 361 | 6.64 | 5.02 | 5.69 | 5.39 | .67 | .52 | .36 | .47 | 8.14 |
| 5,001 to 10,000 | 258 | 323 | 472 | 251 | 6.74 | 4.54 | 4.79 | 5.02 | .42 | .29 | .36 | .27 | 10.99 |
| 10,001 to 25,000 | 250 | 536 | 314 | 248 | 6.05 | 4.49 | 5.27 | 4.97 | .25 | .32 | .17 | .20 | 9.37 |
| 25,001 to 50,000 | 280 | 523 | 275 | 240 | 5.50 | 3.85 | 4.57 | 4.50 | .33 | .31 | .15 | .22 | 13.86 |
| 50,001 to 100,000 | 134 | 422 | 269 | 269 | 5.47 | 4.04 | 4.90 | 4.66 | .16 | .22 | .13 | .20 | 13.11 |
| 100,001 to 200,000 | 184 | 437 | 266 | 129 | 4.83 | 4.24 | 4.23 | 4.72 | .13 | .24 | .20 | .09 | 17.49 |
| 200,001 to 500,000 | Q | 281 | Q | 73 | 3.85 | 3.76 | 3.77 | 3.49 | .24 | .12 | Q | .13 | 25.06 |
| Over 500,000 | 145 | Q | 70 | Q | 3.82 | 3.43 | 3.93 | 2.81 | .06 | .25 | Q | .17 | 15.68 |
| Year Constructed | | | | | | | | | | | | | |
| 1899 or Before | Q | 88 | 20 | Q | 6.27 | 4.30 | 6.28 | Q | .44 | .24 | .10 | Q | 14.13 |
| 1900 to 1919 | 153 | 187 | Q | 83 | 5.46 | 4.57 | Q | 4.06 | .16 | .13 | Q | .26 | 16.43 |
| 1920 to 1945 | 273 | 542 | 171 | 148 | 5.86 | 4.36 | 5.26 | 4.45 | .17 | .26 | .12 | .23 | 14.00 |
| 1946 to 1959 | 278 | 556 | 562 | 412 | 5.40 | 4.47 | 4.92 | 3.77 | .19 | .31 | .25 | .24 | 13.12 |
| 1960 to 1969 | 485 | 758 | 382 | 351 | 4.57 | 4.04 | 4.91 | 4.77 | .26 | .27 | .16 | .24 | 12.20 |
| 1970 to 1979 | 236 | 736 | 562 | 404 | 5.08 | 4.08 | 4.54 | 5.19 | Q | .30 | .23 | .19 | 12.37 |
| 1980 to 1983 | 72 | 150 | 197 | 83 | 5.81 | 3.48 | 4.76 | 4.84 | .24 | .29 | .23 | .16 | 15.60 |
| 1984 to 1986 | 85 | 246 | 207 | 127 | 5.76 | 4.54 | 4.79 | 5.01 | Q | .25 | .21 | .15 | 16.22 |
| 1987 to 1989 | Q | 118 | 88 | 99 | 5.56 | 3.64 | 5.15 | 5.12 | .22 | .31 | .13 | .23 | 16.55 |
| BUILDING USE | | | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | | | |
| Assembly | 142 | 302 | 182 | 183 | 6.13 | 4.55 | 5.04 | 4.23 | Q | .26 | .13 | .19 | 11.14 |
| Education | 195 | 477 | 312 | 325 | 4.67 | 3.99 | 5.15 | 3.51 | .13 | .24 | .17 | .23 | 11.59 |
| Food Sales | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Food Service | 154 | 175 | 181 | 165 | 6.22 | 4.91 | 5.27 | 5.58 | 1.21 | .55 | .80 | 1.13 | 12.83 |
| Health Care | 106 | 428 | 107 | Q | 4.38 | 3.67 | 4.30 | 4.55 | .32 | .57 | .35 | .31 | 18.21 |
| Lodging | 120 | 274 | 201 | 222 | 5.80 | 3.79 | 5.03 | 4.54 | .31 | .33 | .27 | .39 | 18.26 |
| Mercantile and Service | 556 | 693 | 436 | 246 | 5.14 | 4.22 | 5.20 | 5.07 | .32 | .26 | .15 | .16 | 11.80 |
| Office | 195 | 454 | 203 | 276 | 5.64 | 4.43 | 5.14 | 5.04 | .12 | .25 | .12 | .14 | 11.81 |
| Parking Garage | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Warehouse | 104 | 373 | 318 | 58 | 6.14 | 4.30 | 3.68 | 5.52 | .10 | .20 | .20 | .09 | 17.03 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Vacant | Q | 53 | Q | Q | Q | Q | 4.82 | 4.98 | Q | Q | .05 | Q | 16.55 |
| Weekly Operating Hours | | | | | | | | | | | | | |
| 39 or Fewer | 73 | 180 | 155 | 101 | 5.78 | 4.77 | 5.69 | 5.19 | .19 | .26 | .14 | .23 | 11.79 |
| 40 to 48 | 285 | 612 | 602 | 273 | 5.22 | 4.30 | 4.92 | 4.71 | .16 | .28 | .16 | .19 | 10.16 |
| 49 to 60 | 388 | 574 | 319 | 281 | 5.64 | 4.51 | 5.03 | 4.89 | .25 | .21 | .14 | .14 | 11.38 |
| 61 to 84 | 352 | 604 | 361 | 270 | 5.81 | 4.24 | 4.86 | 4.92 | .15 | .25 | .20 | .20 | 11.77 |
| 85 to 167 | 283 | 546 | 335 | 372 | 5.80 | 4.19 | 4.59 | 3.80 | .21 | .21 | .27 | .27 | 15.38 |
| 168 (Open Continuously) | 425 | 865 | 522 | 426 | 4.35 | 3.80 | 4.22 | 4.61 | .40 | .39 | .35 | .27 | 14.97 |
| Workers | | | | | | | | | | | | | |
| 4 or Fewer | 273 | 599 | 377 | 315 | 6.27 | 4.97 | 5.72 | 5.15 | .35 | .24 | .18 | .24 | 10.43 |
| 5 to 9 | 208 | 360 | 268 | 251 | 6.33 | 4.65 | 5.01 | 5.26 | Q | .23 | .14 | .27 | 10.90 |
| 10 to 19 | 215 | 351 | 375 | 236 | 6.54 | 4.04 | 5.04 | 5.02 | .26 | .28 | .27 | .25 | 11.48 |
| 20 to 49 | 330 | 587 | 365 | 257 | 6.01 | 4.30 | 4.98 | 4.42 | .20 | .30 | .20 | .22 | 11.70 |
| 50 to 99 | 190 | 423 | 298 | 160 | 5.25 | 3.76 | 4.67 | 4.72 | .17 | .23 | .21 | .18 | 13.00 |
| 100 to 249 | Q | 495 | 387 | 209 | 4.13 | 4.10 | 3.82 | 4.45 | .30 | .30 | .36 | .17 | 19.23 |
| 250 or More | 266 | 566 | 222 | Q | 4.14 | 3.69 | 4.33 | 3.46 | .12 | .28 | .12 | .17 | 18.25 |

See footnotes at end of table.

Table 41. Natural Gas Expenditures by Census Region (Continued)

| Building Characteristics | Total Natural Gas Expenditures (million dollars) | | | | Natural Gas Expenditures (dollars) | | | | | | | | RSE Flow Factor |
|---|--|----------|-------|-------|------------------------------------|----------|-------|-------|-----------------|----------|-------|-------|-----------------|
| | | | | | per Thousand Cubic Feet | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor | 1.794 | 1.442 | 1.954 | 1.606 | 0.460 | 0.390 | 0.405 | 0.440 | 1.790 | 1.135 | 1.520 | 0.674 | |
| Ownership and Occupancy | | | | | | | | | | | | | |
| Nongovernment Owned | 1,522 | 2,744 | 1,760 | 1,187 | 5.34 | 4.22 | 4.67 | 4.87 | 0.24 | 0.27 | 0.19 | 0.19 | 8.32 |
| Owner Occupied | 1,276 | 2,246 | 1,255 | 904 | 5.17 | 4.12 | 4.66 | 4.64 | .25 | .27 | .20 | .22 | 9.06 |
| Single Establishment | 994 | 1,870 | 1,059 | 789 | 4.96 | 4.16 | 4.58 | 4.62 | .32 | .30 | .23 | .25 | 10.16 |
| Multiple Establishment | 282 | 376 | 196 | 115 | 6.05 | 3.94 | 5.12 | 4.78 | .15 | .20 | .12 | .12 | 14.21 |
| Nonowner Occupied | 246 | 498 | 505 | 284 | 6.46 | 4.73 | 4.70 | 5.77 | .20 | .24 | .19 | .14 | 10.61 |
| Single Establishment | 153 | 243 | 296 | 158 | 6.39 | 4.71 | 4.40 | 5.68 | .25 | .24 | .17 | .18 | 11.55 |
| Multiple Establishment | 88 | 230 | 98 | 120 | 6.46 | 4.78 | 5.70 | 5.91 | .14 | .23 | .13 | .11 | 16.81 |
| Vacant | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Government Owned | 284 | 637 | 533 | 536 | 4.91 | 4.04 | 5.00 | 3.93 | .13 | .25 | .21 | .26 | 12.34 |
| Federal | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| State | Q | 97 | 211 | 123 | 5.37 | 3.42 | 4.90 | 5.16 | Q | .17 | .30 | .31 | 18.25 |
| Local | 200 | 518 | 296 | 257 | 4.79 | 4.18 | 5.06 | 4.45 | .13 | .27 | .17 | .26 | 13.27 |
| Multibuilding Facility | | | | | | | | | | | | | |
| Not on Multibuilding Facility | 1,077 | 2,150 | 1,369 | 831 | 5.79 | 4.40 | 4.82 | 4.73 | .18 | .25 | .19 | .20 | 7.92 |
| Part of Multibuilding Facility | 730 | 1,231 | 924 | 892 | 4.64 | 3.86 | 4.63 | 4.36 | .28 | .30 | .22 | .22 | 12.10 |
| On Facility with Central Plant | 402 | 599 | 267 | Q | 4.03 | 3.65 | 4.58 | 3.22 | .47 | .42 | .26 | .21 | 16.80 |
| Percent Vacant at Least Three Months | | | | | | | | | | | | | |
| 0 | 1,380 | 2,574 | 1,753 | 1,303 | 5.29 | 4.24 | 4.67 | 4.76 | .26 | .30 | .21 | .23 | 7.83 |
| 1 to 50 | 282 | 637 | 286 | 222 | 5.63 | 3.88 | 5.03 | 5.04 | .12 | .22 | .12 | .13 | 14.66 |
| 51 to 99 | Q | 96 | 50 | Q | 4.12 | 4.78 | 5.41 | 2.75 | .18 | Q | .09 | .20 | 14.87 |
| 100 | 44 | 74 | Q | 67 | 5.85 | 4.66 | 4.84 | 4.69 | Q | .21 | Q | .27 | 17.26 |
| Months in Use Out of Past 12 Months | | | | | | | | | | | | | |
| 0 to 8 | Q | 96 | 89 | 97 | Q | 4.05 | 5.14 | 4.68 | Q | .18 | .12 | .35 | 20.78 |
| 9 to 11 | 110 | 162 | Q | 129 | 4.53 | 4.34 | 4.99 | 4.68 | .14 | .28 | .32 | .24 | 13.71 |
| 12 | 1,656 | 3,123 | 1,978 | 1,497 | 5.33 | 4.18 | 4.70 | 4.51 | .22 | .27 | .19 | .20 | 8.20 |
| LOCATION | | | | | | | | | | | | | |
| Metropolitan Status | | | | | | | | | | | | | |
| Metropolitan | 1,347 | 2,630 | 1,694 | 1,514 | 5.62 | 4.11 | 4.74 | 4.66 | .18 | .25 | .19 | .21 | 6.30 |
| Nonmetropolitan | 460 | 750 | 599 | 209 | 4.44 | 4.50 | 4.73 | 3.78 | .40 | .32 | .23 | .26 | 9.85 |
| Climate Zone: 45-Year Average | | | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | | | |
| Over 7,000 HDD | NC | 818 | NC | 153 | NC | 4.07 | NC | 3.46 | NC | .31 | NC | .33 | 10.76 |
| 5,500-7,000 HDD | 1,191 | 1,992 | NC | 444 | 5.06 | 4.34 | NC | 3.36 | .29 | .26 | NC | .22 | 9.73 |
| 4,000-5,499 HDD | 615 | 571 | 489 | 155 | 5.71 | 3.87 | 4.55 | 4.70 | .14 | .24 | .23 | .23 | 15.83 |
| Under 4,000 HDD | NC | NC | 824 | 853 | NC | 4.30 | 5.75 | NC | NC | .20 | NC | .20 | 10.62 |
| 2,000 CDD or More and -- | | | | | | | | | | | | | |
| Under 4,000 HDD | NC | NC | 979 | 120 | NC | NC | 5.30 | 5.26 | NC | NC | .18 | .16 | 12.93 |
| STRUCTURE | | | | | | | | | | | | | |
| Floors | | | | | | | | | | | | | |
| 1 | 383 | 1,109 | 1,304 | 679 | 5.82 | 4.41 | 4.93 | 5.24 | .17 | .31 | .25 | .24 | 9.42 |
| 2 | 569 | 887 | 577 | 429 | 4.99 | 4.21 | 4.45 | 4.76 | .32 | .27 | .16 | .19 | 11.73 |
| 3 | 398 | 423 | 150 | 201 | 5.67 | 4.31 | 4.84 | 4.36 | .29 | .18 | .15 | .21 | 10.80 |
| 4 to 6 | 354 | 532 | Q | Q | 5.19 | 4.03 | 4.54 | 3.55 | .23 | .25 | .16 | .23 | 17.46 |
| 7 or More | 102 | 430 | 94 | 115 | 4.12 | 3.73 | 4.37 | 3.82 | .06 | .30 | .13 | .15 | 17.13 |
| Wall Materials | | | | | | | | | | | | | |
| Masonry | 1,244 | 2,731 | 1,719 | 1,079 | 5.65 | 4.19 | 4.71 | 4.72 | .20 | .27 | .20 | .24 | 7.60 |
| Siding or Shingles | 135 | 161 | 123 | 175 | 5.96 | 4.04 | 6.06 | 5.18 | Q | .25 | .25 | .29 | 13.75 |
| Metal Panels | Q | 231 | 229 | 91 | 3.88 | 4.07 | 4.48 | 4.69 | Q | .26 | .22 | .22 | 17.74 |
| Concrete Panels | 98 | 117 | 197 | 309 | 4.74 | 4.01 | 4.71 | 3.69 | .14 | .14 | .16 | .15 | 16.19 |
| Window Glass | Q | Q | Q | 29 | Q | Q | Q | 4.60 | Q | Q | Q | .10 | 16.66 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |

See footnotes at end of table.

NATURAL GAS

Table 41. Natural Gas Expenditures by Census Region (Continued)

| Building Characteristics | Total Natural Gas Expenditures (million dollars) | | | | Natural Gas Expenditures (dollars) | | | | | | | | RSE Row Factor |
|--|--|----------|-------|-------|------------------------------------|----------|-------|-------|-----------------|----------|-------|-------|----------------|
| | | | | | per Thousand Cubic Feet | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor | 1.764 | 1.442 | 1.684 | 1.606 | 0.469 | 0.389 | 0.495 | 0.448 | 1.796 | 1.135 | 1.526 | 0.974 | |
| Roof Materials | | | | | | | | | | | | | |
| Built-Up | 685 | 1,617 | 1,357 | 936 | 5.44 | 4.20 | 4.61 | 4.34 | 0.19 | 0.23 | 0.20 | 0.20 | 11.45 |
| Shingles (Not Wood) | 378 | 543 | 301 | 411 | 5.64 | 4.53 | 5.95 | 4.78 | .21 | .31 | .18 | .22 | 11.23 |
| Metal Surfacing | Q | 276 | 310 | 105 | 4.43 | 4.21 | 4.51 | 5.10 | Q | .27 | .23 | .19 | 13.62 |
| Synthetic or Rubber | 279 | 563 | 193 | 61 | 5.58 | 3.91 | 4.68 | 3.77 | .24 | .29 | .22 | .14 | 13.85 |
| Slate or Tile | 85 | 108 | 78 | 118 | 5.07 | 4.39 | 4.64 | 4.58 | .19 | .25 | .13 | .32 | 21.72 |
| Concrete | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Wooden Materials | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | | | | | |
| Roof or Ceiling Insulation | 1,066 | 2,708 | 1,865 | 1,285 | 5.50 | 4.15 | 4.74 | 4.47 | .20 | .28 | .22 | .21 | 8.12 |
| Wall Insulation | 988 | 1,824 | 1,122 | 798 | 5.01 | 4.10 | 4.74 | 4.28 | .28 | .27 | .20 | .21 | 10.57 |
| Storm or Multiple Glazing | 980 | 2,144 | 614 | 479 | 5.52 | 4.14 | 4.87 | 4.31 | .26 | .29 | .16 | .24 | 8.17 |
| Tinted, Reflective, or Shading Glass | 593 | 1,176 | 756 | 710 | 5.01 | 3.88 | 4.79 | 4.24 | .22 | .29 | .16 | .18 | 10.58 |
| Exterior or Interior Shadings or Awnings | 746 | 1,388 | 931 | 771 | 5.17 | 4.05 | 5.03 | 4.25 | .19 | .25 | .18 | .22 | 9.19 |
| Weather Stripping or Caulking | 1,312 | 2,779 | 1,573 | 1,127 | 5.37 | 4.11 | 4.88 | 4.23 | .21 | .28 | .19 | .20 | 7.48 |
| None of the Above | 111 | 214 | 146 | 197 | 6.60 | 4.68 | Q | 5.28 | .13 | .15 | .16 | .28 | 15.81 |
| ENERGY SOURCES AND END USES * | | | | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 1,806 | 3,369 | 2,288 | 1,724 | 5.26 | 4.19 | 4.74 | 4.53 | .21 | .26 | .20 | .21 | 8.24 |
| Natural Gas | 1,807 | 3,381 | 2,293 | 1,724 | 5.26 | 4.19 | 4.74 | 4.53 | .21 | .26 | .20 | .21 | 7.89 |
| Fuel Oil | 345 | 706 | Q | 225 | 4.79 | 3.74 | 4.06 | 4.40 | .14 | .29 | .23 | .19 | 17.73 |
| District Heat | 85 | Q | Q | Q | 4.68 | 3.76 | Q | Q | Q | .26 | Q | Q | 28.72 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | Q | 126 | Q | Q | Q | 3.88 | Q | Q | Q | .24 | Q | Q | 41.19 |
| Other | Q | 79 | Q | Q | Q | 4.30 | Q | Q | Q | .17 | Q | Q | 22.90 |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | | | | |
| Heated Buildings | 1,804 | 3,373 | 2,231 | 1,705 | 5.26 | 4.20 | 4.73 | 4.53 | .21 | .26 | .20 | .21 | 7.91 |
| Air-Conditioned Buildings | 1,348 | 2,960 | 2,174 | 1,370 | 5.44 | 4.12 | 4.71 | 4.52 | .19 | .26 | .20 | .20 | 8.18 |
| Buildings with Water Heating | 1,764 | 3,214 | 2,053 | 1,618 | 5.24 | 4.17 | 4.70 | 4.49 | .21 | .26 | .20 | .21 | 8.12 |
| Buildings with Cooking | 1,001 | 1,508 | 796 | 859 | 4.78 | 4.06 | 5.04 | 4.11 | .22 | .26 | .17 | .23 | 10.18 |
| Buildings with Manufacturing | 156 | 372 | Q | Q | 5.56 | 3.77 | 3.56 | 3.27 | .21 | .28 | .41 | .23 | 19.18 |
| Energy End-Use Combinations | | | | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | 751 | 1,404 | 744 | 716 | 5.06 | 4.03 | 5.03 | 4.07 | .19 | .26 | .17 | .23 | 11.66 |
| With Water Heating, Without Cooking | 575 | 1,479 | 1,199 | 579 | 6.00 | 4.23 | 4.47 | 5.10 | .18 | .26 | .23 | .17 | 9.07 |
| Without Water Heating or Cooking | Q | 73 | 182 | 57 | Q | 4.68 | 5.09 | 5.33 | Q | .20 | .16 | .14 | 15.14 |
| Without Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | Q | 102 | Q | 135 | 4.07 | 4.60 | Q | 4.23 | .39 | .24 | Q | .27 | 17.23 |
| With Water Heating, Without Cooking | 187 | 221 | 51 | 169 | 6.08 | 4.83 | 5.46 | 4.72 | .33 | .34 | .12 | .29 | 11.84 |
| Without Water Heating or Cooking | Q | 94 | 38 | Q | Q | 4.50 | 4.99 | Q | Q | .47 | .21 | Q | 18.11 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | NC Q | NC Q | Q 72 | NC Q | NC Q | Q | NC Q | NC Q | NC Q | Q .22 | NC Q | b | 19.09 |
| All Other Combinations | | | | | | | | | | | | | |

See footnotes at end of table.

Table 41. Natural Gas Expenditures by Census Region (Continued)

| Building Characteristics | Total Natural Gas Expenditures (million dollars) | | | | Natural Gas Expenditures (dollars) | | | | | | | | PRICE Conversion Factor |
|--------------------------------------|--|----------|-------|-------|------------------------------------|----------|-------|------|-----------------|----------|-------|------|----------------------------|
| | | | | | per Thousand Cubic Feet | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| Space-Heating Energy Source | | | | | | | | | | | | | |
| Natural Gas | 1,655 | 3,244 | 2,021 | 1,362 | 5.22 | 4.22 | 4.68 | 4.74 | 0.28 | 0.28 | 0.22 | 0.22 | 7.70 |
| Main | 1,550 | 3,202 | 1,866 | 1,330 | 5.20 | 4.23 | 4.75 | 4.74 | .29 | .28 | .22 | .23 | 7.68 |
| With Secondary | 447 | 911 | 571 | 285 | 4.12 | 3.94 | 4.07 | 4.50 | .40 | .30 | .24 | .21 | 14.88 |
| Electricity Only | 159 | 218 | 199 | 142 | 5.28 | 5.00 | 4.12 | 4.81 | .29 | .22 | .15 | .18 | 16.80 |
| Other Energy Sources or Combinations | 160 | 687 | 364 | 142 | 4.08 | 3.69 | 4.03 | 4.21 | .29 | .34 | .36 | .26 | 16.40 |
| With No Secondary | 1,102 | 2,291 | 1,294 | 1,045 | 5.83 | 4.36 | 5.14 | 4.81 | .26 | .28 | .21 | .23 | 7.28 |
| Secondary | 105 | 42 | 155 | Q | 5.46 | 3.78 | 3.98 | Q | .16 | .12 | .32 | Q | 16.88 |
| Other Excluding Natural Gas | 149 | 129 | 211 | 343 | 5.80 | 3.74 | 5.22 | 3.85 | .06 | .12 | .09 | .18 | 16.88 |
| Building Not Heated | Q | Q | 62 | Q | Q | Q | 5.18 | Q | Q | Q | .25 | Q | 21.17 |
| Main Space-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | 74 | 136 | 334 | 234 | 5.26 | 4.04 | 4.56 | 5.33 | .13 | .18 | .15 | .15 | 16.58 |
| Natural Gas | 1,550 | 3,202 | 1,866 | 1,330 | 5.20 | 4.23 | 4.75 | 4.74 | .29 | .28 | .22 | .23 | 7.90 |
| Fuel Oil | 112 | Q | Q | Q | 6.47 | Q | 5.91 | Q | .08 | Q | Q | Q | 26.88 |
| District Heat | Q | Q | Q | Q | 4.77 | 3.79 | Q | 2.77 | Q | .17 | Q | .19 | 25.70 |
| Propane | NC | Q | Q | NC | NC | Q | Q | NC | NC | Q | Q | NC | 3.0 |
| Other | Q | Q | NC | Q | Q | NC | Q | Q | Q | NC | Q | NC | Q |
| Air-Conditioning Energy Source | | | | | | | | | | | | | |
| Natural Gas | 183 | 215 | 92 | 58 | 5.13 | 4.07 | 4.80 | 3.60 | .35 | .32 | .21 | .17 | 17.72 |
| Other Excluding Natural Gas | 1,165 | 2,745 | 2,082 | 1,312 | 5.49 | 4.13 | 4.71 | 4.57 | .17 | .25 | .20 | .20 | 8.57 |
| Air-Conditioning Not Performed | Q | 421 | 119 | 354 | 4.82 | 4.68 | 5.28 | 4.59 | .35 | .32 | .18 | .30 | 11.34 |
| Water-Heating Energy Source | | | | | | | | | | | | | |
| Natural Gas | 1,456 | 2,457 | 1,456 | 1,200 | 5.16 | 4.20 | 5.02 | 4.74 | .27 | .28 | .23 | .23 | 7.72 |
| Other Excluding Natural Gas | 307 | 757 | 597 | 418 | 5.68 | 4.07 | 4.07 | 3.89 | .10 | .22 | .16 | .17 | 14.88 |
| Water Heating Not Performed | 43 | 167 | 240 | 106 | 6.24 | 4.57 | 5.11 | 5.38 | .25 | .30 | .17 | .19 | 14.81 |
| Cooking Energy Source | | | | | | | | | | | | | |
| Natural Gas | 690 | 1,163 | 702 | 689 | 5.19 | 4.16 | 5.09 | 4.00 | .20 | .25 | .18 | .24 | 10.61 |
| Other Excluding Natural Gas | 311 | Q | 94 | 171 | 4.06 | 3.78 | 4.70 | 4.65 | Q | .27 | .12 | .21 | 16.21 |
| Cooking Not Performed | 805 | 1,873 | 1,497 | 864 | 6.03 | 4.29 | 4.60 | 5.04 | .21 | .27 | .21 | .20 | 8.22 |
| Manufacturing Energy Source | | | | | | | | | | | | | |
| Natural Gas | Q | 175 | Q | Q | Q | 3.37 | Q | Q | Q | .57 | Q | Q | 26.00 |
| Other Excluding Natural Gas | 100 | 197 | Q | Q | 5.89 | 4.22 | 3.97 | 3.15 | .20 | .19 | .30 | .22 | 21.26 |
| Manufacturing Not Performed | 1,650 | 3,009 | 1,992 | 1,504 | 5.24 | 4.24 | 4.99 | 4.80 | .21 | .26 | .18 | .21 | 7.23 |
| HEATING AND COOLING | | | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | | | |
| Not Heated | Q | Q | 63 | Q | Q | Q | 5.18 | Q | Q | Q | .23 | Q | 20.10 |
| 1 to 50 | 134 | 197 | 202 | 153 | 6.90 | 4.84 | 5.39 | 5.64 | .11 | .10 | .11 | .15 | 13.11 |
| 51 to 99 | 168 | 380 | 415 | 300 | 5.99 | 4.12 | 4.61 | 5.34 | .26 | .24 | .21 | .18 | 12.08 |
| 100 | 1,497 | 2,794 | 1,614 | 1,252 | 5.08 | 4.17 | 4.69 | 4.27 | .23 | .30 | .21 | .23 | 8.40 |
| Percent Cooled | | | | | | | | | | | | | |
| Not Cooled | Q | 421 | 119 | 354 | 4.82 | 4.68 | 5.28 | 4.59 | .35 | .32 | .18 | .30 | 11.84 |
| 1 to 50 | 675 | 1,112 | 655 | 279 | 5.60 | 4.13 | 4.28 | 5.00 | .19 | .23 | .22 | .16 | 13.48 |
| 51 to 99 | 270 | 741 | 501 | 350 | 5.54 | 4.08 | 4.80 | 4.52 | .16 | .25 | .18 | .19 | 16.26 |
| 100 | 402 | 1,107 | 1,018 | 741 | 5.12 | 4.15 | 5.00 | 4.36 | .20 | .30 | .20 | .22 | 11.26 |

See footnotes at end of table.

NATURAL GAS

Table 41. Natural Gas Expenditures by Census Region (Continued)

| Building Characteristics | Total Natural Gas Expenditures (million dollars) | | | | Natural Gas Expenditures (dollars) | | | | | | | | RSE Row Factor |
|------------------------------|--|----------|-------|-------|------------------------------------|----------|-------|-------|-----------------|----------|-------|-------|----------------|
| | | | | | per Thousand Cubic Feet | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.784 | 1.442 | 1.864 | 1.606 | 0.483 | 0.399 | 0.495 | 0.446 | 1.796 | 1.135 | 1.528 | 0.974 | |
| LIGHTING | | | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| 1 to 50 | 341 | 497 | 227 | 257 | 5.64 | 4.40 | 5.34 | 4.93 | 0.35 | 0.18 | 0.11 | 0.20 | 11.97 |
| 51 to 99 | 471 | 991 | 608 | 442 | 5.64 | 4.18 | 4.53 | 4.66 | .17 | .25 | .20 | .19 | 10.92 |
| 100 | 994 | 1,869 | 1,440 | 1,022 | 4.99 | 4.13 | 4.74 | 4.39 | .21 | .31 | .22 | .22 | 10.33 |

^a Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

^b No applicable RSE row factor.

NC No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 42. Natural Gas Consumption and Conditional Energy Intensity by Building Size

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | Energy Intensity for Natural Gas (cubic feet/sq. ft.) | | | RSE Row Factor |
|------------------------------------|--|-------------------------------|--------------------------|---|-------------------------------|--------------------------|---|-------------------------------|--------------------------|----------------|
| | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | |
| RSE Column Factor | 0.980 | 1.022 | 1.791 | 0.761 | 0.693 | 1.235 | 0.745 | 0.708 | 1.482 | |
| All Buildings | 553 | 812 | 651 | 7,378 | 17,410 | 16,356 | 75.0 | 46.7 | 39.8 | 6.46 |
| Year Constructed | | | | | | | | | | |
| 1899 or Before | 21 | 30 | Q | 320 | 684 | Q | 66.8 | 43.5 | Q | 33.27 |
| 1900 to 1919 | 30 | 48 | Q | 460 | 1,159 | Q | 66.2 | 41.7 | Q | 20.61 |
| 1920 to 1945 | 75 | 84 | Q | 1,290 | 2,230 | 2,222 | 57.9 | 37.5 | 35.6 | 16.93 |
| 1946 to 1959 | 126 | 170 | 103 | 1,555 | 3,174 | 2,509 | 81.0 | 53.7 | 41.2 | 18.82 |
| 1960 to 1969 | 96 | 186 | 162 | 1,312 | 3,959 | 3,197 | 73.4 | 47.1 | 50.8 | 14.66 |
| 1970 to 1979 | 108 | 160 | 161 | 1,326 | 3,094 | 3,683 | 81.7 | 51.7 | 43.6 | 15.82 |
| 1980 to 1983 | 33 | 38 | 44 | 416 | 893 | 880 | 78.6 | 42.0 | 50.0 | 20.29 |
| 1984 to 1986 | 42 | 53 | 43 | 429 | 1,348 | 1,683 | 97.5 | 39.1 | 25.7 | 22.62 |
| 1987 to 1989 | 22 | 44 | 17 | 270 | 869 | 734 | 80.9 | 50.4 | 23.4 | 28.21 |
| BUILDING USE | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | |
| Assembly | 67 | 86 | Q | 1,267 | 2,281 | Q | 53.2 | 37.8 | Q | 15.50 |
| Education | 29 | 163 | 122 | 447 | 3,201 | 2,991 | 64.7 | 51.0 | 40.9 | 16.80 |
| Food Sales | 12 | Q | Q | 156 | Q | Q | 79.1 | Q | Q | 30.94 |
| Food Service | 102 | Q | NC | 525 | Q | NC | 194.6 | Q | NC | 12.12 |
| Health Care | 10 | 11 | 161 | 116 | 216 | 1,270 | 82.7 | 50.0 | 126.6 | 27.92 |
| Lodging | 28 | 103 | 51 | 311 | 1,241 | 988 | 91.6 | 82.8 | 51.4 | 21.99 |
| Mercantile and Service | 148 | 172 | Q | 2,362 | 3,632 | 2,796 | 62.7 | 47.3 | 30.7 | 16.90 |
| Office | 62 | 118 | 52 | 1,101 | 2,651 | 3,468 | 56.0 | 44.4 | 15.1 | 14.66 |
| Parking Garage | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Public Order and Safety | 9 | Q | Q | 111 | Q | Q | 82.4 | Q | Q | 33.84 |
| Warehouse | 27 | 70 | 104 | 551 | 2,524 | 2,060 | 49.0 | 27.7 | 50.5 | 22.30 |
| Other | Q | 41 | Q | Q | 498 | Q | Q | 82.4 | Q | 32.43 |
| Vacant | Q | 9 | Q | 289 | 419 | Q | Q | 21.7 | Q | 30.01 |
| Weekly Operating Hours | | | | | | | | | | |
| 39 or Fewer | 56 | 41 | Q | 1,146 | 1,283 | Q | 48.9 | 31.6 | Q | 17.37 |
| 40 to 48 | 138 | 183 | 56 | 2,063 | 4,633 | 2,467 | 66.8 | 39.5 | 22.9 | 13.82 |
| 49 to 60 | 92 | 156 | 69 | 1,703 | 4,040 | 2,738 | 54.3 | 38.7 | 25.1 | 13.69 |
| 61 to 84 | 104 | 149 | 79 | 1,054 | 2,919 | 3,979 | 98.9 | 51.0 | 20.0 | 14.63 |
| 85 to 167 | 91 | 120 | 139 | 830 | 2,217 | 3,528 | 109.7 | 54.3 | 39.4 | 16.00 |
| 168 (Open Continuously) | 72 | 163 | 306 | 581 | 2,319 | 3,453 | 123.5 | 70.4 | 88.7 | 16.90 |
| Workers | | | | | | | | | | |
| 4 or Fewer | 224 | 67 | Q | 3,591 | 2,405 | Q | 62.5 | 27.9 | Q | 12.01 |
| 5 to 9 | 142 | 68 | Q | 2,003 | 2,518 | Q | 70.8 | 26.8 | Q | 11.60 |
| 10 to 19 | 126 | 109 | 7 | 1,246 | 2,714 | 498 | 100.8 | 40.1 | 14.3 | 17.23 |
| 20 to 49 | 58 | 243 | 21 | 495 | 4,985 | 1,138 | 118.0 | 48.8 | 18.5 | 19.77 |
| 50 to 99 | Q | 179 | 65 | Q | 2,707 | 2,621 | Q | 66.1 | 25.0 | 16.85 |
| 100 to 249 | Q | 131 | 216 | Q | 1,741 | 3,283 | Q | 75.0 | 65.7 | 16.22 |
| 250 or More | NC | 17 | 338 | NC | 341 | 7,432 | NC | 48.4 | 45.4 | 22.73 |
| Ownership and Occupancy | | | | | | | | | | |
| Nongovernment Owned | 492 | 588 | 479 | 6,541 | 13,479 | 11,692 | 75.1 | 43.6 | 41.0 | 9.21 |
| Owner Occupied | 373 | 477 | 407 | 4,957 | 9,642 | 9,041 | 75.3 | 49.5 | 45.0 | 10.18 |
| Single Establishment | 326 | 403 | 324 | 4,161 | 7,549 | 5,440 | 78.3 | 53.4 | 59.5 | 11.76 |
| Multiple Establishment | 47 | 74 | 83 | 795 | 2,093 | 3,601 | 59.2 | 35.2 | 23.2 | 17.87 |
| Nonowner Occupied | 118 | 111 | Q | 1,585 | 3,837 | 2,651 | 74.7 | 28.8 | Q | 12.80 |
| Single Establishment | 67 | 57 | Q | 1,062 | 2,121 | 1,096 | 62.8 | 27.0 | Q | 14.81 |
| Multiple Establishment | 25 | 50 | Q | 388 | 1,632 | 1,495 | 65.4 | 30.4 | Q | 17.08 |
| Vacant | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Government Owned | 62 | 225 | 172 | 836 | 3,931 | 4,664 | 74.1 | 57.2 | 36.9 | 16.73 |
| Federal | Q | Q | Q | Q | Q | Q | Q | Q | 71.8 | 13.26 |
| State | 18 | 60 | 32 | 184 | 1,052 | 1,081 | 95.5 | 56.9 | 29.2 | 26.66 |
| Local | 42 | 153 | 88 | 622 | 2,733 | 2,847 | 67.2 | 55.9 | 30.8 | 15.95 |

See footnotes at end of table.

NATURAL GAS

Table 42. Natural Gas Consumption and Conditional Energy Intensity by Building Size (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | Energy Intensity for Natural Gas (cubic feet/sq. ft.) | | | Total Buildings (number) |
|--------------------------------------|--|-------------------------------|--------------------------|---|-------------------------------|--------------------------|---|-------------------------------|--------------------------|--------------------------------|
| | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | |
| THIS COLUMN TOTAL | 1,020 | 1,022 | 1,701 | 0,716 | 0,623 | 1,235 | 0,745 | 0,705 | 1,020 | 1,020 |
| Multibuilding Facility | | | | | | | | | | |
| Not on Multibuilding Facility | 392 | 473 | 272 | 5,331 | 11,277 | 9,519 | 73.5 | 41.9 | 28.6 | 16,822 |
| Part of Multibuilding Facility | 162 | 340 | 379 | 2,046 | 6,132 | 6,837 | 79.1 | 55.4 | 55.4 | 11,713 |
| On Facility with Central Plant | 9 | 127 | 275 | 121 | 1,385 | 3,120 | 77.7 | 91.7 | 88.1 | 422 |
| LOCATION | | | | | | | | | | |
| Census Region | | | | | | | | | | |
| Northeast | 83 | 117 | 144 | 1,058 | 2,696 | 4,763 | 78.4 | 43.3 | 30.2 | 16,377 |
| Midwest | 182 | 360 | 266 | 2,195 | 5,284 | 5,335 | 83.0 | 68.1 | 49.8 | 12,689 |
| South | 171 | 175 | 139 | 2,443 | 5,780 | 3,438 | 70.0 | 30.3 | 40.4 | 17,104 |
| West | 117 | 161 | Q | 1,681 | 3,650 | 2,820 | 69.7 | 44.1 | 36.3 | 13,449 |
| Census Division | | | | | | | | | | |
| Northeast | | | | | | | | | | |
| New England | 12 | 11 | 15 | 152 | 411 | 673 | 82.2 | 26.2 | 22.5 | 20,844 |
| Middle Atlantic | 70 | 106 | 129 | 906 | 2,285 | 4,090 | 77.8 | 46.4 | 31.5 | 20,353 |
| Midwest | | | | | | | | | | |
| East North Central | 119 | 255 | 171 | 1,457 | 3,609 | 3,731 | 81.9 | 70.7 | 45.8 | 16,111 |
| West North Central | 63 | 105 | 95 | 738 | 1,675 | 1,605 | 85.2 | 62.4 | 59.2 | 10,117 |
| South | | | | | | | | | | |
| South Atlantic | 35 | 61 | 96 | 541 | 2,007 | 1,687 | 65.2 | 30.6 | 57.0 | 24,457 |
| East South Central | 77 | 33 | 12 | 524 | 1,161 | 348 | 147.5 | 28.8 | 33.6 | 26,128 |
| West South Central | 58 | 80 | 31 | 1,377 | 2,612 | 1,402 | 42.4 | 30.7 | Q | 21,227 |
| West | | | | | | | | | | |
| Mountain | 55 | 70 | Q | 611 | 1,424 | Q | 90.5 | 49.1 | 60.8 | 17,177 |
| Pacific | 62 | 91 | 36 | 1,070 | 2,226 | 1,734 | 57.9 | 41.0 | 20.9 | 16,037 |
| Metropolitan Status | | | | | | | | | | |
| Metropolitan | 404 | 630 | 530 | 5,084 | 14,097 | 15,093 | 79.5 | 44.7 | 35.1 | 8,823 |
| Nonmetropolitan | 150 | 182 | Q | 2,293 | 3,313 | 1,263 | 65.2 | 55.1 | 95.9 | 10,777 |
| Climate Zone: 45-Year Average | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | |
| Over 7,000 HDD | 60 | 135 | 51 | 570 | 1,774 | 720 | 105.0 | 76.1 | 70.3 | 15,423 |
| 5,500-7,000 HDD | 186 | 336 | 305 | 2,139 | 5,654 | 6,109 | 86.8 | 59.4 | 50.0 | 13,116 |
| 4,000-5,499 HDD | 96 | 126 | 174 | 1,322 | 3,304 | 5,042 | 72.7 | 38.2 | 34.5 | 10,448 |
| Under 4,000 HDD | 120 | 138 | 83 | 1,787 | 3,519 | 3,130 | 67.0 | 39.2 | 26.5 | 10,354 |
| 2,000 CDD or More and -- | | | | | | | | | | |
| Under 4,000 HDD | 92 | 78 | 38 | 1,560 | 3,159 | 1,354 | 59.0 | 24.6 | 28.3 | 22,440 |
| ENERGY SOURCES AND END USES * | | | | | | | | | | |
| Energy Sources | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Electricity | 553 | 812 | 648 | 7,373 | 17,397 | 16,345 | 74.9 | 46.6 | 39.7 | 8,888 |
| Natural Gas | 552 | 812 | 651 | 7,378 | 17,410 | 16,356 | 74.8 | 46.6 | 39.8 | 8,446 |
| Fuel Oil | 16 | 107 | 293 | 276 | 2,060 | 5,529 | 56.6 | 52.0 | 53.0 | 21,244 |
| District Heat | Q | Q | Q | Q | 623 | 2,766 | Q | Q | 46.3 | 24,104 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | 1,129 |
| Propane | Q | 32 | Q | Q | 402 | 1,130 | Q | 78.8 | 89.2 | 3,620 |
| Other | 9 | Q | Q | 129 | Q | Q | 70.6 | Q | Q | 41,224 |
| Energy End Uses | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Heated Buildings | 544 | 804 | 648 | 7,317 | 17,227 | 16,258 | 74.3 | 46.7 | 39.8 | 8,845 |
| Air-Conditioned Buildings | 431 | 701 | 600 | 5,905 | 15,307 | 15,464 | 72.9 | 45.8 | 38.8 | 8,058 |
| Buildings with Water Heating | 491 | 769 | 646 | 6,110 | 16,188 | 16,135 | 80.3 | 47.5 | 40.1 | 8,555 |
| Buildings with Cooking | 156 | 313 | 479 | 1,514 | 6,221 | 11,134 | 103.3 | 50.3 | 43.0 | 10,442 |
| Buildings with Manufacturing | 18 | 101 | 159 | 297 | 1,664 | 1,816 | 61.6 | 60.9 | 87.5 | 24,920 |

See footnotes at end of table.

Table 42. Natural Gas Consumption and Conditional Energy Intensity by Building Size (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | Energy Intensity for Natural Gas (cubic feet/sq. ft.) | | | RSE Row Factor |
|--|--|-------------------------------|--------------------------|---|-------------------------------|--------------------------|---|-------------------------------|--------------------------|----------------|
| | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | |
| | RSE Column Factor: | 0.980 | 1.022 | 1.791 | 0.761 | 0.663 | 1.295 | 0.745 | 0.759 | 1.481 |
| Space-Heating Energy Source | | | | | | | | | | |
| Natural Gas | 500 | 748 | 556 | 6,711 | 15,009 | 11,297 | 74.5 | 49.9 | 49.2 | 9.87 |
| Main | 473 | 725 | 530 | 6,488 | 14,108 | 10,514 | 72.9 | 51.4 | 50.4 | 9.00 |
| With Secondary | 59 | 161 | 324 | 871 | 3,243 | 3,774 | 68.0 | 49.6 | 85.8 | 16.88 |
| Electricity Only | 39 | 69 | Q | 682 | 2,134 | 804 | 57.9 | 32.2 | Q | 16.77 |
| Other Energy Sources or Combinations | 19 | 92 | 238 | 183 | 1,109 | 2,842 | 104.8 | 83.2 | 83.8 | 22.31 |
| With No Secondary | 414 | 564 | 206 | 5,617 | 10,865 | 6,740 | 73.6 | 51.9 | 30.6 | 9.42 |
| Secondary | Q | 23 | 26 | 224 | 900 | 783 | 119.9 | 25.7 | 33.2 | 30.91 |
| Other Excluding Natural Gas | 44 | 56 | Q | 605 | 2,219 | 4,961 | 72.8 | 25.0 | 18.5 | 18.96 |
| Building Not Heated | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Main Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 64 | 61 | 41 | 628 | 1,991 | 2,490 | 101.6 | 30.5 | 16.4 | 22.26 |
| Natural Gas | 473 | 725 | 530 | 6,488 | 14,108 | 10,514 | 72.9 | 51.4 | 50.4 | 9.00 |
| Fuel Oil | 5 | 10 | Q | 156 | 767 | 1,062 | 30.4 | 12.8 | Q | 31.11 |
| District Heat | Q | Q | Q | Q | 504 | 2,403 | Q | Q | 36.1 | 28.46 |
| Propane | Q | Q | Q | Q | Q | NC | Q | Q | NC | b |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Air-Conditioning Energy Source | | | | | | | | | | |
| Natural Gas | 29 | 31 | 64 | 277 | 958 | 740 | 103.7 | 32.8 | 86.1 | 19.22 |
| Other Excluding Natural Gas | 401 | 669 | 536 | 5,628 | 14,349 | 14,724 | 71.2 | 46.6 | 36.4 | 9.99 |
| Air-Conditioning Not Performed | 123 | 111 | Q | 1,472 | 2,102 | 892 | 83.5 | 53.0 | Q | 15.72 |
| Water-Heating Energy Source | | | | | | | | | | |
| Natural Gas | 365 | 631 | 415 | 4,103 | 11,777 | 10,044 | 88.9 | 53.6 | 41.3 | 9.61 |
| Other Excluding Natural Gas | 125 | 138 | 232 | 2,008 | 4,411 | 6,091 | 62.4 | 31.2 | 38.0 | 15.42 |
| Water Heating Not Performed | 63 | 44 | Q | 1,267 | 1,222 | Q | 49.5 | 35.7 | Q | 24.84 |
| Cooking Energy Source | | | | | | | | | | |
| Natural Gas | 141 | 248 | 334 | 1,254 | 4,593 | 8,919 | 112.7 | 54.0 | 37.4 | 11.19 |
| Other Excluding Natural Gas | 15 | 65 | 145 | 260 | 1,628 | 2,215 | 57.2 | 39.8 | 65.4 | 25.31 |
| Cooking Not Performed | 397 | 500 | 172 | 5,864 | 11,189 | 5,222 | 67.7 | 44.7 | 33.0 | 12.23 |
| Manufacturing Energy Source | | | | | | | | | | |
| Natural Gas | Q | 59 | Q | Q | 394 | 382 | Q | 149.2 | Q | 36.03 |
| Other Excluding Natural Gas | 12 | 43 | Q | 235 | 1,270 | 1,434 | 52.7 | 33.5 | 77.0 | 25.24 |
| Manufacturing Not Performed | 535 | 711 | 492 | 7,081 | 15,746 | 14,540 | 75.6 | 45.2 | 33.8 | 7.80 |
| HEATING AND COOLING | | | | | | | | | | |
| Percent Heated | | | | | | | | | | |
| Not Heated | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | 47 | 61 | 18 | 1,087 | 2,782 | 2,111 | 43.0 | 21.7 | 8.3 | 19.34 |
| 51 to 99 | 54 | 98 | 115 | 964 | 2,285 | 2,698 | 55.5 | 43.1 | 42.6 | 17.41 |
| 100 | 443 | 645 | 515 | 5,242 | 12,131 | 11,442 | 84.4 | 53.2 | 45.0 | 9.12 |
| Percent Cooled | | | | | | | | | | |
| Not Cooled | 123 | 111 | Q | 1,472 | 2,102 | 892 | 83.5 | 53.0 | Q | 16.72 |
| 1 to 50 | 122 | 299 | 179 | 2,061 | 6,317 | 4,842 | 59.2 | 47.3 | 36.9 | 14.75 |
| 51 to 99 | 88 | 144 | 180 | 1,060 | 3,343 | 4,758 | 83.5 | 42.9 | 37.9 | 14.43 |
| 100 | 220 | 259 | 241 | 2,785 | 5,648 | 5,863 | 79.0 | 45.8 | 41.1 | 13.35 |
| LIGHTING | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | 115 | 117 | Q | 1,781 | 3,399 | Q | 64.8 | 34.9 | Q | 14.05 |
| 51 to 99 | 122 | 233 | 195 | 1,779 | 5,312 | 4,922 | 68.6 | 43.9 | 39.6 | 12.58 |
| 100 | 310 | 459 | 419 | 3,723 | 8,707 | 9,532 | 83.4 | 52.8 | 44.0 | 11.10 |

See footnotes at end of table.

Table 42. Natural Gas Consumption and Conditional Energy Intensity by Building Size (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | Energy Intensity for Natural Gas (cubic feet/sq. ft.) | | | RSE Percent Row Factor |
|--|--|-------------------------------|--------------------------|---|-------------------------------|--------------------------|---|-------------------------------|--------------------------|------------------------------|
| | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | 1,001 to 10,000 Square Feet | 10,001 to 100,000 Square Feet | Over 100,000 Square Feet | |
| RSE Column Factors | 0.000 | 1.000 | 1.000 | 0.001 | 0.000 | 1.000 | 0.000 | 0.000 | 1.000 | |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | | |
| Incandescent Lamps | 324 | 506 | 489 | 4,277 | 11,213 | 11,797 | 75.8 | 45.1 | 41.5 | 6.43 |
| Fluorescent Lamps | 521 | 792 | 650 | 6,932 | 17,062 | 16,319 | 75.2 | 46.4 | 39.8 | 5.48 |
| High-Intensity Discharge Lamps | 70 | 184 | 400 | 649 | 3,752 | 8,166 | 108.2 | 49.0 | 49.0 | 15.78 |
| Other Lamps | Q | Q | Q | Q | Q | Q | Q | Q | Q | 5 |
| High-Efficiency Ballasts | 149 | 387 | 328 | 1,721 | 7,163 | 7,964 | 86.5 | 54.0 | 41.2 | 12.23 |
| ENERGY MANAGEMENT | | | | | | | | | | |
| Occupant Control | | | | | | | | | | |
| Any Control of Heating | 327 | 331 | 212 | 4,624 | 8,096 | 6,374 | 70.7 | 40.9 | 33.3 | 12.27 |
| With Thermostats | 296 | 308 | 199 | 4,025 | 7,477 | 6,000 | 73.6 | 41.2 | 33.2 | 12.01 |
| Any Control of Cooling | 260 | 338 | 246 | 3,653 | 8,286 | 7,050 | 71.3 | 40.8 | 34.9 | 12.16 |
| With Thermostats | 234 | 290 | 239 | 3,230 | 7,282 | 6,733 | 72.4 | 39.8 | 35.5 | 12.00 |
| Reduced Use During Off-Hours | | | | | | | | | | |
| Heating Only | 110 | 108 | Q | 1,372 | 2,046 | 971 | 80.2 | 52.9 | Q | 14.68 |
| Cooling Only | 30 | 46 | 70 | 361 | 1,000 | 1,036 | 83.3 | 45.6 | Q | 20.28 |
| Heating and Cooling | 298 | 484 | 399 | 4,755 | 11,534 | 12,024 | 62.7 | 42.0 | 33.2 | 9.75 |
| Computerized Energy Management and Control System | | | | | | | | | | |
| Present in Building | 31 | 138 | 312 | 370 | 2,947 | 7,315 | 83.5 | 47.0 | 42.7 | 15.62 |
| Controls Heating and Cooling | 31 | 132 | 305 | 362 | 2,841 | 6,957 | 84.7 | 46.4 | 43.8 | 15.60 |
| Controls Lighting | Q | 22 | 110 | Q | 595 | 2,501 | Q | 37.6 | 44.0 | 22.09 |
| Controls Other | Q | 25 | Q | Q | 410 | 1,513 | Q | 60.7 | 60.6 | 20.49 |
| Other Energy Management | | | | | | | | | | |
| Regular HVAC Maintenance | 304 | 663 | 619 | 3,656 | 12,700 | 13,491 | 83.2 | 52.2 | 45.9 | 9.32 |
| Participated in Utility Conservation Program | 40 | 191 | 161 | 530 | 2,764 | 3,947 | 76.0 | 69.1 | 40.8 | 15.65 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

c No cases in responding sample.

o Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 43. Natural Gas Consumption and Conditional Energy Intensity for Selected Principal Building Activities

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | RSE Row Factor |
|--|--|--------|-----------|---|--------|-----------|---|--------|-----------|----------------|
| | Mercantile | Office | All Other | Mercantile | Office | All Other | Mercantile | Office | All Other | |
| | 1.291 | 1.282 | 0.931 | 0.940 | 1.005 | 0.722 | 1.195 | 1.190 | 0.734 | |
| All Buildings | 406 | 232 | 1,380 | 8,790 | 7,220 | 25,133 | 46.1 | 32.1 | 54.9 | 8.86 |
| Building Floorspace (Square Feet) | | | | | | | | | | |
| 1,001 to 5,000 | 74 | 41 | 180 | 1,104 | 593 | 1,726 | 67.0 | 69.1 | 104.4 | 9.79 |
| 5,001 to 10,000 | 74 | 21 | 164 | 1,258 | 507 | 2,189 | 58.9 | 40.6 | 74.7 | 15.25 |
| 10,001 to 25,000 | 63 | 42 | 166 | 1,752 | 738 | 3,262 | 35.8 | 57.0 | 50.8 | 14.02 |
| 25,001 to 50,000 | 89 | 50 | 162 | 880 | 940 | 3,631 | 100.8 | 53.4 | 44.5 | 16.52 |
| 50,001 to 100,000 | 20 | 25 | 196 | 1,000 | 973 | 4,234 | 20.4 | 26.0 | 46.3 | 19.39 |
| 100,001 to 200,000 | 23 | 17 | 192 | 1,254 | 991 | 3,773 | 18.6 | 16.7 | 50.8 | 24.84 |
| 200,001 to 500,000 | Q | 17 | 156 | 614 | 718 | 3,723 | 79.6 | 23.6 | 41.9 | 31.72 |
| Over 500,000 | 14 | 19 | 165 | 928 | 1,760 | 2,595 | Q | 10.8 | 63.6 | 38.37 |
| Year Constructed | | | | | | | | | | |
| 1899 or Before | Q | Q | 22 | Q | Q | 532 | Q | Q | 41.0 | 21.86 |
| 1900 to 1919 | 15 | 20 | 85 | 394 | 477 | 2,197 | 38.8 | 41.5 | 38.6 | 30.11 |
| 1920 to 1945 | 36 | 33 | 168 | 989 | 835 | 3,918 | 36.7 | 40.0 | 42.8 | 22.85 |
| 1946 to 1959 | 68 | 43 | 290 | 1,242 | 1,064 | 4,931 | 54.4 | 40.0 | 58.7 | 21.36 |
| 1960 to 1969 | 123 | 38 | 284 | 1,822 | 998 | 5,648 | 67.5 | 38.6 | 50.2 | 15.82 |
| 1970 to 1979 | 91 | 39 | 299 | 2,245 | 1,414 | 4,445 | 40.5 | 27.9 | 67.2 | 17.55 |
| 1980 to 1983 | 21 | 13 | 81 | 608 | 482 | 1,099 | 34.7 | 26.2 | 73.3 | 21.10 |
| 1984 to 1986 | 20 | 17 | 101 | 666 | 1,266 | 1,527 | 30.7 | Q | 65.9 | 21.66 |
| 1987 to 1989 | 14 | Q | 52 | 499 | 538 | 836 | 27.1 | Q | 62.6 | 25.48 |
| BUILDING USE | | | | | | | | | | |
| Weekly Operating Hours | | | | | | | | | | |
| 39 or Fewer | 4 | Q | 90 | Q | Q | 2,326 | 21.1 | Q | 38.9 | 19.21 |
| 40 to 48 | 55 | 95 | 228 | 1,259 | 2,152 | 5,752 | 43.4 | 44.3 | 39.6 | 13.74 |
| 49 to 60 | 104 | 55 | 159 | 2,397 | 2,216 | 3,868 | 43.3 | 24.8 | 41.1 | 12.00 |
| 61 to 84 | 133 | 39 | 161 | 3,033 | 1,584 | 3,335 | 43.8 | 24.8 | 48.1 | 18.26 |
| 85 to 167 | 56 | 9 | 285 | 1,353 | 503 | 4,718 | 41.3 | 18.2 | 60.5 | 21.03 |
| 168 (Open Continuously) | Q | 30 | 457 | 557 | 662 | 5,133 | Q | 45.3 | 89.0 | 22.36 |
| Workers | | | | | | | | | | |
| 4 or Fewer | 73 | 12 | 208 | 1,451 | 276 | 4,993 | 50.0 | 44.3 | 41.6 | 12.06 |
| 5 to 9 | 58 | 19 | 135 | 1,410 | 423 | 3,348 | 41.3 | 44.8 | 40.3 | 14.19 |
| 10 to 19 | 58 | 42 | 142 | 1,168 | 799 | 2,490 | 49.8 | 51.9 | 56.9 | 14.57 |
| 20 to 49 | 66 | 38 | 219 | 1,457 | 811 | 4,350 | 45.2 | 46.3 | 50.4 | 18.16 |
| 50 to 99 | 70 | 23 | 153 | 1,089 | 761 | 3,503 | 64.6 | 30.5 | 43.6 | 21.95 |
| 100 to 249 | Q | 46 | 240 | 1,100 | 1,005 | 2,938 | 56.0 | 45.8 | 81.8 | 23.67 |
| 250 or More | 19 | 52 | 283 | 1,116 | 3,146 | 3,511 | 16.8 | 16.6 | 80.7 | 22.20 |
| Ownership and Occupancy | | | | | | | | | | |
| Nongovernment Owned | 396 | 200 | 963 | 8,565 | 5,832 | 17,316 | 46.2 | 34.3 | 55.6 | 9.55 |
| Owner Occupied | 313 | 154 | 790 | 5,863 | 3,963 | 13,814 | 53.4 | 38.8 | 57.2 | 11.54 |
| Single Establishment | 243 | 97 | 713 | 3,379 | 1,536 | 12,236 | 71.9 | 63.2 | 58.3 | 13.82 |
| Multiple Establishment | 70 | 57 | 77 | 2,485 | 2,427 | 1,578 | 28.3 | 23.5 | 48.8 | 19.16 |
| Nonowner Occupied | 82 | 46 | 173 | 2,702 | 1,869 | 3,502 | 30.5 | 24.5 | 49.3 | 15.58 |
| Single Establishment | 37 | 22 | 112 | 1,120 | 891 | 2,268 | 32.7 | 24.7 | 49.6 | 16.33 |
| Multiple Establishment | 46 | 24 | 30 | 1,582 | 977 | 955 | 28.9 | 24.3 | 31.0 | 23.00 |
| Vacant | -- | -- | Q | -- | -- | 278 | -- | -- | Q | 41.00 |
| Government Owned | 10 | 32 | 417 | 225 | 1,388 | 7,817 | 44.2 | 22.9 | 53.3 | 19.36 |
| Federal | Q | Q | Q | Q | Q | Q | Q | Q | 101.3 | 8.01 |
| State | Q | 4 | 104 | Q | 404 | 1,877 | Q | Q | 55.4 | 26.07 |
| Local | Q | 23 | 254 | Q | 752 | 5,355 | Q | 30.8 | 47.4 | 19.02 |
| LOCATION | | | | | | | | | | |
| Census Region | | | | | | | | | | |
| Northeast | 108 | 35 | 201 | 1,722 | 1,666 | 5,129 | 62.9 | 20.8 | 39.1 | 21.86 |
| Midwest | 164 | 103 | 541 | 2,647 | 1,837 | 8,331 | 62.1 | 55.8 | 64.9 | 14.10 |
| South | 84 | 40 | 361 | 2,860 | 1,674 | 7,126 | 29.4 | 23.6 | 50.7 | 16.56 |
| West | 49 | 55 | 277 | 1,561 | 2,043 | 4,547 | 31.1 | 26.8 | 61.0 | 14.02 |

See footnotes at end of table.

NATURAL GAS
Table 43. Natural Gas Consumption and Conditional Energy Intensity for Selected Principal Building Activities (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | RSE Row Factor |
|--------------------------------------|--|--------|-----------|---|--------|-----------|---|--------|-----------|----------------|
| | Mercantile | Office | All Other | Mercantile | Office | All Other | Mercantile | Office | All Other | |
| RSE Column Factor: | 1.291 | 1.282 | 0.981 | 0.940 | 1.005 | 0.722 | 1.188 | 1.120 | 0.734 | |
| Census Division | | | | | | | | | | |
| Northeast | | | | | | | | | | |
| New England | 7 | 8 | 24 | 157 | 370 | 709 | 45.2 | Q | 33.5 | 32.43 |
| Middle Atlantic | 101 | 27 | 177 | 1,565 | 1,297 | 4,419 | 64.7 | Q | 40.0 | 22.85 |
| Midwest | | | | | | | | | | |
| East North Central | 112 | 76 | 358 | 1,632 | 1,306 | 5,859 | 68.5 | 58.3 | 61.0 | 16.01 |
| West North Central | 53 | 26 | 183 | 1,015 | 530 | 2,472 | 52.0 | 49.8 | 74.1 | 16.44 |
| South | | | | | | | | | | |
| South Atlantic | 33 | 18 | 142 | 770 | 774 | 2,692 | 42.4 | 23.7 | 52.7 | 26.26 |
| East South Central | 19 | 5 | 98 | 525 | 279 | 1,230 | 36.9 | 17.6 | 79.8 | 31.09 |
| West South Central | 32 | 16 | 121 | 1,565 | 622 | 3,204 | 20.6 | 26.3 | 37.8 | 16.79 |
| West | | | | | | | | | | |
| Mountain | 23 | 21 | 148 | 714 | 385 | 2,022 | 32.3 | 53.4 | 73.0 | 23.40 |
| Pacific | 25 | 34 | 130 | 847 | 1,658 | 2,524 | 30.1 | 20.6 | 51.4 | 18.64 |
| Metropolitan Status | | | | | | | | | | |
| Metropolitan | 273 | 200 | 1,091 | 6,633 | 6,584 | 21,056 | 41.1 | 30.4 | 51.8 | 9.83 |
| Nonmetropolitan | 133 | 32 | 289 | 2,157 | 636 | 4,076 | 61.6 | 49.8 | 70.8 | 18.77 |
| Climate Zone: 45-Year Average | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | |
| Over 7,000 HDD | 59 | 25 | 161 | 897 | 459 | 1,708 | 65.9 | 55.6 | 94.2 | 20.26 |
| 5,500-7,000 HDD | 186 | 105 | 535 | 2,821 | 2,088 | 8,994 | 66.0 | 50.4 | 59.5 | 15.29 |
| 4,000-5,499 HDD | 68 | 42 | 286 | 1,599 | 1,877 | 6,192 | 42.4 | 22.6 | 46.2 | 16.41 |
| Under 4,000 HDD | 57 | 43 | 240 | 1,841 | 2,109 | 4,485 | 31.1 | 20.3 | 53.6 | 18.93 |
| 2,000 CDD or More and -- | | | | | | | | | | |
| Under 4,000 HDD | 35 | 15 | 157 | 1,632 | 686 | 3,754 | 21.5 | 22.5 | 41.9 | 18.22 |
| ENERGY SOURCES AND END USES * | | | | | | | | | | |
| Energy Sources | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Electricity | 405 | 229 | 1,379 | 8,788 | 7,214 | 25,112 | 46.1 | 31.7 | 54.9 | 9.23 |
| Natural Gas | 405 | 231 | 1,378 | 8,790 | 7,220 | 25,133 | 46.1 | 32.0 | 54.8 | 8.86 |
| Fuel Oil | 29 | 38 | 348 | 558 | 2,060 | 5,246 | 51.5 | 18.6 | 66.4 | 25.67 |
| District Heat | Q | 7 | Q | Q | 1,131 | 2,191 | Q | Q | 69.6 | 33.24 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | Q | Q | 124 | Q | Q | 1,413 | Q | Q | 87.8 | 42.47 |
| Other | Q | Q | 18 | Q | Q | 502 | Q | Q | 35.3 | 40.84 |
| Energy End Uses | | | | | | | | | | |
| (Solely or in Combination) | | | | | | | | | | |
| Heated Buildings | 400 | 232 | 1,363 | 8,757 | 7,220 | 24,826 | 45.7 | 32.1 | 54.9 | 8.92 |
| Air-Conditioned Buildings | 303 | 225 | 1,203 | 7,999 | 7,101 | 21,577 | 37.8 | 31.7 | 55.8 | 9.41 |
| Buildings with Water Heating | 357 | 224 | 1,326 | 7,646 | 6,902 | 23,885 | 46.7 | 32.4 | 55.5 | 9.25 |
| Buildings with Cooking | 122 | 51 | 774 | 3,331 | 2,763 | 12,775 | 36.7 | 18.5 | 60.6 | 15.19 |
| Buildings with Manufacturing | 66 | 20 | 193 | 625 | 451 | 2,700 | 104.8 | 43.3 | 71.6 | 29.18 |

See footnotes at end of table.

Table 43. Natural Gas Consumption and Conditional Energy Intensity for Selected Principal Building Activities (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | RSE Row Factor |
|--|--|--------|-----------|---|--------|-----------|---|--------|-----------|----------------|
| | Mercantile | Office | All Other | Mercantile | Office | All Other | Mercantile | Office | All Other | |
| RSE Column Factor: | 1.291 | 1.262 | 0.931 | 0.940 | 1.005 | 0.722 | 1.165 | 1.130 | 0.734 | |
| Energy End-Use Combinations | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | 82 | 49 | 690 | 3,234 | 2,676 | 10,996 | 25.3 | 18.3 | 62.8 | 15.44 |
| With Water Heating, Without Cooking | 186 | 169 | 473 | 3,859 | 4,115 | 9,415 | 48.1 | 41.1 | 50.2 | 12.38 |
| Without Water Heating or Cooking | 32 | 7 | 27 | 854 | 257 | 865 | 37.4 | 27.4 | 30.9 | 24.76 |
| Without Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | Q | Q | 74 | Q | Q | 1,499 | Q | Q | 49.3 | 22.19 |
| With Water Heating, Without Cooking | 44 | Q | 73 | 477 | Q | 1,688 | 93.1 | Q | 43.4 | 16.62 |
| Without Water Heating or Cooking | 16 | Q | 23 | 251 | Q | 284 | 64.7 | Q | 81.8 | 27.51 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | Q | Q | Q | NC | NC | Q | NC | NC | Q | b |
| All Other Combinations | Q | Q | 18 | Q | Q | 370 | Q | Q | 48.0 | 41.42 |
| Space-Heating Energy Source | | | | | | | | | | |
| Natural Gas | 384 | 212 | 1,208 | 7,427 | 4,990 | 20,600 | 51.7 | 42.5 | 58.6 | 9.39 |
| Main | 367 | 208 | 1,153 | 6,961 | 4,814 | 19,334 | 52.7 | 43.2 | 59.7 | 9.72 |
| With Secondary | Q | 42 | 421 | 1,204 | 1,355 | 5,328 | 67.7 | 30.9 | 78.9 | 16.89 |
| Electricity Only | 25 | 15 | 112 | 925 | 470 | 2,225 | 26.7 | 31.2 | 50.5 | 19.32 |
| Other Energy Sources or Combinations | 17 | 26 | 307 | 231 | 842 | 3,061 | 71.9 | 30.4 | 100.4 | 22.86 |
| With No Secondary | 285 | 166 | 733 | 5,757 | 3,459 | 14,006 | 49.6 | 47.9 | 52.3 | 10.40 |
| Secondary | 17 | 4 | 54 | 466 | 175 | 1,266 | 37.3 | 24.1 | 43.0 | 32.44 |
| Other Excluding Natural Gas | 16 | 20 | 156 | 1,330 | 2,230 | 4,226 | 12.0 | 8.8 | 36.8 | 26.39 |
| Building Not Heated | Q | Q | 16 | Q | NC | 307 | Q | NC | 53.4 | 44.94 |
| Main Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 30 | 19 | 117 | 1,544 | 1,172 | 2,393 | 19.2 | 16.4 | 48.8 | 24.21 |
| Natural Gas | 367 | 208 | 1,153 | 6,961 | 4,814 | 19,334 | 52.7 | 43.2 | 59.7 | 9.72 |
| Fuel Oil | Q | Q | 21 | Q | Q | 1,497 | Q | Q | 13.8 | 26.71 |
| District Heat | Q | 8 | Q | Q | 1,093 | 1,749 | Q | Q | 56.5 | 33.15 |
| Propane | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Air-Conditioning Energy Source | | | | | | | | | | |
| Natural Gas | 16 | 23 | 85 | 339 | 283 | 1,354 | 46.2 | 82.5 | 62.8 | 23.77 |
| Other Excluding Natural Gas | 287 | 202 | 1,118 | 7,660 | 6,817 | 20,224 | 37.4 | 29.6 | 55.3 | 10.00 |
| Air-Conditioning Not Performed | 103 | Q | 176 | 792 | Q | 3,556 | 130.0 | Q | 49.6 | 19.24 |
| Water-Heating Energy Source | | | | | | | | | | |
| Natural Gas | 275 | 170 | 966 | 4,553 | 4,110 | 17,260 | 60.3 | 41.3 | 56.0 | 10.19 |
| Other Excluding Natural Gas | 82 | 54 | 359 | 3,093 | 2,793 | 6,624 | 26.5 | 19.3 | 54.2 | 15.65 |
| Water Heating Not Performed | 49 | 8 | 54 | 1,144 | 317 | 1,248 | 42.7 | 24.8 | 43.5 | 22.09 |
| Cooking Energy Source | | | | | | | | | | |
| Natural Gas | 75 | 44 | 605 | 2,954 | 2,384 | 9,428 | 25.2 | 18.3 | 64.2 | 16.76 |
| Other Excluding Natural Gas | Q | 8 | 169 | 377 | 379 | 3,347 | Q | 20.1 | 50.6 | 26.90 |
| Cooking Not Performed | 283 | 180 | 605 | 5,460 | 4,457 | 12,358 | 51.9 | 40.5 | 49.0 | 10.57 |
| Manufacturing Energy Source | | | | | | | | | | |
| Natural Gas | Q | Q | 60 | Q | Q | 567 | Q | Q | 106.2 | 43.27 |
| Other Excluding Natural Gas | 18 | 14 | 133 | 444 | 362 | 2,134 | 41.2 | 38.4 | 62.4 | 28.87 |
| Manufacturing Not Performed | 340 | 212 | 1,186 | 8,165 | 6,769 | 22,433 | 41.6 | 31.3 | 52.9 | 8.77 |

See footnotes at end of table.

NATURAL GAS

Table 43. Natural Gas Consumption and Conditional Energy Intensity for Selected Principal Building Activities (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | RSE Row Factor | |
|--|--|--------|-----------|---|--------|-----------|---|--------|-----------|----------------|--|
| | Mercantile | Office | All Other | Mercantile | Office | All Other | Mercantile | Office | All Other | | |
| | 1.201 | 1.202 | 0.931 | 0.940 | 1.005 | 0.722 | 1.165 | 1.130 | 0.734 | | |
| HEATING AND COOLING | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | |
| Not Heated | Q | Q | 17 | Q | Q | 362 | Q | Q | 46.6 | 38.64 | |
| 1 to 50 | 37 | 15 | 73 | 1,184 | 377 | 4,419 | 31.5 | 38.6 | 16.5 | 21.52 | |
| 51 to 99 | 43 | 40 | 184 | 1,452 | 1,674 | 2,822 | 29.6 | 24.0 | 65.1 | 17.04 | |
| 100 | 320 | 176 | 1,106 | 6,120 | 5,165 | 17,530 | 52.3 | 34.1 | 63.1 | 9.86 | |
| Percent Cooled | | | | | | | | | | | |
| Not Cooled | 103 | Q | 176 | 792 | Q | 3,556 | 130.0 | Q | 49.6 | 19.24 | |
| 1 to 50 | 167 | 32 | 400 | 2,667 | 713 | 9,840 | 62.6 | 45.1 | 40.7 | 17.83 | |
| 51 to 99 | 51 | 66 | 296 | 1,987 | 2,537 | 4,637 | 25.4 | 26.1 | 63.7 | 14.90 | |
| 100 | 85 | 127 | 508 | 3,345 | 3,851 | 7,100 | 25.4 | 33.0 | 71.5 | 12.78 | |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | | |
| Present in Building | 63 | 118 | 471 | 1,527 | 3,907 | 6,651 | 41.3 | 30.3 | 70.8 | 16.99 | |
| Not Present | 342 | 113 | 909 | 7,264 | 3,313 | 18,482 | 47.2 | 34.2 | 49.2 | 10.01 | |
| LIGHTING AND REFRIGERATION | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | |
| Not Lit | Q | Q | 8 | Q | NC | 148 | Q | NC | 56.0 | 39.19 | |
| 1 to 50 | 62 | 26 | 181 | 1,095 | 780 | 5,141 | 56.6 | 33.4 | 35.1 | 17.95 | |
| 51 to 99 | 98 | 70 | 382 | 2,446 | 2,757 | 6,811 | 40.1 | 25.3 | 56.1 | 15.22 | |
| 100 | 245 | 136 | 809 | 5,245 | 3,683 | 13,034 | 46.6 | 36.9 | 62.0 | 12.07 | |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | | | |
| Incandescent Lamps | 193 | 126 | 1,000 | 5,412 | 4,888 | 16,987 | 35.7 | 25.9 | 58.9 | 9.50 | |
| Fluorescent Lamps | 396 | 230 | 1,337 | 8,717 | 7,172 | 24,424 | 45.4 | 32.1 | 54.8 | 8.79 | |
| High-Intensity Discharge Lamps | 114 | 35 | 505 | 2,393 | 2,076 | 8,099 | 47.6 | 16.8 | 62.4 | 19.87 | |
| Other Lamps | Q | Q | 12 | Q | Q | 167 | Q | Q | 73.1 | 31.21 | |
| High-Efficiency Ballasts | 195 | 119 | 549 | 3,905 | 3,656 | 9,288 | 50.0 | 32.6 | 59.1 | 14.10 | |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | | | |
| Commercial | | | | | | | | | | | |
| Refrigeration Units | 110 | 56 | 803 | 4,164 | 2,906 | 12,598 | 26.5 | 19.4 | 63.8 | 14.05 | |
| Freezers | 94 | 44 | 764 | 3,721 | 2,603 | 10,953 | 25.2 | 17.0 | 69.7 | 14.58 | |
| Residential | | | | | | | | | | | |
| Refrigerators | 297 | 174 | 1,041 | 5,730 | 6,148 | 19,475 | 51.8 | 28.3 | 53.4 | 10.21 | |
| Freezers | 39 | 37 | 454 | 1,242 | 1,123 | 6,814 | 31.6 | 32.6 | 66.6 | 16.23 | |
| Ice-Making Machines | 127 | 69 | 767 | 3,586 | 3,243 | 10,795 | 35.4 | 21.3 | 71.1 | 15.19 | |
| Refrigerated Vending Machines | 285 | 161 | 1,021 | 6,124 | 5,492 | 16,173 | 46.6 | 29.3 | 63.1 | 11.59 | |
| Water Coolers | 260 | 186 | 1,021 | 5,886 | 5,939 | 18,304 | 44.2 | 31.4 | 55.8 | 10.96 | |
| Other | Q | Q | Q | Q | Q | 687 | Q | Q | 134.7 | 41.43 | |

^a Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

^b No applicable RSE row factor.

^c NC No cases in responding sample.

^d Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

-- Data not applicable.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 44. Natural Gas Consumption and Conditional Energy Intensity by Year Constructed

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | | RSE Row Factor |
|--|--|-----------|-----------|-----------|---|-----------|-----------|-----------|---|-----------|-----------|-----------|----------------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| RSE Column Factor | 1.000 | 1.000 | 1.000 | 1.000 | 0.854 | 0.947 | 0.970 | 0.964 | 0.871 | 0.919 | 1.000 | 0.965 | |
| All Buildings | 808 | 445 | 429 | 335 | 17,051 | 8,467 | 8,103 | 7,522 | 47.4 | 52.6 | 52.9 | 44.5 | 2.91 |
| Building Floorspace (Square Feet) | | | | | | | | | | | | | |
| 1,001 to 5,000 | 141 | 45 | 58 | 50 | 1,782 | 565 | 554 | 522 | 79.2 | 80.3 | 105.1 | 96.7 | 4.11 |
| 5,001 to 10,000 | 111 | 51 | 50 | 46 | 1,843 | 747 | 772 | 593 | 60.4 | 68.3 | 64.9 | 77.4 | 4.75 |
| 10,001 to 25,000 | 110 | 63 | 46 | 51 | 2,441 | 1,286 | 871 | 1,153 | 45.1 | 48.9 | 52.7 | 44.6 | 4.59 |
| 25,001 to 50,000 | 123 | 61 | 71 | 46 | 2,310 | 1,155 | 1,112 | 873 | 53.2 | 53.0 | 63.4 | 52.5 | 5.79 |
| 50,001 to 100,000 | 99 | 62 | 44 | 37 | 2,496 | 1,517 | 1,110 | 1,083 | 39.7 | 41.0 | 39.2 | 33.9 | 5.57 |
| 100,001 to 200,000 | 49 | 54 | 92 | 36 | 1,749 | 1,600 | 1,565 | 1,104 | 28.1 | 33.7 | 59.0 | 32.6 | 5.34 |
| 200,001 to 500,000 | Q | Q | 36 | 47 | 2,109 | 1,174 | 751 | 1,020 | Q | Q | 47.4 | 45.9 | 5.39 |
| Over 500,000 | Q | 31 | 33 | 22 | 2,321 | 423 | 1,366 | 1,173 | 48.5 | 73.4 | Q | Q | 6.35 |
| BUILDING USE | | | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | | | |
| Assembly | 92 | 37 | 23 | 17 | 2,329 | 955 | 595 | 425 | 39.5 | 38.5 | 38.4 | 41.0 | 5.22 |
| Education | 177 | 84 | 43 | 10 | 3,448 | 1,961 | 923 | 308 | 51.4 | 43.1 | 46.3 | 32.5 | 4.56 |
| Food Sales | 7 | Q | Q | 143 | Q | Q | Q | Q | 49.2 | Q | Q | Q | 13.94 |
| Food Service | 40 | 17 | 40 | 26 | 319 | 178 | 188 | 133 | 125.7 | 97.8 | 215.1 | 199.3 | 7.98 |
| Health Care | Q | 15 | 63 | 30 | 620 | 247 | 521 | 214 | 117.1 | 61.8 | 121.2 | 140.8 | 7.32 |
| Lodging | 49 | 54 | 30 | 49 | 857 | 744 | 390 | 550 | 57.2 | 72.7 | 78.1 | 88.3 | 7.72 |
| Mercantile and Service | 137 | 123 | 91 | 55 | 2,950 | 1,822 | 2,245 | 1,773 | 46.3 | 67.5 | 40.5 | 31.0 | 4.33 |
| Office | 108 | 38 | 39 | 46 | 2,523 | 998 | 1,414 | 2,286 | 42.6 | 38.6 | 27.9 | 20.2 | 3.66 |
| Parking Garage | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | 0 |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | 0 |
| Warehouse | 57 | 37 | 75 | 32 | 1,921 | 933 | 1,299 | 983 | 29.7 | 40.0 | Q | 32.5 | 7.04 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | 12.07 |
| Vacant | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | 0 |
| Weekly Operating Hours | | | | | | | | | | | | | |
| 39 or Fewer | 58 | 16 | 18 | 6 | 1,446 | 563 | 399 | 212 | 39.9 | 27.9 | 44.6 | 29.3 | 5.30 |
| 40 to 48 | 194 | 75 | 56 | 53 | 4,578 | 1,847 | 1,313 | 1,426 | 42.3 | 40.6 | 42.3 | 37.3 | 5.54 |
| 49 to 60 | 136 | 69 | 54 | 59 | 3,300 | 1,456 | 1,869 | 1,856 | 41.1 | 47.1 | 29.0 | 31.9 | 5.66 |
| 61 to 84 | 134 | 67 | 82 | 50 | 3,003 | 1,627 | 1,822 | 1,499 | 44.6 | 41.0 | 44.9 | 33.5 | 3.71 |
| 85 to 167 | 119 | 89 | 105 | 38 | 2,708 | 1,660 | 1,335 | 872 | 44.1 | 53.5 | 78.3 | 43.3 | 5.65 |
| 168 (Open Continuously) | 168 | 130 | 115 | 128 | 2,016 | 1,315 | 1,366 | 1,655 | 83.2 | 99.2 | 84.3 | 77.4 | 3.46 |
| Workers | | | | | | | | | | | | | |
| 4 or Fewer | 153 | 49 | 49 | 41 | 3,971 | 1,008 | 846 | 895 | 38.6 | 48.9 | 58.4 | 45.5 | 3.06 |
| 5 to 9 | 92 | 43 | 44 | 33 | 2,498 | 944 | 1,052 | 686 | 36.8 | 45.7 | 41.4 | 48.4 | 4.78 |
| 10 to 19 | 86 | 46 | 53 | 57 | 1,949 | 1,143 | 705 | 661 | 44.2 | 39.8 | 74.6 | 86.4 | 5.66 |
| 20 to 49 | 136 | 77 | 55 | 55 | 2,787 | 1,632 | 1,055 | 1,144 | 48.8 | 47.3 | 52.1 | 47.8 | 4.20 |
| 50 to 99 | 88 | 79 | 61 | 19 | 1,869 | 1,520 | 1,241 | 723 | 46.8 | 52.3 | 48.8 | 25.8 | 5.12 |
| 100 to 249 | 108 | 100 | 81 | 59 | 1,518 | 1,239 | 1,147 | 1,139 | 71.1 | 80.3 | 70.9 | 51.8 | 5.11 |
| 250 or More | 145 | 51 | 87 | 71 | 2,460 | 981 | 2,057 | 2,275 | 59.0 | 52.0 | 42.1 | 31.4 | 5.20 |
| Ownership and Occupancy | | | | | | | | | | | | | |
| Nongovernment Owned | 570 | 332 | 356 | 300 | 12,261 | 6,072 | 6,449 | 6,931 | 46.5 | 54.8 | 55.2 | 43.3 | 2.87 |
| Owner Occupied | 474 | 292 | 264 | 227 | 9,698 | 4,635 | 4,751 | 4,556 | 48.9 | 63.1 | 55.6 | 49.8 | 3.20 |
| Single Establishment | 382 | 253 | 228 | 190 | 7,406 | 3,539 | 3,257 | 2,949 | 51.5 | 71.4 | 70.1 | 64.6 | 3.71 |
| Multiple Establishment | 93 | 40 | 36 | 36 | 2,291 | 1,097 | 1,495 | 1,607 | 40.5 | 36.3 | 23.8 | 22.5 | 4.36 |
| Nonowner Occupied | 96 | 40 | 92 | 73 | 2,563 | 1,436 | 1,698 | 2,375 | 37.3 | 28.0 | 54.1 | 30.8 | 3.18 |
| Single Establishment | 47 | 19 | Q | 40 | 1,456 | 792 | 846 | 1,184 | 32.2 | 24.4 | 76.8 | 33.6 | 3.81 |
| Multiple Establishment | 26 | 18 | 22 | 33 | 959 | 583 | 799 | 1,174 | 27.6 | 31.1 | 27.6 | 27.7 | 4.15 |
| Vacant | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | 0 |
| Government Owned | 238 | 113 | 73 | 35 | 4,790 | 2,396 | 1,654 | 591 | 49.7 | 47.0 | 44.3 | 59.1 | 5.00 |
| Federal | Q | Q | Q | Q | Q | Q | Q | Q | 92.7 | Q | Q | Q | 14.40 |
| State | 45 | 27 | 22 | Q | 1,098 | 623 | 375 | 222 | 41.2 | 44.0 | 59.4 | 63.6 | 5.07 |
| Local | 138 | 82 | 47 | 15 | 3,101 | 1,668 | 1,104 | 329 | 44.5 | 49.2 | 42.3 | 47.1 | 5.03 |

See footnote at end of table.

NATURAL GAS

Table 44. Natural Gas Consumption and Conditional Energy Intensity by Year Constructed (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | | RSE Row Factor |
|---|--|-----------|-----------|-----------|---|-----------|-----------|-----------|---|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| RSE Column Factor | 1.131 | 1.140 | 1.208 | 1.146 | 0.836 | 0.847 | 0.979 | 0.944 | 0.871 | 0.919 | 1.059 | 0.985 | |
| Multibuilding Facility | | | | | | | | | | | | | |
| Not on Multibuilding Facility | 470 | 226 | 244 | 196 | 11,054 | 5,197 | 5,039 | 4,838 | 42.5 | 43.6 | 48.3 | 40.5 | 3.43 |
| Part of Multibuilding Facility | 338 | 219 | 185 | 139 | 5,998 | 3,271 | 3,064 | 2,684 | 56.3 | 66.9 | 60.5 | 51.7 | 2.55 |
| On Facility with Central Plant | 184 | 131 | 57 | 39 | 2,117 | 1,182 | 967 | 361 | 87.1 | 111.1 | 58.5 | 108.2 | 6.03 |
| Percent Vacant at Least Three Months | | | | | | | | | | | | | |
| 0 | 554 | 347 | 367 | 251 | 10,851 | 6,143 | 6,056 | 4,425 | 51.1 | 56.6 | 60.7 | 56.6 | 2.70 |
| 1 to 50 | 142 | 53 | 49 | 72 | 3,238 | 1,622 | 1,793 | 2,570 | 43.7 | 32.9 | 27.1 | 27.9 | 3.92 |
| 51 to 99 | Q | 30 | Q | Q | 2,248 | 352 | Q | Q | 29.6 | 84.4 | Q | Q | 8.75 |
| 100 | 46 | 15 | Q | 11 | 714 | 351 | Q | 392 | 63.9 | 41.8 | Q | 27.0 | 5.89 |
| Months in Use Out of Past 12 Months | | | | | | | | | | | | | |
| 0 to 8 | 21 | Q | Q | 29 | 812 | Q | Q | 609 | 25.5 | Q | Q | 47.0 | 5.23 |
| 9 to 11 | 75 | 42 | 12 | 5 | 1,255 | 852 | 355 | 179 | 59.9 | 48.9 | 34.8 | 30.6 | 5.91 |
| 12 | 712 | 394 | 406 | 301 | 14,985 | 7,386 | 7,654 | 6,734 | 47.5 | 53.3 | 53.0 | 44.7 | 2.34 |
| LOCATION | | | | | | | | | | | | | |
| Census Region | | | | | | | | | | | | | |
| Northeast | 150 | 106 | 47 | 41 | 4,373 | 1,850 | 1,014 | 1,280 | 34.3 | 57.3 | Q | Q | 7.84 |
| Midwest | 310 | 188 | 180 | 130 | 5,648 | 2,783 | 2,490 | 1,894 | 54.9 | 67.4 | 72.5 | 68.5 | 4.38 |
| South | 181 | 78 | 124 | 102 | 4,241 | 2,360 | 2,493 | 2,567 | 42.7 | 33.0 | 49.7 | 39.7 | 4.89 |
| West | 167 | 74 | 78 | 62 | 2,790 | 1,475 | 2,106 | 1,781 | 59.9 | 49.9 | 37.0 | 34.7 | 6.82 |
| Census Division | | | | | | | | | | | | | |
| Northeast | | | | | | | | | | | | | |
| New England | 13 | 6 | Q | 5 | 589 | 270 | Q | 190 | Q | 21.8 | Q | 27.2 | 8.14 |
| Middle Atlantic | 137 | 100 | 32 | 36 | 3,784 | 1,580 | 826 | 1,091 | 36.1 | 63.4 | Q | Q | 10.04 |
| Midwest | | | | | | | | | | | | | |
| East North Central | 204 | 143 | 119 | 79 | 4,214 | 1,922 | 1,506 | 1,154 | 48.3 | 74.7 | 79.1 | 68.5 | 6.69 |
| West North Central | 106 | 44 | 61 | 51 | 1,433 | 861 | 984 | 739 | 74.3 | 51.2 | 62.3 | 68.6 | 10.67 |
| South | | | | | | | | | | | | | |
| South Atlantic | 77 | 30 | Q | 30 | 1,616 | 772 | 731 | 1,116 | 47.8 | 38.9 | 76.6 | 26.5 | 8.43 |
| East South Central | Q | 15 | 34 | 36 | 677 | 396 | 465 | 495 | 56.2 | 37.6 | 72.2 | 72.4 | 14.39 |
| West South Central | 66 | 33 | 34 | 36 | 1,947 | 1,192 | 1,297 | 955 | 33.7 | 27.7 | Q | 38.1 | 10.02 |
| West | | | | | | | | | | | | | |
| Mountain | 120 | 23 | 27 | 21 | 1,422 | 492 | 608 | 599 | 84.2 | 47.4 | 45.0 | 34.7 | 13.82 |
| Pacific | 47 | 50 | 51 | 41 | 1,368 | 982 | 1,498 | 1,182 | 34.7 | 51.2 | 33.8 | 34.8 | 9.24 |
| Metropolitan Status | | | | | | | | | | | | | |
| Metropolitan | 617 | 332 | 318 | 297 | 13,643 | 7,282 | 6,805 | 6,544 | 45.2 | 45.6 | 46.8 | 45.4 | 2.83 |
| Nonmetropolitan | 192 | 113 | 111 | 38 | 3,409 | 1,185 | 1,299 | 977 | 56.2 | 95.2 | 85.4 | 38.8 | 7.07 |
| Climate Zone: 45-Year Average | | | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | | | |
| Over 7,000 HDD | 93 | Q | 62 | 34 | 1,169 | 636 | 783 | 475 | 80.0 | 88.4 | 79.0 | 71.1 | 11.92 |
| 5,500-7,000 HDD | 352 | 208 | 149 | 117 | 6,689 | 3,084 | 2,108 | 2,022 | 52.7 | 67.5 | 70.8 | 58.1 | 6.70 |
| 4,000-5,499 HDD | 193 | 82 | 69 | 52 | 4,524 | 1,832 | 1,735 | 1,577 | 42.6 | 44.9 | 39.7 | 33.2 | 11.66 |
| Under 4,000 HDD | 91 | 65 | 107 | 77 | 2,394 | 1,583 | 2,364 | 2,095 | 38.2 | 41.0 | 45.5 | 36.6 | 10.37 |
| 2,000 CDD or More and -- | | | | | | | | | | | | | |
| Under 4,000 HDD | 78 | 34 | 41 | 54 | 2,274 | 1,332 | 1,113 | 1,353 | 34.5 | 25.3 | 37.2 | 40.2 | 9.42 |
| STRUCTURE | | | | | | | | | | | | | |
| Floors | | | | | | | | | | | | | |
| 1 | 198 | 149 | 223 | 143 | 4,088 | 3,549 | 3,549 | 2,634 | 48.5 | 41.9 | 62.8 | 54.2 | 4.07 |
| 2 | 209 | 168 | 91 | 77 | 3,826 | 2,587 | 2,249 | 2,317 | 54.5 | 65.0 | 40.6 | 33.1 | 3.73 |
| 3 | 148 | 45 | 27 | 26 | 3,961 | 746 | 566 | 448 | 37.4 | 59.9 | 47.6 | 57.1 | 5.32 |
| 4 to 6 | 160 | 57 | 44 | 60 | 3,215 | 1,031 | 733 | 1,067 | 49.9 | 55.6 | 60.2 | 56.5 | 4.97 |
| 7 or More | 92 | 26 | 44 | 29 | 1,961 | 553 | 1,007 | 1,056 | 47.0 | 46.9 | 43.5 | Q | 6.36 |

See footnote at end of table.

Table 44. Natural Gas Consumption and Conditional Energy Intensity by Year Constructed (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | | RSE Row Factor |
|--|--|-----------|-----------|-----------|---|-----------|-----------|-----------|---|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| ROW Column Factor: | 1.731 | 1.149 | 1.209 | 1.146 | 0.936 | 0.847 | 0.979 | 0.944 | 0.871 | 0.910 | 1.069 | 0.995 | |
| Wall Materials | | | | | | | | | | | | | |
| Masonry | 663 | 320 | 302 | 183 | 14,252 | 6,511 | 4,522 | 4,047 | 46.5 | 49.1 | 66.8 | 45.1 | 2.73 |
| Siding or Shingles | 50 | 14 | 26 | 27 | 901 | 373 | 691 | 388 | 55.4 | 38.5 | Q | 70.2 | 7.39 |
| Metal Panels | 18 | Q | 53 | 54 | 303 | 458 | 1,093 | 804 | 60.3 | Q | 48.5 | 66.8 | 7.89 |
| Concrete Panels | Q | 28 | 38 | 44 | 1,278 | 888 | 1,269 | 1,460 | 51.9 | 31.5 | 29.7 | 29.9 | 7.77 |
| Window Glass | Q | Q | 7 | Q | Q | Q | 341 | Q | Q | Q | 20.8 | Q | 9.76 |
| Other | Q | Q | Q | Q | Q | Q | Q | 154 | Q | Q | Q | 55.4 | 10.18 |
| Roof Materials | | | | | | | | | | | | | |
| Built-Up | 446 | 214 | 224 | 139 | 9,249 | 4,702 | 4,645 | 3,369 | 48.2 | 45.5 | 48.2 | 41.2 | 2.68 |
| Shingles (Not Wood) | 144 | 83 | 67 | 31 | 3,947 | 1,456 | 805 | 804 | 36.4 | 57.3 | 82.8 | 38.5 | 5.52 |
| Metal Surfacing | 29 | Q | 50 | 67 | 571 | 766 | 1,253 | 1,211 | 50.0 | 97.2 | 40.0 | 55.7 | 6.25 |
| Synthetic or Rubber | 65 | 46 | 63 | 77 | 1,048 | 970 | 985 | 1,426 | 62.5 | 47.9 | 63.8 | 53.9 | 5.45 |
| Slate or Tile | 53 | Q | Q | 9 | 1,274 | Q | Q | 146 | 41.6 | Q | Q | 62.0 | 10.79 |
| Concrete | 11 | Q | Q | Q | 309 | Q | Q | Q | 36.2 | Q | Q | Q | 12.91 |
| Wooden Materials | 12 | Q | Q | Q | 272 | Q | Q | Q | 44.5 | Q | Q | Q | 9.42 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | | | | | |
| Roof or Ceiling Insulation | 581 | 297 | 345 | 306 | 10,047 | 6,183 | 6,920 | 6,596 | 57.8 | 48.0 | 49.8 | 46.3 | 2.64 |
| Wall Insulation | 309 | 216 | 252 | 289 | 5,025 | 3,878 | 4,805 | 5,934 | 61.5 | 55.7 | 52.3 | 48.8 | 3.26 |
| Storm or Multiple Glazing | 343 | 175 | 195 | 221 | 5,542 | 3,572 | 3,609 | 4,356 | 61.9 | 49.0 | 53.9 | 50.6 | 3.19 |
| Tinted, Reflective, or Shading Glass | 234 | 134 | 193 | 187 | 3,976 | 2,627 | 4,154 | 4,711 | 58.8 | 51.0 | 46.5 | 39.6 | 3.18 |
| Exterior or Interior Shadings or Awnings | 342 | 161 | 178 | 172 | 7,423 | 3,449 | 3,639 | 3,898 | 46.1 | 46.5 | 49.0 | 44.2 | 3.14 |
| Weather Stripping or Caulking | 593 | 305 | 316 | 297 | 10,924 | 6,341 | 6,356 | 6,624 | 54.3 | 48.1 | 49.7 | 44.8 | 2.52 |
| None of the Above | 78 | 27 | 28 | Q | 2,880 | 579 | 267 | Q | 27.1 | 47.0 | 105.1 | Q | 5.28 |
| ENERGY SOURCES AND END USES* | | | | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | | | | |
| Electricity | 807 | 442 | 429 | 335 | 17,039 | 8,460 | 8,097 | 7,519 | 47.4 | 52.2 | 53.0 | 44.5 | 2.65 |
| Natural Gas | 807 | 445 | 428 | 334 | 17,051 | 8,467 | 8,103 | 7,522 | 47.3 | 52.5 | 52.9 | 44.4 | 3.38 |
| Fuel Oil | 152 | 63 | 132 | 69 | 3,341 | 1,433 | 1,732 | 1,359 | 45.5 | 43.8 | 76.3 | 50.6 | 8.03 |
| District Heat | Q | Q | Q | Q | 1,850 | 594 | Q | Q | 61.3 | Q | Q | Q | 11.49 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | 20.26 |
| Propane | Q | Q | Q | Q | Q | Q | 306 | Q | Q | Q | 163.0 | Q | 8.57 |
| Other | 7 | Q | Q | Q | 295 | Q | Q | Q | 23.5 | Q | Q | Q | 13.87 |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | | | | |
| Heated Buildings | 802 | 443 | 422 | 328 | 16,935 | 8,380 | 8,029 | 7,458 | 47.4 | 52.9 | 52.6 | 44.0 | 2.53 |
| Air-Conditioned Buildings | 662 | 361 | 394 | 314 | 14,168 | 7,603 | 7,688 | 7,217 | 46.7 | 47.5 | 51.3 | 43.5 | 2.73 |
| Buildings with Water Heating | 751 | 427 | 407 | 322 | 15,718 | 8,069 | 7,482 | 7,164 | 47.8 | 52.9 | 54.3 | 44.9 | 2.44 |
| Buildings with Cooking | 366 | 230 | 205 | 146 | 7,704 | 3,925 | 3,825 | 3,415 | 47.5 | 58.7 | 53.7 | 42.7 | 3.45 |
| Buildings with Manufacturing | 131 | 47 | 83 | 18 | 1,960 | 539 | 723 | 555 | 66.7 | 87.9 | 114.4 | 31.6 | 6.02 |

See footnote at end of table.

NATURAL GAS

Table 44. Natural Gas Consumption and Conditional Energy Intensity by Year Constructed (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | | RSE Row Factor |
|--|--|-----------|-----------|-----------|---|-----------|-----------|-----------|---|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| RSE Column Factor: | 1.173 | 1.110 | 1.150 | 1.126 | 0.833 | 0.705 | 0.980 | 0.910 | 0.843 | 0.926 | 1.171 | 0.985 | |
| Energy End-Use Combinations | | | | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | 309 | 179 | 196 | 137 | 6,602 | 3,489 | 3,584 | 3,232 | 46.9 | 51.3 | 54.7 | 42.3 | 15.24 |
| With Water Heating, Without Cooking | 310 | 172 | 183 | 164 | 6,418 | 3,760 | 3,550 | 3,662 | 48.3 | 45.6 | 51.5 | 44.7 | 13.63 |
| Without Water Heating or Cooking | 39 | 10 | 11 | 6 | 1,070 | 289 | 401 | 215 | 36.7 | 33.4 | 27.6 | 26.5 | 27.75 |
| Without Air Conditioning | | | | | | | | | | | | | |
| With Water Heating and Cooking | 55 | Q | Q | Q | 1,024 | 378 | Q | Q | 53.8 | Q | Q | Q | 24.62 |
| With Water Heating, Without Cooking | 72 | 23 | 16 | 10 | 1,571 | 355 | 184 | 132 | 46.1 | 66.0 | 86.2 | 75.0 | 22.59 |
| Without Water Heating or Cooking | 15 | Q | Q | Q | 222 | Q | Q | Q | 68.5 | Q | Q | Q | 23.42 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | Q | Q | Q | Q | NC Q | NC Q | Q | Q | Q | NC Q | NC Q | Q | b |
| All Other Combinations | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Space-Heating Energy Source | | | | | | | | | | | | | |
| Natural Gas | 717 | 414 | 371 | 302 | 13,789 | 7,092 | 6,563 | 5,573 | 52.0 | 58.4 | 56.6 | 54.2 | 10.33 |
| Main | 702 | 407 | 350 | 269 | 13,256 | 6,819 | 5,910 | 5,125 | 52.9 | 59.6 | 59.3 | 52.5 | 10.40 |
| With Secondary | 208 | 136 | 131 | 70 | 3,193 | 1,934 | 1,574 | 1,187 | 65.0 | 70.4 | 83.1 | 58.6 | 22.65 |
| Electricity Only | 87 | 26 | 22 | 16 | 1,592 | 833 | 629 | 566 | 54.9 | 31.2 | 35.4 | 28.1 | 21.04 |
| Other Energy Sources or Combinations | 118 | 69 | 108 | 54 | 1,557 | 1,019 | 937 | 621 | 76.0 | 67.7 | 115.8 | 86.4 | 26.95 |
| With No Secondary | 494 | 271 | 220 | 200 | 10,064 | 4,885 | 4,336 | 3,938 | 49.1 | 55.4 | 50.6 | 50.7 | 10.58 |
| Secondary | 15 | Q | 21 | Q | 533 | 273 | 653 | 449 | 27.7 | Q | 32.1 | 72.8 | 34.13 |
| Other Excluding Natural Gas | Q | 29 | 51 | 26 | 3,146 | 1,288 | 1,466 | 1,885 | 27.2 | 22.3 | 34.6 | 13.8 | 29.16 |
| Building Not Heated | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Main Space-Heating Energy Source | | | | | | | | | | | | | |
| Source | | | | | | | | | | | | | |
| Electricity | 26 | 23 | 52 | 65 | 837 | 846 | 1,540 | 1,886 | 31.6 | 27.1 | 33.5 | 34.2 | 26.87 |
| Natural Gas | 702 | 407 | 350 | 269 | 13,256 | 6,819 | 5,910 | 5,125 | 52.9 | 59.6 | 59.3 | 52.5 | 10.40 |
| Fuel Oil | 12 | 2 | Q | Q | 1,391 | 341 | Q | Q | 8.4 | 6.9 | Q | Q | 30.15 |
| District Heat | Q | Q | Q | Q | 1,507 | 517 | 378 | Q | 44.8 | 41.9 | Q | Q | 38.86 |
| Propane | Q | Q | Q | Q | Q | NC Q | Q | NC Q | Q | NC Q | Q | NC Q | b |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Air-Conditioning Energy Source | | | | | | | | | | | | | |
| Natural Gas | 29 | 38 | 21 | 35 | 545 | 663 | 348 | 420 | 53.6 | 57.6 | 61.5 | 83.8 | 25.93 |
| Other Excluding Natural Gas | 632 | 323 | 372 | 278 | 13,622 | 6,941 | 7,340 | 6,798 | 46.4 | 46.5 | 50.7 | 41.0 | 11.37 |
| Air-Conditioning Not Performed | 146 | Q | 35 | 21 | 2,884 | 864 | 415 | 304 | 50.7 | 97.0 | 84.2 | 68.1 | 20.75 |
| Water-Heating Energy Source | | | | | | | | | | | | | |
| Natural Gas | 544 | 341 | 286 | 240 | 11,463 | 5,798 | 4,488 | 4,174 | 47.4 | 58.9 | 63.6 | 57.5 | 10.74 |
| Other Excluding Natural Gas | 207 | 85 | 121 | 82 | 4,254 | 2,271 | 2,995 | 2,989 | 48.7 | 37.4 | 40.3 | 27.3 | 22.07 |
| Water Heating Not Performed | 57 | 19 | 22 | 13 | 1,334 | 398 | 621 | 358 | 42.7 | 46.8 | 36.0 | 36.5 | 25.39 |
| Cooking Energy Source | | | | | | | | | | | | | |
| Natural Gas | 284 | 149 | 159 | 131 | 5,864 | 2,923 | 2,973 | 3,006 | 48.4 | 51.0 | 53.5 | 43.6 | 15.19 |
| Other Excluding Natural Gas | Q | Q | 46 | 15 | 1,840 | 1,002 | 851 | 409 | 44.8 | 80.9 | 54.4 | 36.1 | 29.99 |
| Cooking Not Performed | 442 | 215 | 224 | 189 | 9,347 | 4,542 | 4,279 | 4,107 | 47.3 | 47.3 | 52.2 | 46.0 | 11.81 |
| Manufacturing Energy Source | | | | | | | | | | | | | |
| Natural Gas | Q | 31 | Q | Q | 261 | 255 | Q | Q | Q | 121.7 | Q | Q | 36.85 |
| Other Excluding Natural Gas | Q | 16 | Q | 11 | 1,699 | 284 | 566 | 391 | 47.3 | 57.5 | 101.4 | 29.0 | 29.05 |
| Manufacturing Not Performed | 677 | 398 | 346 | 317 | 15,091 | 7,929 | 7,380 | 6,967 | 44.9 | 50.2 | 46.9 | 45.5 | 9.76 |

See footnotes at end of table.

Table 44. Natural Gas Consumption and Conditional Energy Intensity by Year Constructed (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | | RSE Row Factor |
|--|--|-----------|-----------|-----------|---|-----------|-----------|-----------|---|-----------|-----------|-----------|----------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | |
| | RSE Column Factor | 1.173 | 1.110 | 1.160 | 1.180 | 0.920 | 0.795 | 0.905 | 0.910 | 0.948 | 0.920 | 1.171 | 0.995 |
| HEATING AND COOLING | | | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | | | |
| Not Heated | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | 60 | 22 | 25 | 18 | 3,141 | 986 | 1,078 | 776 | 19.2 | 22.4 | 23.0 | 22.9 | 22.10 |
| 51 to 99 | 91 | 51 | Q | 55 | 2,278 | 1,063 | 1,076 | 1,530 | 39.8 | 48.0 | 65.2 | 35.9 | 21.50 |
| 100 | 650 | 370 | 327 | 255 | 11,477 | 6,313 | 5,875 | 5,150 | 56.7 | 58.6 | 55.7 | 49.5 | 11.60 |
| Percent Cooled | | | | | | | | | | | | | |
| Not Cooled | 146 | Q | 35 | 21 | 2,884 | 864 | 415 | 304 | 50.7 | 97.0 | 84.2 | 68.1 | 20.75 |
| 1 to 50 | 265 | 140 | 130 | 64 | 6,737 | 2,640 | 2,170 | 1,674 | 39.4 | 53.2 | 59.8 | 38.3 | 17.13 |
| 51 to 99 | 125 | 92 | 91 | 104 | 2,900 | 2,240 | 1,994 | 2,026 | 43.0 | 41.1 | 45.8 | 51.4 | 16.82 |
| 100 | 272 | 129 | 173 | 146 | 4,531 | 2,723 | 3,525 | 3,517 | 60.0 | 47.3 | 49.1 | 41.4 | 16.06 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | | | | |
| Present in Building | 269 | 131 | 118 | 135 | 3,969 | 2,405 | 2,639 | 3,071 | 67.7 | 54.5 | 44.8 | 43.8 | 16.85 |
| Not Present | 539 | 314 | 311 | 200 | 13,082 | 6,062 | 5,464 | 4,451 | 41.2 | 51.8 | 56.9 | 45.0 | 11.39 |
| LIGHTING AND REFRIGERATION | | | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | 138 | 54 | 47 | 30 | 4,270 | 1,036 | 759 | 950 | 32.4 | 51.9 | 61.7 | 31.1 | 19.46 |
| 51 to 99 | 204 | 122 | 138 | 86 | 4,512 | 2,344 | 2,531 | 2,627 | 45.2 | 52.2 | 54.6 | 32.7 | 16.49 |
| 100 | 463 | 267 | 240 | 219 | 8,193 | 5,056 | 4,779 | 3,934 | 56.5 | 52.7 | 50.3 | 55.7 | 13.46 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | | | | | |
| Incandescent Lamps | 563 | 289 | 286 | 182 | 11,887 | 5,684 | 5,399 | 4,317 | 47.3 | 50.8 | 53.0 | 42.2 | 12.50 |
| Fluorescent Lamps | 783 | 440 | 412 | 329 | 16,604 | 8,388 | 7,958 | 7,364 | 47.1 | 52.4 | 51.7 | 44.6 | 10.35 |
| High-Intensity Discharge Lamps | 251 | 160 | 126 | 118 | 4,073 | 2,562 | 2,925 | 3,008 | 61.6 | 62.4 | 43.0 | 39.1 | 20.13 |
| Other Lamps | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| High-Efficiency Ballasts | 290 | 205 | 181 | 188 | 5,852 | 3,521 | 3,748 | 3,727 | 49.5 | 58.3 | 48.4 | 50.3 | 15.39 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | | | | | |
| Commercial | | | | | | | | | | | | | |
| Refrigeration Units | 368 | 208 | 222 | 172 | 7,416 | 4,244 | 4,180 | 3,827 | 49.6 | 48.9 | 53.1 | 45.0 | 14.06 |
| Freezers | 338 | 198 | 208 | 158 | 5,700 | 4,119 | 3,939 | 3,520 | 59.2 | 48.1 | 52.8 | 44.9 | 14.41 |
| Residential | | | | | | | | | | | | | |
| Refrigerators | 611 | 355 | 307 | 239 | 13,076 | 6,450 | 5,838 | 5,989 | 46.7 | 55.1 | 52.5 | 39.9 | 12.53 |
| Freezers | 256 | 94 | 97 | 83 | 4,114 | 1,806 | 1,805 | 1,455 | 62.2 | 51.9 | 53.6 | 56.9 | 17.58 |
| Ice-Making Machines | 356 | 191 | 234 | 181 | 5,964 | 3,733 | 4,158 | 3,769 | 59.8 | 51.2 | 56.3 | 48.1 | 14.03 |
| Refrigerated Vending Machines | 532 | 346 | 329 | 260 | 9,694 | 6,114 | 6,167 | 5,815 | 54.9 | 56.6 | 53.4 | 44.7 | 12.42 |
| Water Coolers | 544 | 367 | 305 | 252 | 11,141 | 6,942 | 6,321 | 5,724 | 48.8 | 52.8 | 48.2 | 44.1 | 12.16 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | 91.7 | Q | Q | Q | 31.55 |
| ENERGY MANAGEMENT | | | | | | | | | | | | | |
| Occupant Control | | | | | | | | | | | | | |
| Any Control of Heating | 384 | 161 | 161 | 164 | 8,707 | 3,236 | 3,791 | 3,360 | 44.1 | 49.9 | 42.6 | 48.7 | 13.22 |
| With Thermostats | 357 | 141 | 151 | 155 | 7,995 | 2,763 | 3,570 | 3,175 | 44.6 | 50.9 | 42.2 | 48.8 | 13.00 |
| Any Control of Cooling | 365 | 157 | 165 | 157 | 8,761 | 3,135 | 3,845 | 3,248 | 41.7 | 50.1 | 42.9 | 48.4 | 12.03 |
| With Thermostats | 311 | 149 | 155 | 149 | 7,603 | 2,899 | 3,686 | 3,056 | 40.9 | 51.2 | 42.0 | 48.7 | 13.86 |
| Computerized Energy Management and Control System | | | | | | | | | | | | | |
| Present in Building | 170 | 89 | 112 | 110 | 2,792 | 2,217 | 2,436 | 3,187 | 61.0 | 40.3 | 46.1 | 34.5 | 10.02 |
| Controls Heating and Cooling | 170 | 87 | 105 | 105 | 2,635 | 2,102 | 2,317 | 3,105 | 64.5 | 41.5 | 45.5 | 33.7 | 10.28 |
| Controls Lighting | Q | 18 | 30 | 35 | Q | 530 | 664 | 1,148 | 69.2 | 33.9 | 45.5 | 30.7 | 28.63 |
| Controls Other | Q | Q | 31 | 9 | Q | Q | 525 | 368 | Q | Q | 59.0 | 24.8 | 34.10 |

See footnotes at end of table.

Table 44. Natural Gas Consumption and Conditional Energy Intensity by Year Constructed (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | | | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | | | RSE Row Factor |
|--|--|-----------|-----------|-----------|----------------|---|-----------|-----------|----------------|---|-----------|-----------|-------|-------------------|
| | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | 1959 or Before | 1960-1969 | 1970-1979 | 1980-1989 | | |
| RSE Column Factor | 1.173 | 1.110 | 1.160 | 1.120 | 0.625 | 0.705 | 0.690 | 0.650 | 0.600 | 0.650 | 0.720 | 0.680 | | |
| Other Energy Management | | | | | | | | | | | | | | |
| Regular HVAC Maintenance | 607 | 364 | 348 | 267 | 10,525 | 6,497 | 6,608 | 6,217 | 57.7 | 56.0 | 52.6 | 43.0 | 14.20 | |
| Participated in Utility Conservation Program | 132 | 103 | 109 | 49 | 2,532 | 1,808 | 1,825 | 1,077 | 52.0 | 56.9 | 59.7 | 45.4 | 19.43 | |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

nc No cases in responding sample.

a Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 45. Consumption and Conditional Energy Intensity for Buildings Heated with Natural Gas

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | RSE Row Factor |
|--|--|---|---|---|---|---|----------------|
| | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | |
| | RSE Column Factor: | 1.173 | 1.192 | 0.879 | 0.908 | 0.939 | 0.964 |
| All Buildings | 1,804 | 1,728 | 33,017 | 31,110 | 54.6 | 55.5 | 6.80 |
| Building Floorspace (Square Feet) | | | | | | | |
| 1,001 to 5,000 | 257 | 253 | 3,111 | 3,018 | 82.7 | 83.8 | 6.27 |
| 5,001 to 10,000 | 242 | 220 | 3,601 | 3,470 | 67.3 | 63.4 | 10.76 |
| 10,001 to 25,000 | 241 | 235 | 4,886 | 4,705 | 49.3 | 50.0 | 7.23 |
| 25,001 to 50,000 | 282 | 271 | 4,820 | 4,521 | 58.4 | 59.9 | 11.00 |
| 50,001 to 100,000 | 226 | 219 | 5,302 | 4,882 | 42.6 | 44.8 | 11.22 |
| 100,001 to 200,000 | 209 | 201 | 4,406 | 4,224 | 47.5 | 47.6 | 18.51 |
| 200,001 to 500,000 | 210 | 195 | 4,303 | 3,793 | 48.9 | 51.3 | 28.30 |
| Over 500,000 | 136 | 134 | 2,588 | 2,496 | 52.6 | 53.8 | 31.96 |
| Year Constructed | | | | | | | |
| 1899 or Before | 50 | 49 | 889 | 848 | 56.4 | 57.8 | 21.47 |
| 1900 to 1919 | 112 | 112 | 2,602 | 2,578 | 43.2 | 43.5 | 31.15 |
| 1920 to 1945 | 215 | 210 | 4,314 | 4,027 | 49.9 | 52.2 | 17.91 |
| 1946 to 1959 | 339 | 331 | 5,984 | 5,804 | 56.6 | 57.0 | 10.77 |
| 1960 to 1969 | 414 | 407 | 7,092 | 6,819 | 58.4 | 59.6 | 10.91 |
| 1970 to 1979 | 371 | 350 | 6,563 | 5,910 | 56.6 | 59.3 | 13.18 |
| 1980 to 1983 | 106 | 101 | 1,766 | 1,611 | 59.8 | 62.4 | 13.52 |
| 1984 to 1986 | 127 | 108 | 2,399 | 2,273 | 52.8 | 47.5 | 12.80 |
| 1987 to 1989 | 70 | 61 | 1,407 | 1,241 | 49.4 | 48.8 | 19.08 |
| BUILDING USE | | | | | | | |
| Principal Building Activity | | | | | | | |
| Assembly | 164 | 162 | 3,837 | 3,733 | 42.6 | 43.4 | 12.17 |
| Education | 256 | 251 | 5,082 | 4,779 | 50.3 | 52.6 | 9.18 |
| Food Sales | 21 | 18 | 438 | 332 | 48.5 | 53.9 | 24.56 |
| Food Service | 96 | 96 | 640 | 632 | 150.6 | 151.6 | 13.15 |
| Health Care | 164 | 158 | 1,337 | 1,211 | 123.0 | 130.3 | 17.60 |
| Lodging | 138 | 135 | 1,610 | 1,560 | 85.7 | 86.5 | 15.06 |
| Mercantile and Service | 384 | 367 | 7,427 | 6,961 | 51.7 | 52.7 | 10.80 |
| Office | 212 | 208 | 4,990 | 4,814 | 42.5 | 43.2 | 10.25 |
| Parking Garage | Q | Q | Q | Q | Q | Q | b |
| Public Order and Safety | 24 | 18 | 383 | 314 | 61.6 | 57.0 | 36.00 |
| Warehouse | 197 | 189 | 4,540 | 4,277 | 43.3 | 44.3 | 21.34 |
| Other | 96 | 75 | 788 | 595 | 121.8 | 125.6 | 22.89 |
| Vacant | 44 | 43 | Q | Q | Q | Q | 41.41 |
| Weekly Operating Hours | | | | | | | |
| 39 or Fewer | 94 | 94 | 2,335 | 2,279 | 40.3 | 41.1 | 11.04 |
| 40 to 48 | 360 | 350 | 7,848 | 7,538 | 45.8 | 46.4 | 6.21 |
| 49 to 60 | 300 | 295 | 7,124 | 6,664 | 42.2 | 44.2 | 10.24 |
| 61 to 84 | 306 | 284 | 6,037 | 5,643 | 50.6 | 50.4 | 10.79 |
| 85 to 167 | 277 | 272 | 5,012 | 4,754 | 55.3 | 57.2 | 17.53 |
| 168 (Open Continuously) | 467 | 434 | 4,661 | 4,230 | 100.2 | 102.5 | 13.23 |
| Workers | | | | | | | |
| 4 or Fewer | 268 | 263 | 6,085 | 5,940 | 44.0 | 44.4 | 10.26 |
| 5 to 9 | 190 | 184 | 4,494 | 4,344 | 42.2 | 42.5 | 10.10 |
| 10 to 19 | 207 | 189 | 3,844 | 3,629 | 53.8 | 52.0 | 8.97 |
| 20 to 49 | 297 | 290 | 5,437 | 5,110 | 54.6 | 56.8 | 10.03 |
| 50 to 99 | 235 | 224 | 4,576 | 4,304 | 51.3 | 52.0 | 15.80 |
| 100 to 249 | 326 | 316 | 3,936 | 3,674 | 82.7 | 86.1 | 16.88 |
| 250 or More | 283 | 261 | 4,645 | 4,109 | 60.8 | 63.6 | 15.75 |

See footnote at end of table.

NATURAL GAS

Table 45. Consumption and Conditional Energy Intensity for Buildings Heated with Natural Gas (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | RSE Row Factor |
|--------------------------------------|--|---|---|---|---|---|----------------|
| | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | |
| | RSE Column Factor: | 1.173 | 1.192 | 0.879 | 0.806 | 0.839 | 0.854 |
| Ownership and Occupancy | | | | | | | |
| Nongovernment Owned | 1,417 | 1,354 | 25,913 | 24,445 | 54.7 | 55.4 | 8.95 |
| Owner Occupied | 1,144 | 1,085 | 19,466 | 18,308 | 58.8 | 59.3 | 7.79 |
| Single Establishment | 955 | 907 | 15,006 | 14,198 | 63.6 | 63.9 | 9.74 |
| Multiple Establishment | 190 | 178 | 4,460 | 4,111 | 42.5 | 43.2 | 11.62 |
| Nonowner Occupied | 272 | 269 | 6,447 | 6,136 | 42.3 | 43.8 | 12.47 |
| Single Establishment | 154 | 153 | 3,430 | 3,308 | 45.0 | 46.2 | 10.29 |
| Multiple Establishment | 88 | 87 | 2,767 | 2,591 | 31.9 | 33.6 | 15.97 |
| Vacant | Q | Q | 250 | 237 | Q | Q | 34.58 |
| Government Owned | 387 | 374 | 7,104 | 6,665 | 54.5 | 56.2 | 9.99 |
| Federal | 20 | 17 | 387 | 332 | 51.6 | 52.6 | 26.21 |
| State | 97 | 91 | 1,514 | 1,388 | 64.0 | 65.4 | 18.51 |
| Local | 270 | 266 | 5,203 | 4,945 | 52.0 | 53.8 | 11.92 |
| Multibuilding Facility | | | | | | | |
| Not on Multibuilding Facility | 1,051 | 1,023 | 21,397 | 20,380 | 49.1 | 50.2 | 7.12 |
| Part of Multibuilding Facility | 753 | 706 | 11,620 | 10,730 | 64.8 | 65.8 | 9.66 |
| On Facility with Central Plant | 325 | 310 | 2,843 | 2,574 | 114.2 | 120.3 | 20.46 |
| LOCATION | | | | | | | |
| Census Region | | | | | | | |
| Northeast | 317 | 298 | 5,970 | 5,319 | 53.1 | 56.0 | 17.95 |
| Midwest | 768 | 757 | 11,709 | 11,352 | 65.6 | 66.7 | 9.22 |
| South | 431 | 392 | 9,098 | 8,609 | 47.4 | 45.6 | 13.84 |
| West | 287 | 281 | 6,241 | 5,830 | 46.1 | 48.1 | 6.36 |
| Census Division | | | | | | | |
| Northeast | | | | | | | |
| New England | 36 | 29 | 804 | 603 | 44.5 | 48.0 | 20.59 |
| Middle Atlantic | 281 | 269 | 5,166 | 4,716 | 54.5 | 57.0 | 19.57 |
| Midwest | | | | | | | |
| East North Central | 518 | 512 | 8,039 | 7,835 | 64.5 | 65.4 | 11.44 |
| West North Central | 250 | 245 | 3,670 | 3,517 | 68.1 | 69.6 | 16.12 |
| South | | | | | | | |
| South Atlantic | 174 | 167 | 2,982 | 2,787 | 58.4 | 59.9 | 23.63 |
| East South Central | 110 | 88 | 1,837 | 1,692 | 60.0 | 52.0 | 25.35 |
| West South Central | 147 | 138 | 4,279 | 4,130 | 34.4 | 33.3 | 15.17 |
| West | | | | | | | |
| Mountain | 127 | 124 | 2,218 | 2,031 | 57.3 | 60.8 | 8.37 |
| Pacific | 160 | 157 | 4,023 | 3,799 | 39.9 | 41.4 | 14.44 |
| Metropolitan Status | | | | | | | |
| Metropolitan | 1,370 | 1,300 | 26,890 | 25,233 | 51.0 | 51.5 | 8.67 |
| Nonmetropolitan | 434 | 428 | 6,127 | 5,877 | 70.8 | 72.9 | 13.71 |
| Climate Zone: 45-Year Average | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | |
| Over 7,000 HDD | 235 | 232 | 2,737 | 2,586 | 85.7 | 89.6 | 14.34 |
| 5,500-7,000 HDD | 746 | 723 | 12,007 | 11,329 | 62.1 | 63.9 | 9.70 |
| 4,000-5,499 HDD | 353 | 340 | 6,962 | 6,487 | 50.6 | 52.3 | 17.98 |
| Under 4,000 HDD | 304 | 276 | 6,511 | 6,080 | 46.7 | 45.4 | 16.03 |
| 2,000 CDD or More and -- | | | | | | | |
| Under 4,000 HDD | 167 | 157 | 4,799 | 4,628 | 34.9 | 34.0 | 17.52 |

See footnote at end of table.

Table 45. Consumption and Conditional Energy Intensity for Buildings Heated with Natural Gas (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | RSE Row Factor |
|--|--|---|---|---|---|---|----------------|
| | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | |
| RSE Column Factor: | 1.173 | 1.192 | 0.879 | 0.908 | 0.939 | 0.954 | |
| 1989 Degree-Days | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | |
| Over 7,000 HDD | 350 | 339 | 4,559 | 4,215 | 76.8 | 80.3 | 13.06 |
| 5,500-7,000 HDD | 834 | 812 | 13,983 | 13,270 | 59.6 | 61.2 | 11.47 |
| 4,000-5,499 HDD | 169 | 164 | 3,661 | 3,384 | 46.3 | 48.5 | 15.99 |
| Under 4,000 HDD | 297 | 270 | 6,524 | 6,122 | 45.6 | 44.2 | 17.18 |
| 2,000 CDD or More and -- | | | | | | | |
| Under 4,000 HDD | 153 | 143 | 4,290 | 4,119 | 35.7 | 34.7 | 16.22 |
| STRUCTURE | | | | | | | |
| Floors | | | | | | | |
| 1 | 657 | 611 | 12,530 | 11,710 | 52.4 | 52.2 | 9.25 |
| 2 | 508 | 497 | 8,846 | 8,248 | 57.4 | 60.2 | 10.34 |
| 3 | 224 | 213 | 4,712 | 4,490 | 47.5 | 47.5 | 12.61 |
| 4 to 6 | 254 | 246 | 4,384 | 4,233 | 58.0 | 58.2 | 15.70 |
| 7 or More | 162 | 160 | 2,545 | 2,429 | 63.5 | 66.0 | 21.43 |
| Wall Materials | | | | | | | |
| Masonry | 1,341 | 1,299 | 23,958 | 22,582 | 56.0 | 57.5 | 7.02 |
| Siding or Shingles | 93 | 92 | 2,082 | 2,032 | 44.8 | 45.5 | 15.04 |
| Metal Panels | 177 | 152 | 2,471 | 2,263 | 71.6 | 67.2 | 24.32 |
| Concrete Panels | 119 | 111 | 3,307 | 3,070 | 36.1 | 36.0 | 14.97 |
| Window Glass | 45 | 45 | 646 | 622 | 69.7 | 72.2 | 27.89 |
| Other | 29 | 29 | 555 | 542 | 51.7 | 52.9 | 34.28 |
| Roof Materials | | | | | | | |
| Built-Up | 898 | 878 | 17,687 | 16,646 | 50.7 | 52.7 | 8.30 |
| Shingles (Not Wood) | 295 | 289 | 5,776 | 5,548 | 51.2 | 52.1 | 12.82 |
| Metal Surfacing | 209 | 174 | 3,466 | 3,159 | 60.3 | 55.2 | 20.33 |
| Synthetic or Rubber | 230 | 220 | 3,509 | 3,273 | 65.5 | 67.1 | 11.77 |
| Slate or Tile | 72 | 72 | 1,230 | 1,204 | 58.8 | 59.5 | 18.87 |
| Concrete | 20 | 20 | 450 | 420 | 44.8 | 46.9 | 25.29 |
| Wooden Materials | 25 | 22 | 434 | 394 | 57.2 | 54.6 | 24.39 |
| Other | Q | Q | Q | Q | 118.0 | 118.0 | 15.36 |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | |
| Roof or Ceiling Insulation | 1,360 | 1,291 | 23,842 | 22,281 | 57.0 | 57.9 | 6.71 |
| Wall Insulation | 937 | 881 | 15,936 | 14,861 | 58.8 | 59.3 | 7.74 |
| Storm or Multiple Glazing | 852 | 818 | 13,674 | 12,728 | 62.3 | 64.2 | 7.16 |
| Tinted, Reflective, or Shading Glass | 646 | 610 | 11,558 | 10,561 | 55.9 | 57.7 | 9.05 |
| Exterior or Interior Shadings or Awnings | 732 | 708 | 14,280 | 13,419 | 51.2 | 52.8 | 6.76 |
| Weather Stripping or Caulking | 1,336 | 1,271 | 23,790 | 22,481 | 56.2 | 56.5 | 5.76 |
| None of the Above | 119 | 118 | 3,282 | 3,096 | 36.3 | 38.0 | 26.84 |
| ENERGY SOURCES AND END USES* | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | |
| Electricity | 1,801 | 1,725 | 33,004 | 31,102 | 54.6 | 55.5 | 6.31 |
| Natural Gas | 1,804 | 1,728 | 33,017 | 31,110 | 54.6 | 55.5 | 6.30 |
| Fuel Oil | 381 | 361 | 5,401 | 4,716 | 70.5 | 76.5 | 17.30 |
| District Heat | Q | Q | Q | Q | 90.2 | Q | 29.16 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | b |
| Propane | Q | Q | 980 | 878 | 95.0 | 102.9 | 31.51 |
| Other | 21 | 20 | 454 | Q | 45.3 | 47.6 | 34.12 |

See footnote at end of table.

NATURAL GAS

Table 45. Consumption and Conditional Energy Intensity for Buildings Heated with Natural Gas (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | RSE Flow Factor |
|---|--|---|---|---|---|---|-----------------|
| | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | |
| | RSE Column Factor: | 1.173 | 1.192 | 0.879 | 0.908 | 0.939 | 0.954 |
| Energy End Uses (Solely or in Combination) | | | | | | | |
| Heated Buildings | 1,804 | 1,728 | 33,017 | 31,110 | 54.6 | 55.5 | 6.30 |
| Air-Conditioned Buildings | 1,534 | 1,461 | 29,458 | 27,736 | 52.1 | 52.7 | 6.77 |
| Buildings with Water Heating | 1,697 | 1,622 | 30,438 | 28,662 | 55.7 | 56.6 | 6.42 |
| Buildings with Cooking | 805 | 775 | 13,341 | 12,485 | 60.3 | 62.0 | 6.63 |
| Buildings with Manufacturing | 221 | 215 | 2,813 | 2,634 | 78.5 | 81.5 | 22.50 |
| Space-Heating Energy Source | | | | | | | |
| Natural Gas | 1,804 | 1,728 | 33,017 | 31,110 | 54.6 | 55.5 | 6.30 |
| Main | 1,728 | 1,728 | 31,110 | 31,110 | 55.5 | 55.5 | 6.40 |
| With Secondary | 544 | 544 | 7,887 | 7,887 | 69.0 | 69.0 | 12.67 |
| Electricity Only | 152 | 152 | 3,620 | 3,620 | 41.9 | 41.9 | 16.83 |
| Other Energy Sources or Combinations | 349 | 349 | 4,134 | 4,134 | 84.5 | 84.5 | 16.60 |
| With No Secondary | 1,184 | 1,184 | 23,222 | 23,222 | 51.0 | 51.0 | 6.39 |
| Secondary | 76 | -- | 1,907 | -- | 39.9 | -- | 22.64 |
| Other Excluding Natural Gas | -- | -- | -- | -- | -- | -- | -- |
| Building Not Heated | -- | -- | -- | -- | -- | -- | -- |
| Main Space-Heating Energy Source | | | | | | | |
| Electricity | 74 | Q | 1,543 | Q | 48.0 | Q | 26.66 |
| Natural Gas | 1,728 | 1,728 | 31,110 | 31,110 | 55.5 | 55.5 | 6.40 |
| Fuel Oil | 13 | Q | 523 | Q | 24.2 | Q | 26.43 |
| District Heat | Q | Q | 383 | Q | 61.6 | Q | 46.20 |
| Propane | Q | Q | Q | Q | Q | Q | b |
| Other | Q | Q | Q | Q | Q | Q | b |
| Ability to Switch Main Heating Fuel | | | | | | | |
| No Alternate | 1,214 | 1,174 | 23,356 | 22,256 | 52.0 | 52.7 | 6.04 |
| Alternate Main Heating Fuel | | | | | | | |
| Electricity | 71 | 71 | 2,849 | 2,845 | 25.1 | 24.8 | 17.45 |
| Natural Gas | 36 | Q | 866 | Q | 41.8 | Q | 26.47 |
| Fuel Oil | 391 | 391 | 4,477 | 4,466 | 87.4 | 87.5 | 12.73 |
| Propane | 68 | 68 | 1,041 | 1,036 | 65.5 | 65.7 | 23.65 |
| Other | Q | Q | Q | Q | Q | Q | b |
| Air-Conditioning Energy Source | | | | | | | |
| Natural Gas | 117 | 117 | 1,854 | 1,825 | 63.3 | 64.0 | 15.76 |
| Other Excluding Natural Gas | 1,417 | 1,345 | 27,604 | 25,912 | 51.3 | 51.9 | 7.32 |
| Air-Conditioning Not Performed | 270 | 267 | 3,559 | 3,373 | 75.8 | 79.1 | 16.21 |

See footnote at end of table.

Table 45. Consumption and Conditional Energy Intensity for Buildings Heated with Natural Gas (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | RSE Row Factor |
|--|--|---|---|---|---|---|----------------|
| | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | |
| RSE Column Factor | 1.147 | 1.166 | 0.632 | 0.663 | 1.019 | 1.029 | |
| Water-Heating Energy Source | | | | | | | |
| Natural Gas | 1,306 | 1,284 | 22,127 | 21,458 | 590.3 | 598.4 | 6.83 |
| Other Excluding Natural Gas | 390 | 338 | 8,311 | 7,204 | 469.7 | 469.7 | 12.90 |
| Water Heating Not Performed | 108 | 106 | 2,579 | 2,448 | 417.2 | 432.2 | 15.97 |
| Cooking Energy Source | | | | | | | |
| Natural Gas | 588 | 576 | 9,904 | 9,409 | 593.6 | 612.3 | 8.46 |
| Other Excluding Natural Gas | 217 | 198 | 3,437 | 3,076 | 630.7 | 645.0 | 23.95 |
| Cooking Not Performed | 999 | 954 | 19,677 | 18,625 | 508.0 | 512.0 | 8.01 |
| Manufacturing Energy Source | | | | | | | |
| Natural Gas | 105 | 100 | 634 | 550 | 1,651.2 | 1,825.1 | 20.76 |
| Other Excluding Natural Gas | 116 | 114 | 2,178 | 2,083 | 532.4 | 548.1 | 27.45 |
| Manufacturing Not Performed | 1,583 | 1,514 | 30,205 | 28,476 | 524.2 | 531.5 | 5.70 |
| HEATING AND COOLING | | | | | | | |
| Percent Heated | | | | | | | |
| Not Heated | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | 118 | 110 | 5,428 | 5,170 | 217.8 | 212.5 | 14.17 |
| 51 to 99 | 240 | 238 | 4,577 | 4,460 | 524.4 | 534.0 | 16.35 |
| 100 | 1,445 | 1,379 | 22,964 | 21,432 | 629.1 | 643.4 | 8.12 |
| Percent Cooled | | | | | | | |
| Not Cooled | 270 | 267 | 3,559 | 3,373 | 757.7 | 790.6 | 18.21 |
| 1 to 50 | 573 | 546 | 11,542 | 10,769 | 496.0 | 506.8 | 13.31 |
| 51 to 99 | 365 | 338 | 7,082 | 6,756 | 515.9 | 500.4 | 10.11 |
| 100 | 597 | 578 | 10,834 | 10,212 | 550.6 | 565.6 | 8.88 |
| Year Main Central Chiller Installed | | | | | | | |
| 1959 or Before | 49 | 49 | 869 | 819 | 563.8 | 592.6 | 26.22 |
| 1960 to 1969 | 107 | 101 | 1,819 | 1,736 | 586.4 | 579.7 | 14.79 |
| 1970 to 1979 | 112 | 112 | 2,086 | 2,064 | 539.2 | 541.5 | 16.22 |
| 1980 to 1986 | 136 | 134 | 1,947 | 1,840 | 698.8 | 729.2 | 24.46 |
| 1987 to 1989 | 56 | 55 | 1,099 | 1,031 | 507.1 | 533.8 | 30.25 |
| Year Packaged Cooling System Installed | | | | | | | |
| 1959 or Before | 63 | 57 | 1,109 | 1,074 | 564.0 | 528.2 | 28.10 |
| 1960 to 1969 | 170 | 164 | 2,855 | 2,707 | 594.0 | 607.7 | 12.31 |
| 1970 to 1979 | 343 | 328 | 6,796 | 6,435 | 505.4 | 509.3 | 11.34 |
| 1980 to 1986 | 276 | 254 | 6,382 | 5,992 | 431.9 | 424.7 | 11.48 |
| 1987 to 1989 | 239 | 229 | 4,335 | 4,072 | 551.4 | 561.7 | 14.58 |
| Computer Area with Separate Air-Conditioning System | | | | | | | |
| Present in Building | 569 | 525 | 9,006 | 8,274 | 631.3 | 634.0 | 11.13 |
| Not Present | 1,236 | 1,204 | 24,011 | 22,836 | 514.6 | 527.0 | 8.69 |
| LIGHTING | | | | | | | |
| Percent Lit When Open | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | 247 | 240 | 5,858 | 5,730 | 420.9 | 418.4 | 10.20 |
| 51 to 99 | 504 | 481 | 9,720 | 9,027 | 519.0 | 532.6 | 10.81 |
| 100 | 1,046 | 1,001 | 17,305 | 16,218 | 604.6 | 617.0 | 8.06 |
| ENERGY MANAGEMENT | | | | | | | |
| Occupant Control | | | | | | | |
| Any Control of Heating | 785 | 743 | 15,632 | 14,747 | 502.1 | 503.7 | 8.41 |
| With Thermostats | 723 | 683 | 14,168 | 13,448 | 510.4 | 507.9 | 8.98 |
| Any Control of Cooling | 755 | 714 | 15,395 | 14,601 | 490.5 | 488.9 | 8.86 |
| With Thermostats | 680 | 640 | 13,824 | 13,092 | 492.1 | 489.0 | 9.47 |

See footnotes at end of table.

Table 45. Consumption and Conditional Energy Intensity for Buildings Heated with Natural Gas (Continued)

| Building Characteristics | Total Natural Gas Consumption (billion cubic feet) | | Total Floorspace of Buildings Using Natural Gas (million square feet) | | Natural Gas Energy Intensity (cubic feet/sq. ft.) | | RSE Row Factor |
|--|--|---|---|---|---|---|----------------|
| | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | All Buildings Heated with Natural Gas | Buildings with Natural Gas Main Heating | |
| RSE Column Factor: | 1.147 | 1.196 | 0.832 | 0.863 | 1.016 | 1.026 | |
| Reduced Use During Off-Hours | | | | | | | |
| Heating Only | 260 | 257 | 3,562 | 3,380 | 728.7 | 760.9 | 14.95 |
| Cooling Only | 125 | 123 | 1,767 | 1,718 | 708.1 | 713.9 | 25.98 |
| Heating and Cooling | 1,044 | 1,011 | 22,644 | 21,452 | 461.1 | 471.4 | 7.47 |
| Computerized Energy Management and Control System | | | | | | | |
| Present in Building | 399 | 380 | 7,676 | 7,150 | 520.2 | 531.3 | 9.74 |
| Controls Heating and Cooling | 386 | 368 | 7,301 | 6,787 | 529.4 | 541.5 | 9.67 |
| Controls Lighting | 85 | 81 | 2,133 | 1,990 | 396.8 | 406.9 | 20.41 |
| Controls Other | 109 | 109 | 1,545 | 1,540 | 707.5 | 709.5 | 31.34 |
| Other Energy Management | | | | | | | |
| Regular HVAC Maintenance | 1,422 | 1,369 | 23,526 | 22,012 | 604.4 | 621.8 | 6.79 |
| Participated in Utility Conservation Program | 365 | 350 | 5,890 | 5,633 | 620.5 | 620.8 | 12.49 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

NC No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

-- Data not applicable.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 46. Natural Gas Conditional Energy Intensity and Distribution of Building-Level Intensities

| Building Characteristics | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Natural Gas Consumed (billion cubic feet) | Total Consumed per Square Foot (cubic feet) | Distribution of Building-Level Intensities (cubic feet/sq. ft.) | | |
|--|--------------------------------|--|---|---|---|--------|-----------------|
| | | | | | 25th Percentile | Median | 75th Percentile |
| All Buildings | 2,420 | 41,143 | 2,015 | 49.0 | 16.6 | 43.8 | 92.9 |
| Building Floorspace (Square Feet) | | | | | | | |
| 1,001 to 5,000 | 1,225 | 3,423 | 294 | 85.8 | 28.4 | 66.1 | 150.8 |
| 5,001 to 10,000 | 532 | 3,955 | 258 | 65.2 | 14.1 | 43.9 | 85.9 |
| 10,001 to 25,000 | 355 | 5,752 | 270 | 46.9 | 10.8 | 29.1 | 59.3 |
| 25,001 to 50,000 | 153 | 5,451 | 300 | 55.1 | 11.2 | 26.4 | 60.5 |
| 50,001 to 100,000 | 88 | 6,207 | 242 | 38.9 | 9.6 | 24.2 | 50.9 |
| 100,001 to 200,000 | 45 | 6,018 | 231 | 38.5 | 3.5 | 18.8 | 42.3 |
| 200,001 to 500,000 | 17 | 5,054 | 222 | 43.9 | 8.2 | 31.8 | 54.8 |
| Over 500,000 | 6 | 5,284 | 198 | 37.4 | 2.2 | 5.8 | 31.1 |
| Year Constructed | | | | | | | |
| 1899 or Before | 98 | 1,004 | 51 | 50.8 | 11.9 | 43.8 | 90.1 |
| 1900 to 1919 | 152 | 3,068 | 120 | 39.1 | 15.1 | 41.2 | 132.1 |
| 1920 to 1945 | 396 | 5,741 | 237 | 41.3 | 11.3 | 30.0 | 77.0 |
| 1946 to 1959 | 512 | 7,238 | 399 | 55.2 | 16.9 | 46.7 | 96.9 |
| 1960 to 1969 | 454 | 8,467 | 445 | 52.5 | 21.5 | 46.7 | 87.5 |
| 1970 to 1979 | 420 | 8,103 | 428 | 52.9 | 18.4 | 48.5 | 107.4 |
| 1980 to 1983 | 138 | 2,189 | 114 | 52.1 | 26.4 | 58.5 | 104.6 |
| 1984 to 1986 | 148 | 3,460 | 138 | 39.7 | 15.7 | 30.8 | 73.0 |
| 1987 to 1989 | 102 | 1,873 | 83 | 44.1 | 11.2 | 29.7 | 71.2 |
| BUILDING USE | | | | | | | |
| Principal Building Activity | | | | | | | |
| Assembly | 345 | 4,304 | 169 | 39.2 | 14.0 | 39.3 | 67.8 |
| Education | 199 | 6,640 | 314 | 47.3 | 20.6 | 49.5 | 88.5 |
| Food Sales | 60 | 548 | 27 | 48.4 | 31.9 | 62.3 | 86.5 |
| Food Service | 188 | 818 | 124 | 152.0 | 89.1 | 181.7 | 305.1 |
| Health Care | 40 | 1,602 | 181 | 113.1 | 10.6 | 32.8 | 123.1 |
| Lodging | 101 | 2,541 | 182 | 71.7 | 43.8 | 82.0 | 147.3 |
| Mercantile and Service | 732 | 8,790 | 405 | 46.1 | 13.9 | 33.6 | 74.9 |
| Office | 394 | 7,220 | 231 | 32.0 | 15.3 | 32.5 | 70.7 |
| Parking Garage | 16 | 282 | 10 | 36.5 | 37.0 | 53.0 | 67.6 |
| Public Order and Safety | 28 | 440 | 24 | 54.2 | 13.7 | 72.2 | 171.6 |
| Warehouse | 207 | 5,135 | 201 | 39.1 | 7.3 | 22.6 | 41.7 |
| Other | 26 | 932 | 99 | 106.1 | 52.9 | 105.5 | 135.6 |
| Vacant | 84 | 1,891 | 48 | 25.2 | 10.7 | 31.2 | 100.1 |
| Weekly Operating Hours | | | | | | | |
| 39 or Fewer | 323 | 2,620 | 97 | 37.0 | 12.1 | 30.6 | 70.5 |
| 40 to 48 | 650 | 9,163 | 377 | 41.1 | 13.4 | 32.8 | 68.2 |
| 49 to 60 | 560 | 8,481 | 317 | 37.4 | 15.7 | 33.4 | 71.2 |
| 61 to 84 | 377 | 7,952 | 332 | 41.8 | 24.3 | 56.9 | 124.4 |
| 85 to 167 | 297 | 6,574 | 350 | 53.3 | 18.8 | 62.9 | 166.2 |
| 168 (Open Continuously) | 213 | 6,353 | 541 | 85.2 | 32.6 | 72.2 | 154.5 |
| Workers | | | | | | | |
| 4 or Fewer | 1,113 | 6,720 | 291 | 43.3 | 16.6 | 47.9 | 87.4 |
| 5 to 9 | 556 | 5,180 | 212 | 40.8 | 15.0 | 34.3 | 93.1 |
| 10 to 19 | 352 | 4,457 | 241 | 54.1 | 21.2 | 46.0 | 103.7 |
| 20 to 49 | 242 | 6,618 | 323 | 48.8 | 16.7 | 43.8 | 94.6 |
| 50 to 99 | 82 | 5,352 | 246 | 46.0 | 18.8 | 41.1 | 85.0 |
| 100 to 249 | 53 | 5,043 | 348 | 69.0 | 14.4 | 40.7 | 73.2 |
| 250 or More | 23 | 7,773 | 354 | 45.6 | 6.0 | 16.6 | 73.0 |

See footnotes at end of table.

NATURAL GAS

Table 46. Natural Gas Conditional Energy Intensity and Distribution of Building-Level Intensities (Continued)

| Building Characteristics | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Natural Gas Consumed (billion cubic feet) | Total Consumed per Square Foot (cubic feet) | Distribution of Building-Level Intensities (cubic feet/sq. ft.) | | |
|---|--------------------------------|--|---|---|---|--------|-----------------|
| | | | | | 25th Percentile | Median | 75th Percentile |
| Ownership and Occupancy | | | | | | | |
| Nongovernment Owned | 2,104 | 31,713 | 1,556 | 49.1 | 16.6 | 42.9 | 94.2 |
| Owner Occupied | 1,561 | 23,640 | 1,256 | 53.1 | 16.8 | 46.4 | 98.9 |
| Single Establishment | 1,318 | 17,151 | 1,052 | 61.3 | 18.3 | 46.8 | 101.4 |
| Multiple Establishment | 244 | 6,490 | 204 | 31.4 | 11.4 | 34.0 | 84.7 |
| Nonowner Occupied | 543 | 8,072 | 300 | 37.2 | 14.3 | 32.6 | 72.2 |
| Single Establishment | 363 | 4,279 | 171 | 39.9 | 13.7 | 30.9 | 70.7 |
| Multiple Establishment | 146 | 3,515 | 99 | 28.2 | 15.0 | 35.9 | 72.0 |
| Vacant | 33 | 278 | 30 | 109.1 | 31.2 | 69.8 | 136.7 |
| Government Owned | 316 | 9,431 | 459 | 48.6 | 17.4 | 46.8 | 90.3 |
| Federal | 13 | 911 | 68 | 74.1 | 24.0 | 69.7 | 101.9 |
| State | 78 | 2,317 | 109 | 47.0 | 11.8 | 55.2 | 112.4 |
| Local | 225 | 6,202 | 282 | 45.5 | 19.1 | 43.9 | 75.8 |
| Percent Vacant at Least Three Months | | | | | | | |
| 0 | 2,009 | 27,476 | 1,518 | 55.2 | 17.7 | 45.5 | 96.9 |
| 1 to 50 | 208 | 9,223 | 315 | 34.2 | 9.3 | 33.2 | 68.2 |
| 51 to 99 | 63 | 2,854 | 102 | 35.7 | 10.2 | 21.0 | 76.1 |
| 100 | 139 | 1,590 | 80 | 50.1 | 18.7 | 41.6 | 79.8 |
| Months in Use Out of Past 12 Months | | | | | | | |
| 0 to 8 | 126 | 1,744 | 70 | 40.1 | 9.4 | 39.8 | 92.3 |
| 9 to 11 | 152 | 2,640 | 135 | 51.0 | 21.5 | 47.1 | 69.8 |
| 12 | 2,141 | 36,759 | 1,810 | 49.2 | 16.6 | 42.9 | 94.6 |
| LOCATION | | | | | | | |
| Census Region | | | | | | | |
| Northeast | 355 | 8,517 | 343 | 40.3 | 18.8 | 47.8 | 97.3 |
| Midwest | 734 | 12,815 | 808 | 63.0 | 31.9 | 67.6 | 114.7 |
| South | 806 | 11,660 | 484 | 41.5 | 11.5 | 30.6 | 67.8 |
| West | 525 | 8,151 | 380 | 46.7 | 15.7 | 34.0 | 76.2 |
| Census Division | | | | | | | |
| Northeast | | | | | | | |
| New England | 53 | 1,236 | 38 | 31.0 | 18.6 | 62.3 | 89.6 |
| Middle Atlantic | 302 | 7,281 | 305 | 41.9 | 18.9 | 46.9 | 104.5 |
| Midwest | | | | | | | |
| East North Central | 499 | 8,797 | 545 | 62.0 | 26.8 | 64.3 | 114.4 |
| West North Central | 236 | 4,018 | 262 | 65.3 | 41.2 | 73.5 | 114.7 |
| South | | | | | | | |
| South Atlantic | 187 | 4,235 | 192 | 45.4 | 10.2 | 31.0 | 58.9 |
| East South Central | 168 | 2,034 | 122 | 60.1 | 18.2 | 46.4 | 103.2 |
| West South Central | 451 | 5,391 | 169 | 31.4 | 11.1 | 25.1 | 60.4 |
| West | | | | | | | |
| Mountain | 204 | 3,121 | 191 | 61.2 | 21.9 | 54.8 | 80.7 |
| Pacific | 320 | 5,030 | 189 | 37.6 | 10.0 | 30.1 | 62.3 |
| Metropolitan Status | | | | | | | |
| Metropolitan | 1,738 | 34,274 | 1,562 | 45.6 | 16.7 | 43.0 | 92.9 |
| Nonmetropolitan | 682 | 6,869 | 452 | 65.8 | 15.0 | 43.9 | 90.9 |
| Climate Zone: 45-Year Average | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | |
| Over 7,000 HDD | 188 | 3,064 | 245 | 80.1 | 37.8 | 84.8 | 167.0 |
| 5,500-7,000 HDD | 726 | 13,903 | 827 | 59.5 | 31.9 | 63.7 | 111.5 |
| 4,000-5,499 HDD | 444 | 9,668 | 396 | 40.9 | 13.9 | 41.5 | 84.7 |
| Under 4,000 HDD | 555 | 8,436 | 340 | 40.3 | 14.4 | 33.6 | 70.8 |
| 2,000 CDD or More and -- | | | | | | | |
| Under 4,000 HDD | 507 | 6,073 | 207 | 34.1 | 9.8 | 22.6 | 52.4 |

See footnotes at end of table.

Table 46. Natural Gas Conditional Energy Intensity and Distribution of Building-Level Intensities (Continued)

| Building Characteristics | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Natural Gas Consumed (billion cubic feet) | Total Consumed per Square Foot (cubic feet) | Distribution of Building-Level Intensities (cubic feet/sq. ft.) | | | | | | |
|--|--------------------------------|--|---|---|---|--------|-----------------|--|--|--|--|
| | | | | | 25th Percentile | Median | 75th Percentile | | | | |
| ENERGY SOURCES AND END USES * | | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | | |
| Electricity | 2,417 | 41,115 | 2,010 | 48.9 | 16.6 | 43.8 | 92.9 | | | | |
| Natural Gas | 2,420 | 41,143 | 2,015 | 49.0 | 16.6 | 43.8 | 92.9 | | | | |
| Fuel Oil | 142 | 7,865 | 415 | 52.8 | 5.7 | 22.7 | 68.1 | | | | |
| District Heat | 27 | 3,415 | 160 | 46.8 | 3.3 | 28.3 | 68.2 | | | | |
| District Chilled Water | 8 | 948 | 26 | 26.9 | 5.4 | 28.3 | 81.2 | | | | |
| Propane | 31 | 1,615 | 141 | 87.0 | 29.4 | 71.0 | 156.1 | | | | |
| Other | 36 | 775 | 28 | 36.1 | 11.9 | 29.4 | 114.7 | | | | |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | | |
| Heated Buildings | 2,392 | 40,802 | 1,994 | 48.9 | 16.7 | 43.6 | 92.3 | | | | |
| Air-Conditioned Buildings | 1,969 | 36,677 | 1,730 | 47.2 | 16.6 | 41.7 | 89.1 | | | | |
| Buildings with Water Heating | 2,029 | 38,433 | 1,905 | 49.6 | 17.6 | 45.5 | 95.7 | | | | |
| Buildings with Cooking | 582 | 18,868 | 947 | 50.2 | 20.1 | 62.9 | 148.2 | | | | |
| Buildings with Manufacturing | 121 | 3,777 | 278 | 73.7 | 12.6 | 35.9 | 78.6 | | | | |
| Energy End-Use Combinations | | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | | |
| With Water Heating and Cooking | 472 | 16,906 | 821 | 48.5 | 25.5 | 66.8 | 152.3 | | | | |
| With Water Heating, Without Cooking | 1,225 | 17,389 | 827 | 47.6 | 15.7 | 36.0 | 74.9 | | | | |
| Without Water Heating or Cooking | 247 | 1,976 | 65 | 33.1 | 10.9 | 22.0 | 48.3 | | | | |
| Without Air Conditioning | | | | | | | | | | | |
| With Water Heating and Cooking | 83 | 1,575 | 115 | 73.3 | 13.3 | 56.7 | 137.1 | | | | |
| With Water Heating, Without Cooking | 223 | 2,242 | 121 | 54.2 | 17.4 | 52.1 | 108.9 | | | | |
| Without Water Heating or Cooking | 130 | 543 | 40 | 73.1 | 19.2 | 58.5 | 115.4 | | | | |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | 1 | 17 | 1 | 57.0 | .0 | .0 | .0 | | | | |
| All Other Combinations | 39 | 495 | 24 | 48.3 | 11.1 | 60.7 | 230.7 | | | | |
| Space-Heating Energy Source | | | | | | | | | | | |
| Natural Gas | 2,158 | 33,017 | 1,804 | 54.6 | 18.6 | 45.5 | 93.1 | | | | |
| Main | 2,079 | 31,110 | 1,728 | 55.5 | 19.6 | 46.7 | 94.4 | | | | |
| With Secondary | 307 | 7,887 | 544 | 69.0 | 21.3 | 44.2 | 89.6 | | | | |
| Electricity Only | 224 | 3,620 | 152 | 41.9 | 18.6 | 40.5 | 85.2 | | | | |
| Other Energy Sources or Combinations | 80 | 4,134 | 349 | 84.5 | 29.4 | 62.3 | 127.1 | | | | |
| With No Secondary | 1,772 | 23,222 | 1,184 | 51.0 | 19.0 | 47.1 | 95.1 | | | | |
| Secondary | 79 | 1,907 | 76 | 39.9 | 7.4 | 22.3 | 46.9 | | | | |
| Other Excluding Natural Gas | 235 | 7,785 | 189 | 24.3 | 4.8 | 25.0 | 80.0 | | | | |
| Building Not Heated | 28 | 341 | 21 | 61.6 | 7.8 | 62.3 | 369.7 | | | | |
| Main Space-Heating Energy Source | | | | | | | | | | | |
| Electricity | 224 | 5,109 | 165 | 32.2 | 8.0 | 31.5 | 95.7 | | | | |
| Natural Gas | 2,079 | 31,110 | 1,728 | 55.5 | 19.6 | 46.7 | 94.4 | | | | |
| Fuel Oil | 74 | 1,985 | 24 | 12.0 | 2.1 | 10.1 | 26.2 | | | | |
| District Heat | 23 | 2,933 | 107 | 36.5 | 2.8 | 18.8 | 67.2 | | | | |
| Propane | 1 | 31 | 1 | 41.5 | 46.1 | 46.1 | 46.1 | | | | |
| Other | 11 | 238 | 4 | 17.6 | 11.9 | 11.9 | 114.7 | | | | |
| Air-Conditioning Energy Source | | | | | | | | | | | |
| Natural Gas | 97 | 1,976 | 124 | 62.8 | 24.2 | 58.6 | 130.3 | | | | |
| Other Excluding Natural Gas | 1,872 | 34,701 | 1,606 | 46.3 | 15.5 | 41.5 | 88.5 | | | | |
| Air-Conditioning Not Performed | 451 | 4,467 | 285 | 63.7 | 17.4 | 56.4 | 115.4 | | | | |

See footnotes at end of table.

NATURAL GAS

Table 46. Natural Gas Conditional Energy Intensity and Distribution of Building-Level Intensities (Continued)

| Building Characteristics | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Natural Gas Consumed (billion cubic feet) | Total Consumed per Square Foot (cubic feet) | Distribution of Building-Level Intensities (cubic feet/sq. ft.) | | |
|--|--------------------------------|--|---|---|---|--------|-----------------|
| | | | | | 25th Percentile | Median | 75th Percentile |
| Water-Heating Energy Source | | | | | | | |
| Natural Gas | 1,391 | 25,923 | 1,410 | 54.4 | 22.9 | 56.8 | 111.7 |
| Other Excluding Natural Gas | 637 | 12,510 | 494 | 39.5 | 10.7 | 28.7 | 66.8 |
| Water Heating Not Performed | 391 | 2,710 | 110 | 40.6 | 12.0 | 32.1 | 64.2 |
| Cooking Energy Source | | | | | | | |
| Natural Gas | 462 | 14,766 | 723 | 49.0 | 22.3 | 72.7 | 177.4 |
| Other Excluding Natural Gas | 120 | 4,103 | 225 | 54.7 | 16.1 | 33.9 | 66.8 |
| Cooking Not Performed | 1,838 | 22,275 | 1,067 | 47.9 | 15.1 | 37.6 | 77.2 |
| Manufacturing Energy Source | | | | | | | |
| Natural Gas | 23 | 838 | 113 | 135.0 | 35.1 | 62.7 | 256.5 |
| Other Excluding Natural Gas | 98 | 2,939 | 165 | 56.2 | 11.9 | 30.7 | 72.2 |
| Manufacturing Not Performed | 2,299 | 37,366 | 1,736 | 46.5 | 16.7 | 43.9 | 93.5 |
| HEATING AND COOLING | | | | | | | |
| Percent Heated | | | | | | | |
| Not Heated | 33 | 401 | 22 | 55.2 | 7.3 | 34.8 | 369.7 |
| 1 to 50 | 358 | 5,980 | 125 | 20.8 | 10.0 | 19.2 | 40.3 |
| 51 to 99 | 296 | 5,948 | 267 | 44.8 | 12.5 | 31.0 | 67.6 |
| 100 | 1,732 | 28,814 | 1,601 | 55.6 | 22.1 | 54.9 | 103.5 |
| Percent Cooled | | | | | | | |
| Not Cooled | 451 | 4,467 | 285 | 63.7 | 17.4 | 56.4 | 115.4 |
| 1 to 50 | 667 | 13,220 | 599 | 45.3 | 14.0 | 35.9 | 78.6 |
| 51 to 99 | 363 | 9,160 | 412 | 45.0 | 17.6 | 35.1 | 77.0 |
| 100 | 939 | 14,296 | 719 | 50.3 | 20.1 | 50.6 | 97.2 |
| Computer Area with Separate Air-Conditioning System | | | | | | | |
| Present in Building | 165 | 12,085 | 652 | 54.0 | 17.1 | 33.2 | 80.8 |
| Not Present | 2,255 | 29,059 | 1,362 | 46.9 | 16.6 | 44.2 | 95.0 |
| LIGHTING AND REFRIGERATION | | | | | | | |
| Percent Lit When Open | | | | | | | |
| Not Lit | 23 | 152 | 9 | 57.6 | 7.3 | 55.4 | 76.1 |
| 1 to 50 | 557 | 7,016 | 268 | 38.2 | 12.2 | 31.7 | 72.0 |
| 51 to 99 | 581 | 12,013 | 550 | 45.8 | 19.9 | 45.4 | 89.6 |
| 100 | 1,258 | 21,962 | 1,188 | 54.1 | 19.6 | 47.2 | 99.4 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | |
| Commercial | | | | | | | |
| Refrigeration Units | 609 | 19,667 | 970 | 49.3 | 20.6 | 60.9 | 135.9 |
| Freezers | 481 | 17,278 | 902 | 52.2 | 25.0 | 70.5 | 168.7 |
| Residential | | | | | | | |
| Refrigerators | 1,515 | 31,353 | 1,511 | 48.2 | 15.3 | 37.4 | 84.9 |
| Freezers | 391 | 9,179 | 529 | 57.6 | 21.3 | 51.7 | 103.7 |
| Ice-Making Machines | 501 | 17,624 | 963 | 54.6 | 28.1 | 66.4 | 149.2 |
| Refrigerated Vending Machines | 950 | 27,789 | 1,467 | 52.8 | 16.7 | 41.4 | 94.6 |
| Water Coolers | 1,051 | 30,128 | 1,467 | 48.7 | 13.6 | 32.5 | 72.2 |
| Other | 29 | 1,027 | 106 | 103.1 | 77.2 | 157.9 | 305.5 |
| ENERGY MANAGEMENT | | | | | | | |
| Occupant Control | | | | | | | |
| Any Control of Heating | 1,465 | 19,094 | 869 | 45.5 | 15.8 | 41.1 | 84.7 |
| With Thermostats | 1,296 | 17,503 | 802 | 45.8 | 16.4 | 41.2 | 84.8 |
| Any Control of Cooling | 1,220 | 18,989 | 843 | 44.4 | 15.2 | 39.3 | 80.6 |
| With Thermostats | 1,077 | 17,244 | 762 | 44.2 | 15.1 | 37.9 | 79.3 |

See footnotes at end of table.

Table 46. Natural Gas Conditional Energy Intensity and Distribution of Building-Level Intensities (Continued)

| Building Characteristics | Number of Buildings (thousand) | Total Floorspace (million square feet) | Total Natural Gas Consumed (billion cubic feet) | Total Consumed per Square Foot (cubic feet) | Distribution of Building-Level Intensities (cubic feet/sq. ft.) | | |
|--|--------------------------------|--|---|---|---|--------|-----------------|
| | | | | | 25th Percentile | Median | 75th Percentile |
| Reduced Use During Off-Hours | | | | | | | |
| Heating Only | 432 | 4,388 | 271 | 61.8 | 19.2 | 56.4 | 113.5 |
| Cooling Only | 117 | 2,397 | 145 | 60.7 | 11.2 | 47.0 | 121.7 |
| Heating and Cooling | 1,565 | 28,312 | 1,180 | 41.7 | 15.1 | 37.6 | 81.2 |
| Computerized Energy Management and Control System | | | | | | | |
| Present in Building | 182 | 10,633 | 482 | 45.3 | 18.5 | 41.8 | 90.3 |
| Controls Heating and Cooling | 175 | 10,160 | 467 | 46.0 | 18.0 | 41.8 | 90.3 |
| Controls Lighting | 39 | 3,145 | 139 | 44.2 | 15.3 | 42.9 | 94.6 |
| Controls Other | 23 | 1,938 | 117 | 60.3 | 7.5 | 43.6 | 95.7 |
| NATURAL GAS DEMAND | | | | | | | |
| Annual Consumption (hundred cubic feet) | | | | | | | |
| 1,000 or less | 663 | 4,170 | 33 | 7.9 | 5.1 | 11.3 | 21.5 |
| 1,001 to 5,000 | 1,046 | 9,967 | 254 | 25.5 | 22.1 | 46.7 | 82.0 |
| 5,001 to 10,000 | 348 | 6,485 | 241 | 37.1 | 33.2 | 66.1 | 150.1 |
| 10,001 to 25,000 | 238 | 7,326 | 344 | 46.9 | 43.8 | 96.0 | 269.7 |
| 25,001 to 50,000 | 71 | 5,017 | 241 | 48.0 | 44.5 | 85.0 | 130.3 |
| 50,001 to 100,000 | 28 | 2,808 | 185 | 66.0 | 53.0 | 75.0 | 134.8 |
| Over 100,000 | 26 | 5,370 | 717 | 133.5 | 88.9 | 157.9 | 407.5 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

Note: * See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 47. Fuel Oil Consumption

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Consumption | | | | | RSE Flow Factor | |
|--|--------------------------------|----------------------------------|--|----------------------|-------------------------|--------------|-----------------|------------|-----------------|--|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (million gallons) | Gallons | | | | |
| | | | | | | per Building | per Square Foot | per Worker | | |
| RSE Column Factor | 0.959 | 0.797 | 0.844 | 1.108 | 1.102 | 1.096 | 0.971 | 1.165 | | |
| All Buildings | 581 | 12,600 | 22 | 357 | 2,550 | 4,391 | 0.20 | 150 | 13.17 | |
| Building Floorspace (Square Feet) | | | | | | | | | | |
| 1,001 to 5,000 | 302 | 821 | 3 | 59 | 426 | 1,411 | .52 | 285 | 15.21 | |
| 5,001 to 10,000 | 97 | 698 | 7 | 41 | 298 | 3,055 | .43 | 405 | 22.00 | |
| 10,001 to 25,000 | 95 | 1,495 | 16 | 69 | 492 | 5,157 | .33 | 387 | 13.31 | |
| 25,001 to 50,000 | 36 | 1,319 | 37 | 47 | 336 | 9,295 | .25 | 284 | 15.51 | |
| 50,001 to 100,000 | 23 | 1,675 | 72 | 54 | 387 | 16,568 | .23 | 214 | 25.87 | |
| 100,001 to 200,000 | 17 | 2,228 | 135 | 46 | 324 | 19,584 | .15 | 135 | 25.12 | |
| 200,001 to 500,000 | 6 | 1,798 | 289 | 28 | 199 | 32,023 | .11 | 52 | 23.16 | |
| Over 500,000 | 3 | 2,566 | 740 | 12 | 87 | 25,103 | .03 | 21 | 20.50 | |
| Year Constructed | | | | | | | | | | |
| 1899 or Before | 31 | 406 | 13 | 17 | 123 | 4,031 | .30 | 389 | 20.45 | |
| 1900 to 1919 | 35 | 809 | 23 | 26 | 185 | 5,338 | .23 | 271 | 20.73 | |
| 1920 to 1945 | 137 | 2,460 | 18 | 69 | 492 | 3,587 | .20 | 161 | 18.07 | |
| 1946 to 1959 | 141 | 2,068 | 15 | 77 | 554 | 3,919 | .27 | 234 | 20.22 | |
| 1960 to 1969 | 95 | 2,275 | 24 | 73 | 516 | 5,423 | .23 | 200 | 22.18 | |
| 1970 to 1979 | 90 | 2,399 | 27 | 61 | 434 | 4,819 | .18 | 114 | 24.54 | |
| 1980 to 1983 | 21 | 935 | 44 | 10 | 72 | 3,387 | .08 | 59 | 30.20 | |
| 1984 to 1986 | 12 | 576 | 50 | Q | Q | 3,176 | Q | Q | 43.87 | |
| 1987 to 1989 | 19 | 671 | Q | Q | Q | Q | Q | Q | 47.20 | |
| BUILDING USE | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | |
| Assembly | 98 | 1,069 | 11 | 31 | 226 | 2,294 | .21 | Q | 22.52 | |
| Education | 38 | 2,209 | 59 | 71 | 508 | 13,477 | .23 | 315 | 21.88 | |
| Food Sales | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Food Service | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Health Care | 13 | 1,397 | 109 | 17 | 121 | Q | .09 | 43 | 33.52 | |
| Lodging | 15 | 573 | 39 | 10 | 71 | 4,813 | .12 | Q | 34.85 | |
| Mercantile and Service | 219 | 1,616 | 7 | 75 | 544 | 2,479 | .34 | 331 | 16.00 | |
| Office | 67 | 2,909 | 44 | 43 | 310 | 4,639 | .11 | 45 | 23.68 | |
| Parking Garage | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Warehouse | 49 | 1,429 | 29 | 53 | 371 | 7,563 | .26 | 388 | 31.70 | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Vacant | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Weekly Operating Hours | | | | | | | | | | |
| 39 or Fewer | 91 | 758 | 8 | 26 | 183 | 2,024 | .24 | Q | 23.24 | |
| 40 to 48 | 129 | 2,649 | 20 | 65 | 468 | 3,612 | .18 | 185 | 10.66 | |
| 49 to 60 | 138 | 2,369 | 17 | 54 | 389 | 2,823 | .16 | 131 | 17.70 | |
| 61 to 84 | 86 | 1,789 | 21 | 68 | 488 | 5,687 | .27 | 185 | 18.30 | |
| 85 to 167 | 75 | 2,200 | 29 | 80 | 564 | 7,474 | .26 | 242 | 27.55 | |
| 168 (Open Continuously) | 62 | 2,835 | 46 | 65 | 458 | 7,439 | .16 | 80 | 24.54 | |
| Workers | | | | | | | | | | |
| 4 or Fewer | 304 | 1,732 | 6 | 83 | 596 | 1,962 | .34 | 831 | 15.23 | |
| 5 to 9 | 115 | 1,083 | 9 | 35 | 248 | 2,165 | .23 | 343 | 17.47 | |
| 10 to 19 | 59 | 884 | 15 | 38 | 273 | 4,655 | .31 | 362 | 22.69 | |
| 20 to 49 | 54 | 1,499 | 28 | 72 | 516 | 9,565 | .34 | 325 | 17.10 | |
| 50 to 99 | 21 | 1,814 | 86 | 34 | 241 | 11,396 | .13 | 186 | 24.63 | |
| 100 to 249 | 17 | 1,700 | 99 | 57 | 401 | 23,278 | .24 | 155 | 34.20 | |
| 250 or More | 11 | 3,888 | 340 | 39 | 276 | 24,128 | .07 | 30 | 25.45 | |

See footnote at end of table.

Table 47. Fuel Oil Consumption (Continued)

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Consumption | | | | | RSE Row Factor | |
|---|--------------------------------|----------------------------------|--|----------------------|-------------------------|--------------|-----------------|------------|----------------------|--|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (million gallons) | Gallons | | | | |
| | | | | | | per Building | per Square Foot | per Worker | | |
| RSE Column Factor | 0.000 | 0.707 | 0.944 | 1.000 | 1.102 | 1.000 | 0.994 | 1.105 | | |
| Ownership and Occupancy | | | | | | | | | | |
| Nongovernment Owned | 498 | 8,758 | 18 | 242 | 1,726 | 3,465 | 0.20 | 141 | 14.29 | |
| Owner Occupied | 400 | 6,942 | 17 | 200 | 1,431 | 3,580 | .21 | 139 | 15.64 | |
| Single Establishment | 355 | 5,553 | 16 | 176 | 1,256 | 3,534 | .23 | 166 | 17.33 | |
| Multiple Establishment | 44 | 1,389 | 31 | 24 | 175 | 3,955 | .13 | 65 | 17.32 | |
| Nonowner Occupied | 99 | 1,816 | 18 | 42 | 295 | 2,997 | .16 | 153 | 26.84 | |
| Single Establishment | 67 | 1,100 | 16 | Q | 134 | Q | .12 | 137 | 37.06 | |
| Multiple Establishment | 22 | 600 | 28 | 19 | 133 | 6,083 | .22 | 149 | 26.72 | |
| Vacant | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Government Owned | 83 | 3,842 | 47 | 115 | 824 | 9,973 | .21 | 174 | 73.92 | |
| Federal | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| State | 17 | 964 | 56 | 31 | 224 | Q | .23 | 173 | 39.43 | |
| Local | 59 | 2,487 | 42 | 79 | 562 | 9,611 | .23 | 231 | 23.09 | |
| Multibuilding Facility | | | | | | | | | | |
| Not on Multibuilding Facility | 440 | 7,797 | 18 | 234 | 1,676 | 3,810 | .21 | 170 | 18.72 | |
| Part of Multibuilding Facility | 141 | 4,803 | 34 | 123 | 875 | 6,202 | .18 | 124 | 21.08 | |
| On Facility with Central Plant | 27 | 2,279 | 86 | 60 | 423 | 15,919 | .19 | 100 | 35.37 | |
| Percent Vacant at Least Three Months | | | | | | | | | | |
| 0 | 499 | 8,968 | 18 | 284 | 2,028 | 4,064 | .23 | 171 | 14.88 | |
| 1 to 50 | 45 | 2,495 | 56 | 48 | 344 | 7,661 | .14 | 76 | 19.54 | |
| 51 to 99 | 14 | 719 | 51 | 14 | 101 | 7,260 | .14 | Q | 37.09 | |
| 100 | 23 | 419 | Q | 11 | 77 | 3,344 | .18 | 477 | 34.71 | |
| Months In Use Out of Past 12 Months | | | | | | | | | | |
| 0 to 8 | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| 9 to 11 | 31 | 885 | 28 | 36 | 255 | 8,149 | .29 | 491 | 33.00 | |
| 12 | 530 | 11,166 | 21 | 309 | 2,203 | 4,157 | .20 | 136 | 13.42 | |
| LOCATION | | | | | | | | | | |
| Census Region | | | | | | | | | | |
| Northeast | 305 | 5,127 | 17 | 237 | 1,691 | 5,551 | .33 | 280 | 18.29 | |
| Midwest | 87 | 3,197 | 37 | 61 | 436 | 4,984 | .14 | 108 | 21.31 | |
| South | 156 | 2,844 | 18 | 50 | 357 | Q | .13 | 103 | 31.02 | |
| West | 33 | 1,432 | 44 | Q | Q | Q | Q | Q | 38.59 | |
| Census Division | | | | | | | | | | |
| Northeast | | | | | | | | | | |
| New England | 104 | 1,892 | 18 | 92 | 659 | 6,352 | .35 | 329 | 17.72 | |
| Middle Atlantic | 201 | 3,235 | 16 | 145 | 1,032 | 5,138 | .32 | 255 | 24.20 | |
| Midwest | | | | | | | | | | |
| East North Central | 56 | 1,948 | 35 | 38 | 272 | 4,887 | .14 | 114 | 38.41 | |
| West North Central | 32 | 1,249 | 39 | 23 | 164 | Q | .13 | Q | 32.33 | |
| South | | | | | | | | | | |
| South Atlantic | 123 | 2,037 | Q | 42 | 301 | Q | .15 | 126 | 32.00 | |
| East South Central | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| West South Central | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| West | | | | | | | | | | |
| Mountain | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Pacific | 23 | 1,123 | 48 | Q | Q | Q | Q | Q | 38.00 | |
| Metropolitan Status | | | | | | | | | | |
| Metropolitan | 377 | 10,142 | 27 | 274 | 1,959 | 5,192 | .19 | 134 | 13.60 | |
| Nonmetropolitan | 203 | 2,458 | 12 | 83 | 591 | 2,903 | .24 | 253 | 35.00 | |

See footnote at end of table.

Table 47. Fuel Oil Consumption (Continued)

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Consumption | | | | | RSE Row Factor | |
|--|--------------------------------|----------------------------------|--|----------------------|-------------------------|--------------|-----------------|------------|-------------------|--|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (million gallons) | Gallons | | | | |
| | | | | | | per Building | per Square Foot | per Worker | | |
| FUEL OIL CONSUMPTION | (1,000) | (1,000) | (1,000) | (1,000) | (1,000) | (1,000) | (1,000) | (1,000) | | |
| Climate Zone: 45-Year Average | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | |
| Over 7,000 HDD | 89 | 1,870 | 21 | 65 | 469 | 5,258 | 0.25 | 203 | 20.26 | |
| 5,500-7,000 HDD | 186 | 3,922 | 21 | 137 | 978 | 5,256 | .25 | 226 | 26.26 | |
| 4,000-5,499 HDD | 234 | 4,272 | 18 | 127 | 909 | 3,894 | .21 | 157 | 17.03 | |
| Under 4,000 HDD | 44 | 1,840 | 42 | Q | Q | Q | Q | Q | 26.46 | |
| 2,000 CDD or More and -- | | | | | | | | | | |
| Under 4,000 HDD | Q | 696 | Q | Q | Q | Q | .08 | Q | 51.22 | |
| 1989 Degree-Days | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | |
| Over 7,000 HDD | 124 | 2,563 | 21 | 100 | 714 | 5,773 | .28 | 235 | 28.41 | |
| 5,500-7,000 HDD | 214 | 5,122 | 24 | 148 | 1,058 | 4,952 | .21 | 179 | 18.65 | |
| 4,000-5,499 HDD | 181 | 2,605 | 14 | 84 | 601 | 3,319 | .23 | 159 | 22.10 | |
| Under 4,000 HDD | 35 | 1,647 | 47 | Q | Q | 3,551 | Q | Q | 30.56 | |
| 2,000 CDD or More and -- | | | | | | | | | | |
| Under 4,000 HDD | Q | 663 | Q | Q | Q | Q | Q | Q | 50.99 | |
| STRUCTURE | | | | | | | | | | |
| Floors | | | | | | | | | | |
| 1 | 265 | 2,277 | 9 | 101 | 724 | 2,735 | .32 | 323 | 18.18 | |
| 2 | 172 | 3,056 | 18 | 108 | 769 | 4,469 | .25 | 241 | 24.44 | |
| 3 | 98 | 2,044 | 21 | 75 | 540 | 5,504 | .26 | 320 | 18.88 | |
| 4 to 6 | 39 | 2,699 | 68 | 52 | 371 | 9,419 | .14 | 89 | 24.05 | |
| 7 or More | 7 | 2,523 | 383 | 21 | 146 | 22,178 | .06 | 26 | 28.64 | |
| Wall Materials | | | | | | | | | | |
| Masonry | 392 | 9,382 | 24 | 285 | 2,038 | 5,205 | .22 | 172 | 14.33 | |
| Siding or Shingles | 112 | 707 | 6 | 31 | 222 | 1,987 | .31 | Q | 26.16 | |
| Metal Panels | 50 | 665 | 13 | 17 | 125 | 2,484 | .19 | 164 | 26.46 | |
| Concrete Panels | 19 | 1,246 | 65 | Q | Q | Q | .09 | 58 | 42.46 | |
| Window Glass | Q | 452 | Q | Q | Q | Q | .10 | Q | 38.50 | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Roof Materials | | | | | | | | | | |
| Built-Up | 200 | 6,554 | 33 | 175 | 1,249 | 6,258 | .19 | 123 | 15.87 | |
| Shingles (Not Wood) | 206 | 2,145 | 10 | 72 | 519 | 2,521 | .24 | 235 | 21.36 | |
| Metal Surfacing | 100 | 822 | 8 | 34 | 241 | 2,415 | .29 | 288 | 22.60 | |
| Synthetic or Rubber | 40 | 1,777 | 45 | 59 | 420 | 10,622 | .24 | 176 | 26.47 | |
| Slate or Tile | Q | Q | Q | Q | Q | 3,349 | Q | 229 | 24.92 | |
| Concrete | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Wooden Materials | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | | |
| Roof or Ceiling Insulation | 420 | 9,597 | 23 | 254 | 1,818 | 4,332 | .19 | 129 | 18.98 | |
| Wall Insulation | 275 | 6,374 | 23 | 148 | 1,056 | 3,836 | .17 | 109 | 18.61 | |
| Storm or Multiple Glazing | 269 | 6,723 | 25 | 160 | 1,151 | 4,284 | .17 | 129 | 14.70 | |
| Tinted, Reflective, or Shading Glass | 86 | 4,801 | 56 | 75 | 535 | 6,217 | .11 | 67 | 18.60 | |
| Exterior or Interior Shadings or Awnings | 178 | 5,764 | 32 | 130 | 931 | 5,242 | .16 | 104 | 15.84 | |
| Weather Stripping or Caulking | 378 | 9,440 | 25 | 244 | 1,751 | 4,637 | .19 | 132 | 12.06 | |
| None of the Above | 65 | 1,155 | 18 | Q | 308 | Q | Q | Q | 39.42 | |

See footnote at end of table.

Table 47. Fuel Oil Consumption (Continued)

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Consumption | | | | | RSE Column Factor: | |
|--|--------------------------------|----------------------------------|--|----------------------|-------------------------|--------------|-----------------|------------|--------------------|--|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (million gallons) | Gallons | | | | |
| | | | | | | per Building | per Square Foot | per Worker | | |
| | 0.860 | 0.767 | 0.894 | 1.105 | 1.102 | 1.100 | 1.099 | 1.098 | | |
| ENERGY SOURCES AND END USES* | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | |
| Electricity | 580 | 12,579 | 22 | 355 | 2,538 | 4,372 | 0.20 | 150 | 14.8 | |
| Natural Gas | 142 | 7,865 | 55 | 149 | 1,060 | 7,438 | .13 | 93 | 14.9 | |
| Fuel Oil | 581 | 12,600 | 22 | 357 | 2,550 | 4,391 | .20 | 150 | 14.7 | |
| District Heat | 9 | 1,413 | 150 | Q | Q | 10,476 | Q | Q | 14.8 | |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | 14.8 | |
| Propane | 64 | 1,475 | Q | 66 | 472 | Q | .32 | 288 | 14.8 | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | 14.8 | |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | |
| Heated Buildings | 578 | 12,512 | 22 | 356 | 2,541 | 4,394 | .20 | 151 | 14.18 | |
| Air-Conditioned Buildings | 374 | 10,459 | 28 | 260 | 1,858 | 4,968 | .18 | 122 | 14.00 | |
| Buildings with Water Heating | 453 | 11,819 | 26 | 321 | 2,291 | 5,054 | .19 | 143 | 14.18 | |
| Buildings with Cooking | 141 | 6,236 | 44 | 150 | 1,070 | 7,601 | .17 | 111 | 14.20 | |
| Buildings with Manufacturing | 34 | 1,099 | 33 | Q | Q | Q | Q | Q | 14.00 | |
| Energy End-Use Combinations | | | | | | | | | | |
| Heated Buildings | | | | | | | | | | |
| With Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | 99 | 5,456 | 55 | 108 | 770 | 7,808 | .14 | 89 | 14.04 | |
| With Water Heating, Without Cooking | 231 | 4,603 | 20 | 139 | 993 | 4,305 | .22 | 162 | 17.23 | |
| Without Water Heating or Cooking | Q | Q | Q | Q | Q | Q | Q | Q | 14.8 | |
| Without Air Conditioning | | | | | | | | | | |
| With Water Heating and Cooking | 35 | 676 | 19 | 39 | 275 | 7,837 | .41 | 483 | 14.04 | |
| With Water Heating, Without Cooking | 87 | 1,020 | 12 | 35 | 246 | 2,833 | .24 | 420 | 21.14 | |
| Without Water Heating or Cooking | 79 | 417 | 5 | 21 | 149 | 1,900 | .36 | 502 | 20.97 | |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| All Other Combinations | Q | Q | Q | Q | Q | Q | Q | Q | 14.8 | |
| Space-Heating Energy Source | | | | | | | | | | |
| Fuel Oil | | | | | | | | | | |
| Main | 555 | 10,526 | 19 | 344 | 2,459 | 4,427 | .23 | 197 | 14.94 | |
| Main | 473 | 5,599 | 12 | 287 | 2,056 | 4,347 | .37 | 360 | 14.97 | |
| With Secondary | 74 | 1,146 | 16 | 59 | 423 | 5,743 | .37 | 326 | 14.77 | |
| Electricity Only | 41 | 465 | 11 | 27 | 192 | 4,652 | .41 | 431 | 14.92 | |
| Other Energy Sources or Combinations | 32 | 682 | 21 | 32 | 231 | 7,132 | .34 | 271 | 22.09 | |
| With No Secondary | 399 | 4,453 | 11 | 228 | 1,633 | 4,090 | .37 | 370 | 14.89 | |
| Secondary | 83 | 4,927 | 60 | 57 | 403 | 4,884 | .08 | 60 | 14.51 | |
| Other Excluding Fuel Oil | 23 | 1,986 | 87 | Q | Q | Q | Q | Q | 14.95 | |
| Building Not Heated | Q | Q | Q | Q | Q | Q | Q | Q | 14.8 | |
| Main Space-Heating Energy Source | | | | | | | | | | |
| Electricity | 29 | 1,174 | 40 | 4 | 32 | 1,079 | .03 | 18 | 14.49 | |
| Natural Gas | 63 | 4,716 | 75 | 44 | 312 | 4,977 | .07 | 45 | 14.55 | |
| Fuel Oil | 473 | 5,599 | 12 | 287 | 2,056 | 4,347 | .37 | 360 | 14.97 | |
| District Heat | 6 | 933 | 159 | Q | Q | Q | Q | Q | 20.28 | |
| Propane | Q | Q | Q | Q | Q | Q | Q | Q | 14.8 | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | 14.8 | |

See footnote at end of table.

FUEL OIL

Table 47. Fuel Oil Consumption (Continued)

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Consumption | | | | | Household Equivalent | |
|---|--------------------------------|----------------------------------|--|----------------------|-------------------------|--------------|-----------------|------------|----------------------|--|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (million gallons) | Gallons | | | | |
| | | | | | | per Building | per Square Foot | per Worker | | |
| | | | | | | | | | | |
| Air-Conditioning Energy Source | | | | | | | | | | |
| Fuel Oil | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Other Excluding Fuel Oil | 370 | 10,287 | 28 | 257 | 1,837 | 4,959 | 0.18 | 123 | 15,20 | |
| Air-Conditioning Not Performed | 207 | 2,141 | 10 | 97 | 692 | 3,346 | .32 | 398 | 15,20 | |
| Water-Heating Energy Source | | | | | | | | | | |
| Fuel Oil | 126 | 2,284 | 18 | 124 | 885 | 7,005 | .39 | 330 | 17,89 | |
| Other Excluding Fuel Oil | 327 | 9,488 | 29 | 197 | 1,406 | 4,307 | .15 | 106 | 16,41 | |
| Water Heating Not Performed | 128 | 781 | 6 | 36 | 259 | 2,030 | .33 | Q | 16,55 | |
| Cooking Energy Source | | | | | | | | | | |
| Fuel Oil | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Other Excluding Fuel Oil | 139 | 6,090 | 44 | 137 | 974 | 7,007 | .16 | 104 | 20,35 | |
| Cooking Not Performed | 440 | 6,364 | 14 | 207 | 1,480 | 3,363 | .23 | 201 | 13,73 | |
| Manufacturing Energy Source | | | | | | | | | | |
| Fuel Oil | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Other Excluding Fuel Oil | 28 | 919 | 33 | Q | Q | Q | Q | Q | 26,00 | |
| Manufacturing Not Performed | 547 | 11,501 | 21 | 309 | 2,216 | 4,048 | .19 | 142 | 11,00 | |
| HEATING AND COOLING | | | | | | | | | | |
| Percent Heated | | | | | | | | | | |
| Not Heated | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| 1 to 50 | 75 | 995 | 13 | 27 | 196 | 2,592 | .20 | 232 | 22,71 | |
| 51 to 99 | 90 | 2,421 | 27 | 62 | 438 | 4,855 | .18 | 119 | 35,02 | |
| 100 | 410 | 9,081 | 22 | 264 | 1,891 | 4,613 | .21 | 153 | 12,27 | |
| Percent Cooled | | | | | | | | | | |
| Not Cooled | 207 | 2,141 | 10 | 97 | 692 | 3,346 | .32 | 398 | 16,27 | |
| 1 to 50 | 175 | 3,702 | 21 | 146 | 1,038 | 5,927 | .28 | 348 | 26,90 | |
| 51 to 99 | 81 | 3,423 | 42 | 65 | 463 | 5,696 | .14 | 81 | 24,82 | |
| 100 | 118 | 3,333 | 28 | 50 | 358 | 3,038 | .11 | 55 | 21,82 | |
| Heating Equipment (Solely or in Combination) | | | | | | | | | | |
| Furnaces | 284 | 2,785 | 10 | 99 | 706 | 2,484 | .25 | 236 | 21,03 | |
| Boilers | 242 | 8,267 | 34 | 282 | 2,013 | 8,320 | .24 | 181 | 13,78 | |
| Individual Space Heaters | 189 | 4,739 | 25 | 113 | 809 | 4,276 | .17 | 122 | 21,04 | |
| Packaged Heating Units | 30 | 1,889 | 64 | 28 | 197 | 6,648 | .10 | 72 | 39,05 | |
| Heat Pumps | 21 | 1,516 | 74 | 16 | 116 | 5,647 | .08 | 34 | 20,15 | |
| Air Ducts | 228 | 8,112 | 36 | 181 | 1,288 | 5,652 | .16 | 97 | 19,58 | |
| Heating or Reheating Coils | 45 | 5,186 | 116 | 89 | 632 | 14,157 | .12 | 66 | 24,04 | |
| Fan-Coil Units | 55 | 4,402 | 80 | 78 | 557 | 10,106 | .13 | 71 | 19,02 | |
| Steam or Hot Water Radiators or Baseboards | 191 | 6,453 | 34 | 216 | 1,540 | 8,049 | .24 | 194 | 16,39 | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Cooling Equipment (Solely or in Combination) | | | | | | | | | | |
| Central Chillers | 40 | 5,209 | 131 | 52 | 367 | 9,221 | .07 | 38 | 22,85 | |
| Individual Air Conditioners | 220 | 5,031 | 23 | 181 | 1,292 | 5,875 | .26 | 197 | 16,13 | |
| Packaged Cooling Units | 173 | 6,305 | 37 | 153 | 1,086 | 6,292 | .17 | 110 | 18,65 | |
| Heat Pumps | 29 | 1,514 | 52 | 17 | 123 | 4,210 | .08 | 49 | 32,42 | |
| Air Ducts | 149 | 7,317 | 49 | 131 | 932 | 6,236 | .13 | 78 | 21,32 | |
| Fan-Coil Units | 27 | 4,271 | 156 | 50 | 352 | 12,816 | .08 | 39 | 27,96 | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b | |

See footnotes at end of table.

Table 47. Fuel Oil Consumption (Continued)

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Consumption | | | | | RSE Row Factor | |
|--|--------------------------------|----------------------------------|--|----------------------|-------------------------|--------------|-----------------|------------|----------------|--|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (million gallons) | Gallons | | | | |
| | | | | | | per Building | per Square Foot | per Worker | | |
| Category | Value | Value | Value | Value | Value | Value | Value | Value | Value | |
| Year Main Central Chiller Installed | | | | | | | | | | |
| 1959 or Before | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| 1960 to 1969 | 9 | 863 | 94 | Q | Q | Q | Q | Q | 22.66 | |
| 1970 to 1979 | 10 | 1,121 | 114 | Q | Q | Q | Q | Q | 20.07 | |
| 1980 to 1986 | 9 | 1,670 | 182 | 12 | 86 | 9,404 | 0.05 | 25 | 27.62 | |
| 1987 to 1989 | 8 | 1,095 | 133 | Q | Q | Q | Q | Q | 29.64 | |
| Year Packaged Cooling System Installed | | | | | | | | | | |
| 1959 or Before | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| 1960 to 1969 | 28 | 905 | 32 | Q | Q | Q | Q | Q | 26.21 | |
| 1970 to 1979 | 42 | 1,618 | 39 | 37 | 266 | 6,379 | .16 | 113 | 26.02 | |
| 1980 to 1986 | 56 | 1,974 | 35 | 48 | 347 | 6,141 | .18 | 98 | 22.72 | |
| 1987 to 1989 | 35 | 1,484 | 42 | 33 | 236 | 6,699 | .16 | 103 | 34.29 | |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | |
| Present in Building | 57 | 5,487 | 96 | 92 | 657 | 11,480 | .12 | 63 | 18.33 | |
| Not Present | 524 | 7,113 | 14 | 265 | 1,893 | 3,616 | .27 | 289 | 15.13 | |
| LIGHTING AND REFRIGERATION | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| 1 to 50 | 160 | 1,717 | 11 | 48 | 348 | 2,176 | .20 | 340 | 16.67 | |
| 51 to 99 | 137 | 3,766 | 27 | 102 | 725 | 5,280 | .19 | 145 | 21.98 | |
| 100 | 282 | 7,008 | 25 | 203 | 1,452 | 5,147 | .21 | 133 | 17.13 | |
| Percent Lit When Closed | | | | | | | | | | |
| Not Lit | 307 | 4,317 | 14 | 154 | 1,100 | 3,585 | .25 | 228 | 17.69 | |
| 1 to 50 | 256 | 7,002 | 27 | 167 | 1,198 | 4,670 | .17 | 123 | 17.81 | |
| 51 to 99 | 15 | 1,041 | 71 | 29 | 208 | 14,112 | .20 | 96 | 40.44 | |
| 100 | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | | |
| Incandescent Lamps | 358 | 8,978 | 25 | 239 | 1,708 | 4,765 | .19 | 132 | 16.58 | |
| Fluorescent Lamps | 545 | 12,319 | 23 | 347 | 2,479 | 4,550 | .20 | 147 | 13.01 | |
| High-Intensity Discharge Lamps | 68 | 4,558 | 68 | 104 | 740 | 10,962 | .16 | 123 | 21.90 | |
| Other Lamps | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| High-Efficiency Ballasts | 164 | 6,321 | 39 | 147 | 1,045 | 6,382 | .17 | 112 | 18.50 | |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | | |
| Commercial | | | | | | | | | | |
| Refrigeration Units | 133 | 6,867 | 52 | 159 | 1,138 | 8,543 | .17 | 109 | 18.79 | |
| Freezers | 96 | 6,445 | 67 | 142 | 1,012 | 10,521 | .16 | 102 | 21.46 | |
| Residential | | | | | | | | | | |
| Refrigerators | 375 | 10,351 | 28 | 290 | 2,073 | 5,527 | .20 | 136 | 14.45 | |
| Freezers | 91 | 3,306 | 36 | 81 | 574 | 6,281 | .17 | 98 | 26.86 | |
| Ice-Making Machines | 93 | 5,835 | 62 | 105 | 751 | 8,031 | .13 | 71 | 24.40 | |
| Refrigerated Vending Machines | 241 | 9,590 | 40 | 225 | 1,606 | 6,651 | .17 | 113 | 15.54 | |
| Water Coolers | 255 | 10,265 | 40 | 249 | 1,774 | 6,968 | .17 | 119 | 13.79 | |
| Other | Q | 605 | Q | Q | Q | Q | .08 | Q | 46.10 | |

See footnotes at end of table.

Table 47. Fuel Oil Consumption (Continued)

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Consumption | | | | | RSE Row Factor | |
|--|--------------------------------|----------------------------------|--|----------------------|-------------------------|--------------|-----------------|------------|----------------|--|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (million gallons) | Gallons | | | | |
| | | | | | | per Building | per Square Foot | per Worker | | |
| | 0.360 | 0.709 | 0.919 | 1.095 | 1,052 | 1,041 | 0.989 | 1.265 | | |
| ENERGY MANAGEMENT | | | | | | | | | | |
| Occupant Control | | | | | | | | | | |
| Any Control of Heating | 324 | 4,750 | 15 | 157 | 1,125 | 3,470 | 0.24 | 189 | 13.11 | |
| With Thermostats | 284 | 4,287 | 15 | 143 | 1,025 | 3,608 | .24 | 193 | 14.68 | |
| Any Control of Cooling | 218 | 4,334 | 20 | 134 | 965 | 4,426 | .22 | 156 | 15.08 | |
| With Thermostats | 190 | 3,962 | 21 | 104 | 749 | 3,942 | .19 | 132 | 16.79 | |
| Reduced Use During Off-Hours | | | | | | | | | | |
| Heating Only | 193 | 2,068 | 11 | 83 | 596 | 3,096 | .29 | 332 | 14.86 | |
| Cooling Only | 35 | 784 | 22 | 24 | 174 | 4,896 | .22 | 171 | 26.75 | |
| Heating and Cooling | 286 | 7,725 | 27 | 172 | 1,230 | 4,303 | .16 | 115 | 16.18 | |
| Computerized Energy Management and Control System | | | | | | | | | | |
| Present in Building | 30 | 4,189 | 138 | 51 | 361 | 11,859 | .09 | 48 | 22.75 | |
| Controls Heating and Cooling | 30 | 3,987 | 133 | 50 | 360 | 12,035 | .09 | 49 | 22.64 | |
| Controls Lighting | 4 | 1,171 | 281 | Q | Q | Q | Q | Q | 26.40 | |
| Controls Other | 3 | 917 | 305 | Q | Q | Q | Q | Q | 42.60 | |
| Other Energy Management | | | | | | | | | | |
| Regular HVAC Maintenance | 360 | 10,398 | 29 | 283 | 2,021 | 5,610 | .19 | 137 | 14.43 | |
| Participated in Utility Conservation Program | 65 | 3,478 | 53 | 64 | 457 | 7,003 | .13 | 76 | 23.04 | |
| FUEL OIL DEMAND | | | | | | | | | | |
| Annual Consumption (gallons) | | | | | | | | | | |
| 1,000 or less | 231 | 4,181 | 18 | 12 | 84 | 364 | .02 | 14 | 17.87 | |
| 1,001 to 5,000 | 239 | 2,848 | 12 | 73 | 524 | 2,194 | .18 | 143 | 16.75 | |
| 5,001 to 10,000 | 62 | 1,355 | 22 | 61 | 439 | 7,097 | .32 | 258 | 14.82 | |
| 10,001 to 25,000 | 30 | 2,017 | 68 | 66 | 474 | 15,896 | .23 | 214 | 14.99 | |
| Over 25,000 | 19 | 2,199 | 115 | 145 | 1,029 | 53,656 | .47 | 324 | 22.76 | |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

† No applicable RSE row factor.

‡ Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

— Data not applicable.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 48. Fuel Oil Expenditures

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Expenditures | | | | RSE Column Factor: |
|--|--------------------------------|----------------------------------|--|-------------------------|---------------------------------|---------------------------|----------------------|--------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Gallon (dollars) | |
| All Buildings | 581 | 12,600 | 22 | 1,822 | 3.1 | 0.14 | 0.71 | .1024 |
| Building Floorspace (Square Feet) | | | | | | | | |
| 1,001 to 5,000 | 302 | 821 | 3 | 351 | 1.2 | .43 | .82 | .1024 |
| 5,001 to 10,000 | 97 | 698 | 7 | 232 | 2.4 | .33 | .78 | .1024 |
| 10,001 to 25,000 | 95 | 1,495 | 16 | 378 | 4.0 | .25 | .77 | .1024 |
| 25,001 to 50,000 | 36 | 1,319 | 37 | 233 | 6.5 | .18 | .69 | .1024 |
| 50,001 to 100,000 | 23 | 1,675 | 72 | 251 | 10.7 | .15 | .65 | .1024 |
| 100,001 to 200,000 | 17 | 2,228 | 135 | 198 | 12.0 | .09 | .61 | .1024 |
| 200,001 to 500,000 | 6 | 1,798 | 289 | 126 | 20.2 | .07 | .63 | .1024 |
| Over 500,000 | 3 | 2,566 | 740 | 54 | 15.5 | .02 | .62 | .1024 |
| Year Constructed | | | | | | | | |
| 1899 or Before | 31 | 406 | 13 | 96 | 3.1 | .24 | .78 | .1024 |
| 1900 to 1919 | 35 | 809 | 23 | 138 | 4.0 | .17 | .75 | .1024 |
| 1920 to 1945 | 137 | 2,460 | 18 | 377 | 2.7 | .15 | .76 | .1024 |
| 1946 to 1959 | 141 | 2,068 | 15 | 404 | 2.9 | .20 | .73 | .1024 |
| 1960 to 1969 | 95 | 2,275 | 24 | 349 | 3.7 | .15 | .68 | .1024 |
| 1970 to 1979 | 90 | 2,399 | 27 | 288 | 3.2 | .12 | .66 | .1024 |
| 1980 to 1983 | 21 | 935 | 44 | 50 | 2.4 | .05 | .70 | .1024 |
| 1984 to 1986 | 12 | 576 | 50 | 26 | 2.3 | Q | .71 | .1024 |
| 1987 to 1989 | 19 | 671 | Q | Q | Q | Q | .69 | .1024 |
| BUILDING USE | | | | | | | | |
| Principal Building Activity | | | | | | | | |
| Assembly | 98 | 1,069 | 11 | 180 | 1.8 | .17 | .80 | .1024 |
| Education | 38 | 2,209 | 59 | 331 | 8.8 | .15 | .65 | .1024 |
| Food Sales | Q | Q | Q | Q | Q | Q | Q | .1024 |
| Food Service | Q | Q | Q | Q | Q | Q | Q | .1024 |
| Health Care | 13 | 1,397 | 109 | 72 | Q | .05 | .60 | .1024 |
| Lodging | 15 | 573 | 39 | 52 | 3.5 | .09 | .73 | .1024 |
| Mercantile and Service | 219 | 1,616 | 7 | 430 | 2.0 | .27 | .79 | .1024 |
| Office | 67 | 2,909 | 44 | 232 | 3.5 | .08 | .75 | .1024 |
| Parking Garage | Q | Q | Q | Q | Q | Q | Q | .1024 |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | .1024 |
| Warehouse | 49 | 1,429 | 29 | 234 | 4.8 | .16 | .63 | .1024 |
| Other | Q | Q | Q | Q | Q | Q | Q | .1024 |
| Vacant | Q | Q | Q | Q | Q | Q | Q | .1024 |
| Weekly Operating Hours | | | | | | | | |
| 39 or Fewer | 91 | 758 | 8 | 144 | 1.6 | .19 | .78 | .1024 |
| 40 to 48 | 129 | 2,649 | 20 | 331 | 2.6 | .12 | .71 | .1024 |
| 49 to 60 | 138 | 2,369 | 17 | 296 | 2.1 | .12 | .76 | .1024 |
| 61 to 84 | 86 | 1,789 | 21 | 364 | 4.2 | .20 | .75 | .1024 |
| 85 to 167 | 75 | 2,200 | 29 | 391 | 5.2 | .18 | .69 | .1024 |
| 168 (Open Continuously) | 62 | 2,835 | 46 | 296 | 4.8 | .10 | .65 | .1024 |
| Workers | | | | | | | | |
| 4 or Fewer | 304 | 1,732 | 6 | 475 | 1.6 | .27 | .80 | .1024 |
| 5 to 9 | 115 | 1,083 | 9 | 201 | 1.7 | .19 | .81 | .1024 |
| 10 to 19 | 59 | 884 | 15 | 203 | 3.5 | .23 | .75 | .1024 |
| 20 to 49 | 54 | 1,499 | 28 | 365 | 6.8 | .24 | .71 | .1024 |
| 50 to 99 | 21 | 1,814 | 86 | 164 | 7.7 | .09 | .68 | .1024 |
| 100 to 249 | 17 | 1,700 | 99 | 241 | 14.0 | .14 | .60 | .1024 |
| 250 or More | 11 | 3,888 | 340 | 173 | 15.1 | .04 | .63 | .1024 |

See footnote at end of table.

Table 48. Fuel Oil Expenditures (Continued)

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Expenditures | | | | RSE Row Percent |
|---|--------------------------------|----------------------------------|--|-------------------------|---------------------------------|---------------------------|----------------------|-----------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Gallon (dollars) | |
| | 1,269 | 1,000 | 1,100 | 1,261 | 1,241 | 1,144 | 6,261 | |
| Ownership and Occupancy | | | | | | | | |
| Nongovernment Owned | 498 | 8,758 | 18 | 1,282 | 2.6 | 0.15 | 0.74 | 16.92 |
| Owner Occupied | 400 | 6,942 | 17 | 1,069 | 2.7 | .15 | .75 | 11.71 |
| Single Establishment | 355 | 5,553 | 16 | 932 | 2.6 | .17 | .74 | 12.99 |
| Multiple Establishment | 44 | 1,389 | 31 | 137 | 3.1 | .10 | .78 | 14.07 |
| Nonowner Occupied | 99 | 1,816 | 18 | 213 | 2.2 | .12 | .72 | 15.71 |
| Single Establishment | 67 | 1,100 | 16 | 91 | 1.4 | .08 | .68 | 20.90 |
| Multiple Establishment | 22 | 600 | 28 | 103 | 4.7 | .17 | .78 | 21.16 |
| Vacant | Q | Q | Q | Q | Q | Q | Q | b |
| Government Owned | 83 | 3,842 | 47 | 540 | 6.5 | .14 | .66 | 16.49 |
| Federal | Q | Q | Q | Q | Q | Q | Q | b |
| State | 17 | 964 | 56 | 145 | Q | .15 | .65 | 25.95 |
| Local | 59 | 2,487 | 42 | 370 | 6.3 | .15 | .66 | 17.62 |
| Multibuilding Facility | | | | | | | | |
| Not on Multibuilding Facility | 440 | 7,797 | 18 | 1,231 | 2.8 | .16 | .73 | 10.67 |
| Part of Multibuilding Facility | 141 | 4,803 | 34 | 591 | 4.2 | .12 | .68 | 16.50 |
| On Facility with Central Plant | 27 | 2,279 | 86 | 262 | 9.9 | .12 | .62 | 27.00 |
| Percent Vacant at Least Three Months | | | | | | | | |
| 0 | 499 | 8,968 | 18 | 1,447 | 2.9 | .16 | .71 | 11.20 |
| 1 to 50 | 45 | 2,495 | 56 | 244 | 5.4 | .10 | .71 | 15.88 |
| 51 to 99 | 14 | 719 | 51 | 76 | 5.4 | .11 | .75 | 20.71 |
| 100 | 23 | 419 | Q | 55 | 2.4 | .13 | .71 | 20.80 |
| Months In Use Out of Past 12 Months | | | | | | | | |
| 0 to 8 | Q | Q | Q | Q | Q | Q | Q | b |
| 9 to 11 | 31 | 885 | 28 | 172 | 5.5 | .19 | .67 | 25.25 |
| 12 | 530 | 11,166 | 21 | 1,579 | 3.0 | .14 | .72 | 10.65 |
| LOCATION | | | | | | | | |
| Census Region | | | | | | | | |
| Northeast | 305 | 5,127 | 17 | 1,225 | 4.0 | .24 | .72 | 12.45 |
| Midwest | 87 | 3,197 | 37 | 310 | 3.5 | .10 | .71 | 15.80 |
| South | 156 | 2,844 | 18 | 241 | Q | .08 | .68 | 23.95 |
| West | 33 | 1,432 | 44 | Q | 1.4 | Q | .70 | 25.25 |
| Census Division | | | | | | | | |
| Northeast | | | | | | | | |
| New England | 104 | 1,892 | 18 | 473 | 4.6 | .25 | .72 | 14.22 |
| Middle Atlantic | 201 | 3,235 | 16 | 752 | 3.7 | .23 | .73 | 16.88 |
| Midwest | | | | | | | | |
| East North Central | 56 | 1,948 | 35 | 194 | 3.5 | .10 | .71 | 21.18 |
| West North Central | 32 | 1,249 | 39 | 116 | 3.6 | .09 | .71 | 24.00 |
| South | | | | | | | | |
| South Atlantic | 123 | 2,037 | Q | 203 | Q | .10 | .67 | 25.83 |
| East South Central | Q | Q | Q | Q | Q | Q | Q | b |
| West South Central | Q | Q | Q | Q | Q | Q | Q | b |
| West | | | | | | | | |
| Mountain | Q | Q | Q | Q | Q | Q | Q | b |
| Pacific | 23 | 1,123 | 48 | Q | 1.5 | Q | .70 | 22.69 |
| Metropolitan Status | | | | | | | | |
| Metropolitan | 377 | 10,142 | 27 | 1,414 | 3.7 | .14 | .72 | 10.10 |
| Nonmetropolitan | 203 | 2,458 | 12 | 408 | 2.0 | .17 | .69 | 20.39 |

See footnote at end of table.

Table 48. Fuel Oil Expenditures (Continued)

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Expenditures | | | | GSE Row Factor |
|--|--------------------------------|----------------------------------|--|-------------------------|---------------------------------|---------------------------|----------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Gallon (dollars) | |
| | | | | | | | | |
| Climate Zone: 45-Year Average | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | |
| Over 7,000 HDD | 89 | 1,870 | 21 | 339 | 3.8 | .018 | .72 | 18.22 |
| 5,500-7,000 HDD | 186 | 3,922 | 21 | 687 | 3.7 | .18 | .70 | 20.65 |
| 4,000-5,499 HDD | 234 | 4,272 | 18 | 676 | 2.9 | .16 | .74 | 19.46 |
| Under 4,000 HDD | 44 | 1,840 | 42 | Q | 1.8 | Q | .58 | 25.61 |
| 2,000 CDD or More and -- | | | | | | | | |
| Under 4,000 HDD | Q | 696 | Q | Q | Q | .05 | .72 | 48.10 |
| 1989 Degree-Days | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | |
| Over 7,000 HDD | 124 | 2,563 | 21 | 495 | 4.0 | .19 | .69 | 20.72 |
| 5,500-7,000 HDD | 214 | 5,122 | 24 | 774 | 3.6 | .15 | .73 | 14.73 |
| 4,000-5,499 HDD | 181 | 2,605 | 14 | 444 | 2.4 | .17 | .74 | 17.83 |
| Under 4,000 HDD | 35 | 1,647 | 47 | Q | 2.0 | Q | .57 | 23.94 |
| 2,000 CDD or More and -- | | | | | | | | |
| Under 4,000 HDD | Q | 663 | Q | Q | Q | .06 | .72 | 48.13 |
| STRUCTURE | | | | | | | | |
| Floors | | | | | | | | |
| 1 | 265 | 2,277 | 9 | 520 | 2.0 | .23 | .72 | 13.46 |
| 2 | 172 | 3,056 | 18 | 551 | 3.2 | .18 | .72 | 16.20 |
| 3 | 98 | 2,044 | 21 | 403 | 4.1 | .20 | .75 | 15.52 |
| 4 to 6 | 39 | 2,699 | 68 | 256 | 6.5 | .09 | .69 | 16.41 |
| 7 or More | 7 | 2,523 | 383 | 92 | 14.0 | .04 | .63 | 15.40 |
| Wall Materials | | | | | | | | |
| Masonry | 392 | 9,382 | 24 | 1,445 | 3.7 | .15 | .71 | 11.19 |
| Siding or Shingles | 112 | 707 | 6 | 173 | 1.6 | .25 | .78 | 10.13 |
| Metal Panels | 50 | 665 | 13 | 91 | 1.8 | .14 | .73 | 20.66 |
| Concrete Panels | 19 | 1,246 | 65 | 79 | 4.1 | .06 | .68 | 33.88 |
| Window Glass | Q | 452 | Q | Q | Q | .07 | .66 | 30.73 |
| Other | Q | Q | Q | Q | Q | Q | Q | b |
| Roof Materials | | | | | | | | |
| Built-Up | 200 | 6,554 | 33 | 866 | 4.3 | .13 | .69 | 11.47 |
| Shingles (Not Wood) | 206 | 2,145 | 10 | 408 | 2.0 | .19 | .79 | 14.44 |
| Metal Surfacing | 100 | 822 | 8 | 180 | 1.8 | .22 | .75 | 17.72 |
| Synthetic or Rubber | 40 | 1,777 | 45 | 277 | 7.0 | .16 | .66 | 19.71 |
| Slate or Tile | Q | Q | Q | Q | 2.6 | Q | .79 | 19.48 |
| Concrete | Q | Q | Q | Q | Q | Q | Q | b |
| Wooden Materials | Q | Q | Q | Q | Q | Q | Q | b |
| Other | Q | Q | Q | Q | Q | Q | Q | b |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | |
| Roof or Ceiling Insulation | 420 | 9,597 | 23 | 1,307 | 3.1 | .14 | .72 | 11.01 |
| Wall Insulation | 275 | 6,374 | 23 | 760 | 2.8 | .12 | .72 | 12.43 |
| Storm or Multiple Glazing | 269 | 6,723 | 25 | 839 | 3.1 | .12 | .73 | 11.37 |
| Tinted, Reflective, or Shading Glass | 86 | 4,801 | 56 | 368 | 4.3 | .08 | .69 | 13.71 |
| Exterior or Interior Shadings or Awnings | 178 | 5,764 | 32 | 662 | 3.7 | .11 | .71 | 12.46 |
| Weather Stripping or Caulking | 378 | 9,440 | 25 | 1,268 | 3.4 | .13 | .72 | 9.48 |
| None of the Above | 65 | 1,155 | 18 | 204 | 3.1 | .18 | .66 | 35.23 |

See footnote at end of table.

Table 48. Fuel Oil Expenditures (Continued)

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Expenditures | | | | RSE Flow Factor |
|--|--------------------------------|----------------------------------|--|-------------------------|---------------------------------|---------------------------|----------------------|-----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Gallon (dollars) | |
| RSE Column Factor: | 1.283 | 1,098 | 1,100 | 1,363 | 1,241 | 1.154 | 0.383 | |
| ENERGY SOURCES AND END USES^a | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | |
| Electricity | 580 | 12,579 | 22 | 1,814 | 3.1 | 0.14 | 0.71 | 10.30 |
| Natural Gas | 142 | 7,865 | 55 | 717 | 5.0 | .09 | .68 | 11.56 |
| Fuel Oil | 581 | 12,600 | 22 | 1,822 | 3.1 | .14 | .71 | 10.14 |
| District Heat | 9 | 1,413 | 150 | Q | 7.0 | Q | .67 | 33.56 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | 64 | 1,475 | Q | 323 | 5.1 | .22 | .68 | 25.13 |
| Other | Q | Q | Q | Q | Q | Q | Q | b |
| Energy End Uses (Solely or in Combination) | | | | | | | | |
| Heated Buildings | 578 | 12,512 | 22 | 1,815 | 3.1 | .15 | .71 | 10.14 |
| Air-Conditioned Buildings | 374 | 10,459 | 28 | 1,321 | 3.5 | .13 | .71 | 12.48 |
| Buildings with Water Heating | 453 | 11,819 | 26 | 1,624 | 3.6 | .14 | .71 | 10.24 |
| Buildings with Cooking | 141 | 6,236 | 44 | 720 | 5.1 | .12 | .67 | 14.82 |
| Buildings with Manufacturing | 34 | 1,099 | 33 | 206 | 6.1 | Q | .62 | 31.93 |
| Energy End-Use Combinations | | | | | | | | |
| Heated Buildings | | | | | | | | |
| With Air Conditioning | | | | | | | | |
| With Water Heating and Cooking | 99 | 5,456 | 55 | 513 | 5.2 | .09 | .67 | 18.30 |
| With Water Heating, Without Cooking | 231 | 4,603 | 20 | 733 | 3.2 | .16 | .74 | 12.97 |
| Without Water Heating or Cooking | Q | Q | Q | Q | Q | Q | Q | b |
| Without Air Conditioning | | | | | | | | |
| With Water Heating and Cooking | 35 | 676 | 19 | 187 | 5.3 | .28 | .68 | 18.70 |
| With Water Heating, Without Cooking | 87 | 1,020 | 12 | 184 | 2.1 | .18 | .75 | 18.95 |
| Without Water Heating or Cooking | 79 | 417 | 5 | 113 | 1.4 | .27 | .76 | 18.83 |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | -- | -- | -- | -- | -- | -- | -- | -- |
| All Other Combinations | Q | Q | Q | Q | Q | Q | Q | b |
| Space-Heating Energy Source | | | | | | | | |
| Fuel Oil | 555 | 10,526 | 19 | 1,758 | 3.2 | .17 | .71 | 10.29 |
| Main | 473 | 5,599 | 12 | 1,483 | 3.1 | .26 | .72 | 10.67 |
| With Secondary | 74 | 1,146 | 16 | 289 | 3.9 | .25 | .68 | 14.99 |
| Electricity Only | 41 | 465 | 11 | 137 | 3.3 | .30 | .72 | 19.74 |
| Other Energy Sources or Combinations | 32 | 682 | 21 | 151 | 4.7 | .22 | .65 | 20.53 |
| With No Secondary | 399 | 4,453 | 11 | 1,194 | 3.0 | .27 | .73 | 11.97 |
| Secondary | 83 | 4,927 | 60 | 275 | 3.3 | .06 | .68 | 18.75 |
| Other Excluding Fuel Oil | 23 | 1,986 | 87 | Q | Q | Q | .70 | 22.01 |
| Building Not Heated | Q | Q | Q | Q | Q | Q | Q | b |
| Main Space-Heating Energy Source | | | | | | | | |
| Electricity | 29 | 1,174 | 40 | 25 | Q | .02 | .81 | 28.83 |
| Natural Gas | 63 | 4,716 | 75 | 207 | 3.3 | .04 | .66 | 17.55 |
| Fuel Oil | 473 | 5,599 | 12 | 1,483 | 3.1 | .26 | .72 | 10.67 |
| District Heat | 6 | 933 | 159 | Q | Q | Q | .65 | 38.00 |
| Propane | Q | Q | Q | Q | Q | Q | Q | b |
| Other | Q | Q | Q | Q | Q | Q | Q | b |

See footnote at end of table.

Table 48. Fuel Oil Expenditures (Continued)

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Expenditures | | | | RSE Row Factor |
|---|--------------------------------|----------------------------------|--|-------------------------|---------------------------------|---------------------------|----------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Gallon (dollars) | |
| RSE Column Factor: | 1,328 | 0.843 | 1.224 | 1,351 | 1.165 | 1.106 | 0.350 | |
| Air-Conditioning Energy Source | | | | | | | | |
| Fuel Oil | Q | Q | Q | Q | Q | Q | Q | b |
| Other Excluding Fuel Oil | 370 | 10,287 | 28 | 1,305 | 3.5 | .013 | .71 | 12.60 |
| Air-Conditioning Not Performed | 207 | 2,141 | 10 | 501 | 2.4 | .23 | .72 | 10.98 |
| Water-Heating Energy Source | | | | | | | | |
| Fuel Oil | 126 | 2,284 | 18 | 631 | 5.0 | .28 | .71 | 13.78 |
| Other Excluding Fuel Oil | 327 | 9,488 | 29 | 993 | 3.0 | .10 | .71 | 12.44 |
| Water Heating Not Performed | 128 | 781 | 6 | 198 | 1.6 | .25 | .77 | 15.09 |
| Cooking Energy Source | | | | | | | | |
| Fuel Oil | Q | Q | Q | Q | Q | Q | Q | b |
| Other Excluding Fuel Oil | 139 | 6,090 | 44 | 664 | 4.8 | .11 | .68 | 15.22 |
| Cooking Not Performed | 440 | 6,364 | 14 | 1,102 | 2.5 | .17 | .74 | 10.48 |
| Manufacturing Energy Source | | | | | | | | |
| Fuel Oil | Q | Q | Q | Q | Q | Q | Q | b |
| Other Excluding Fuel Oil | 28 | 919 | 33 | Q | 6.0 | Q | .64 | 43.03 |
| Manufacturing Not Performed | 547 | 11,501 | 21 | 1,616 | 3.0 | .14 | .73 | 9.24 |
| HEATING AND COOLING | | | | | | | | |
| Percent Heated | | | | | | | | |
| Not Heated | Q | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | 75 | 995 | 13 | 151 | 2.0 | .15 | .77 | 16.49 |
| 51 to 99 | 90 | 2,421 | 27 | 291 | 3.2 | .12 | .66 | 23.08 |
| 100 | 410 | 9,081 | 22 | 1,362 | 3.3 | .15 | .72 | 9.27 |
| Percent Cooled | | | | | | | | |
| Not Cooled | 207 | 2,141 | 10 | 501 | 2.4 | .23 | .72 | 10.96 |
| 1 to 50 | 175 | 3,702 | 21 | 726 | 4.1 | .20 | .70 | 15.89 |
| 51 to 99 | 81 | 3,423 | 42 | 326 | 4.0 | .10 | .70 | 18.97 |
| 100 | 118 | 3,333 | 28 | 269 | 2.3 | .08 | .75 | 14.46 |
| Heating Equipment (Solely or in Combination) | | | | | | | | |
| Furnaces | 284 | 2,785 | 10 | 528 | 1.9 | .19 | .75 | 16.50 |
| Boilers | 242 | 8,267 | 34 | 1,388 | 5.7 | .17 | .69 | 10.22 |
| Individual Space Heaters | 189 | 4,739 | 25 | 564 | 3.0 | .12 | .70 | 15.47 |
| Packaged Heating Units | 30 | 1,889 | 64 | 124 | 4.2 | .07 | .63 | 24.58 |
| Heat Pumps | 21 | 1,516 | 74 | 81 | 3.9 | .05 | .70 | 18.07 |
| Air Ducts | 228 | 8,112 | 36 | 864 | 3.8 | .11 | .67 | 14.91 |
| Heating or Reheating Coils | 45 | 5,186 | 116 | 399 | 9.0 | .08 | .63 | 17.47 |
| Fan-Coil Units | 55 | 4,402 | 80 | 378 | 6.9 | .09 | .68 | 14.51 |
| Steam or Hot Water Radiators or Baseboards | 191 | 6,453 | 34 | 1,052 | 5.5 | .16 | .68 | 12.48 |
| Other | Q | Q | Q | Q | Q | Q | Q | b |
| Cooling Equipment (Solely or in Combination) | | | | | | | | |
| Central Chillers | 40 | 5,209 | 131 | 244 | 6.1 | .05 | .66 | 17.04 |
| Individual Air Conditioners | 220 | 5,031 | 23 | 906 | 4.1 | .18 | .70 | 14.79 |
| Packaged Cooling Units | 173 | 6,305 | 37 | 745 | 4.3 | .12 | .69 | 14.12 |
| Heat Pumps | 29 | 1,514 | 52 | 88 | 3.0 | .06 | .71 | 23.74 |
| Air Ducts | 149 | 7,317 | 49 | 628 | 4.2 | .09 | .67 | 16.03 |
| Fan-Coil Units | 27 | 4,271 | 156 | 220 | 8.0 | .05 | .63 | 20.50 |
| Other | Q | Q | Q | Q | Q | Q | Q | b |

See footnotes at end of table.

Table 48. Fuel Oil Expenditures (Continued)

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Expenditures | | | | Fuels Type Factor |
|--|--------------------------------|----------------------------------|--|-------------------------|---------------------------------|---------------------------|----------------------|-------------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Gallon (dollars) | |
| RSE Column Factor | 1,329 | 0.949 | 1,224 | 1,221 | 1,189 | .001 | .000 | |
| Year Main Central Chiller Installed | | | | | | | | |
| 1959 or Before | Q | Q | Q | Q | Q | Q | Q | .5 |
| 1960 to 1969 | 9 | 863 | 94 | Q | Q | Q | 0.63 | 14.22 |
| 1970 to 1979 | 10 | 1,121 | 114 | Q | 5.3 | Q | .64 | 15.02 |
| 1980 to 1986 | 9 | 1,670 | 182 | 60 | 6.5 | 0.04 | .69 | 20.50 |
| 1987 to 1989 | 8 | 1,095 | 133 | Q | Q | Q | .75 | 14.57 |
| Year Packaged Cooling System Installed | | | | | | | | |
| 1959 or Before | Q | Q | Q | Q | Q | Q | Q | .1 |
| 1960 to 1969 | 28 | 905 | 32 | Q | Q | Q | .63 | 51.00 |
| 1970 to 1979 | 42 | 1,618 | 39 | 186 | 4.5 | .12 | .70 | 18.50 |
| 1980 to 1986 | 56 | 1,974 | 35 | 246 | 4.4 | .12 | .71 | 17.00 |
| 1987 to 1989 | 35 | 1,484 | 42 | 158 | 4.5 | .11 | .67 | 20.50 |
| Computer Area with Separate Air-Conditioning System | | | | | | | | |
| Present in Building | 57 | 5,487 | 96 | 442 | 7.7 | .08 | .67 | 19.75 |
| Not Present | 524 | 7,113 | 14 | 1,380 | 2.6 | .19 | .73 | 31.00 |
| LIGHTING AND REFRIGERATION | | | | | | | | |
| Percent Lit When Open | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | Q | .1 |
| 1 to 50 | 160 | 1,717 | 11 | 280 | 1.8 | .16 | .81 | 11.45 |
| 51 to 99 | 137 | 3,766 | 27 | 498 | 3.6 | .13 | .69 | 17.50 |
| 100 | 282 | 7,008 | 25 | 1,027 | 3.6 | .15 | .71 | 12.00 |
| Percent Lit When Closed | | | | | | | | |
| Not Lit | 307 | 4,317 | 14 | 787 | 2.6 | .18 | .72 | 12.50 |
| 1 to 50 | 256 | 7,002 | 27 | 873 | 3.4 | .12 | .73 | 13.45 |
| 51 to 99 | 15 | 1,041 | 71 | 132 | 9.0 | .13 | .64 | 20.15 |
| 100 | Q | Q | Q | Q | Q | Q | Q | .0 |
| Lighting Equipment (Solely or in Combination) | | | | | | | | |
| Incandescent Lamps | 358 | 8,978 | 25 | 1,204 | 3.4 | .13 | .70 | 12.50 |
| Fluorescent Lamps | 545 | 12,319 | 23 | 1,767 | 3.2 | .14 | .71 | 13.45 |
| High-Intensity Discharge Lamps | 68 | 4,558 | 68 | 493 | 7.3 | .11 | .67 | 16.00 |
| Other Lamps | Q | Q | Q | Q | Q | Q | Q | .1 |
| High-Efficiency Ballasts | 164 | 6,321 | 39 | 732 | 4.5 | .12 | .70 | 13.45 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | |
| Commercial | | | | | | | | |
| Refrigeration Units | 133 | 6,867 | 52 | 765 | 5.7 | .11 | .67 | 14.25 |
| Freezers | 96 | 6,445 | 67 | 670 | 7.0 | .10 | .66 | 15.50 |
| Residential | | | | | | | | |
| Refrigerators | 375 | 10,351 | 28 | 1,452 | 3.9 | .14 | .70 | 10.81 |
| Freezers | 91 | 3,306 | 36 | 379 | 4.1 | .11 | .66 | 21.50 |
| Ice-Making Machines | 93 | 5,835 | 62 | 502 | 5.4 | .09 | .67 | 18.25 |
| Refrigerated Vending Machines | 241 | 9,590 | 40 | 1,098 | 4.5 | .11 | .68 | 14.75 |
| Water Coolers | 255 | 10,265 | 40 | 1,217 | 4.8 | .12 | .69 | 10.50 |
| Other | Q | 605 | Q | Q | Q | .05 | .64 | 13.45 |

See footnotes at end of table.

Table 48. Fuel Oil Expenditures (Continued)

| Building Characteristics | All Buildings Using Fuel Oil | | | Fuel Oil Expenditures | | | | RSE Row Factor |
|--|--------------------------------|----------------------------------|--|-------------------------|---------------------------------|---------------------------|----------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Gallon (dollars) | |
| RSE Column Factor | 1.380 | 0.943 | 1.224 | 1.351 | 1.166 | 1.105 | 0.360 | |
| ENERGY MANAGEMENT | | | | | | | | |
| Occupant Control | | | | | | | | |
| Any Control of Heating | 324 | 4,750 | 15 | 837 | 2.6 | 0.18 | 0.74 | 10.25 |
| With Thermostats | 284 | 4,287 | 15 | 764 | 2.7 | .18 | .75 | 11.49 |
| Any Control of Cooling | 218 | 4,334 | 20 | 712 | 3.3 | .16 | .74 | 12.67 |
| With Thermostats | 190 | 3,962 | 21 | 562 | 3.0 | .14 | .75 | 13.35 |
| Reduced Use During Off-Hours | | | | | | | | |
| Heating Only | 193 | 2,068 | 11 | 435 | 2.3 | .21 | .73 | 10.61 |
| Cooling Only | 35 | 784 | 22 | 132 | 3.7 | .17 | .76 | 20.00 |
| Heating and Cooling | 286 | 7,725 | 27 | 888 | 3.1 | .11 | .72 | 12.32 |
| Computerized Energy Management and Control System | | | | | | | | |
| Present in Building | 30 | 4,189 | 138 | 229 | 7.5 | .05 | .63 | 16.37 |
| Controls Heating and Cooling | 30 | 3,987 | 133 | 228 | 7.6 | .06 | .63 | 16.30 |
| Controls Lighting | 4 | 1,171 | 281 | Q | Q | Q | .63 | 16.10 |
| Controls Other | 3 | 917 | 305 | Q | Q | Q | .68 | 31.00 |
| Other Energy Management | | | | | | | | |
| Regular HVAC Maintenance | 360 | 10,398 | 29 | 1,415 | 3.9 | .14 | .70 | 11.00 |
| Participated in Utility Conservation Program | 65 | 3,478 | 53 | 321 | 4.9 | .09 | .70 | 17.20 |
| FUEL OIL DEMAND | | | | | | | | |
| Annual Consumption (gallons) | | | | | | | | |
| 1,000 or Less | 231 | 4,181 | 18 | 73 | .3 | .02 | .87 | 11.56 |
| 1,001 to 5,000 | 239 | 2,848 | 12 | 437 | 1.8 | .15 | .83 | 11.36 |
| 5,001 to 10,000 | 62 | 1,355 | 22 | 335 | 5.4 | .25 | .76 | 11.71 |
| 10,001 to 25,000 | 30 | 2,017 | 68 | 339 | 11.4 | .17 | .72 | 12.03 |
| Over 25,000 | 19 | 2,199 | 115 | 638 | 33.3 | .29 | .62 | 16.50 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

† No applicable RSE row factor.

‡ Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

-- Data not applicable.

Notes: * To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. * See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 49. Fuel Oil Consumption and Conditional Energy Intensity by Census Region

| Building Characteristics | Total Fuel Oil Consumption (million gallons) | | | | Total Floorspace of Buildings Using Fuel Oil (million square feet) | | | | Fuel Oil Energy Intensity (gallons/sq. ft.) | | | | RSE Row Factor |
|--------------------------------------|--|----------|-------|------|--|----------|-------|-------|---|----------|-------|------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| Total Fuel Oil Consumption | 1,312 | 372 | 307 | Q | 3,542 | 2,418 | 1,951 | 1,057 | .37 | .15 | .16 | Q | 24.27 |
| Building Floorspace (Square Feet) | 534 | 93 | 113 | Q | 879 | 180 | Q | Q | .61 | .52 | .29 | Q | 30.80 |
| 1,001 to 10,000 | 775 | 243 | 164 | Q | 2,166 | 927 | 986 | 409 | .36 | .26 | .17 | 0.11 | 26.44 |
| Over 100,000 | 387 | 110 | Q | Q | 2,081 | 2,091 | 1,464 | 956 | .19 | .05 | Q | Q | 32.63 |
| Year Constructed | 633 | 112 | Q | Q | 2,291 | 841 | Q | Q | .28 | Q | Q | Q | 31.12 |
| 1945 or Before | 349 | 106 | 98 | Q | 786 | 499 | 663 | Q | .44 | .21 | .15 | Q | 33.71 |
| 1946 to 1959 | 358 | 61 | Q | Q | 1,018 | 553 | 539 | Q | .35 | .11 | Q | Q | 35.82 |
| 1960 to 1969 | 245 | 67 | Q | Q | 639 | 705 | 523 | Q | .38 | Q | .22 | Q | 40.04 |
| 1970 to 1979 | 112 | Q | Q | Q | 392 | 600 | 684 | Q | .29 | .17 | Q | Q | 47.25 |
| BUILDING USE | | | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | | | |
| Assembly | 151 | Q | Q | Q | 540 | Q | 297 | Q | .28 | Q | .14 | Q | 32.69 |
| Education | 296 | 97 | Q | Q | 974 | 735 | Q | Q | .30 | .13 | Q | Q | 40.55 |
| Mercantile and Service | 419 | Q | Q | Q | 943 | Q | Q | Q | .44 | Q | Q | Q | 32.03 |
| Office | 202 | Q | 21 | Q | 971 | 573 | 633 | 733 | .21 | Q | Q | Q | 37.97 |
| Warehouse | 195 | Q | Q | Q | 465 | Q | Q | Q | .42 | Q | Q | Q | 55.90 |
| Other | 433 | 77 | Q | Q | 1,234 | 985 | 699 | Q | .35 | .08 | .10 | Q | 32.49 |
| Weekly Operating Hours | | | | | | | | | | | | | |
| 48 or Fewer | 378 | 120 | 149 | Q | 1,246 | 715 | 1,162 | Q | .30 | Q | .13 | Q | 31.14 |
| 49 to 84 | 646 | 144 | 90 | Q | 2,066 | 956 | 802 | Q | .31 | .15 | .11 | Q | 26.74 |
| 85 to 168 | 672 | 182 | Q | Q | 1,815 | 1,527 | 880 | 812 | .37 | .12 | .15 | Q | 29.39 |
| Workers | | | | | | | | | | | | | |
| 9 or Fewer | 627 | 98 | 126 | Q | 1,546 | 301 | 836 | Q | .41 | .33 | .15 | Q | 26.10 |
| 10 to 99 | 676 | 188 | 149 | Q | 1,962 | 1,195 | 779 | Q | .34 | Q | .19 | Q | 27.88 |
| 100 or More | 393 | 161 | Q | Q | 1,619 | 1,702 | 1,229 | 1,039 | .24 | .09 | Q | Q | 35.48 |
| Ownership and Occupancy | | | | | | | | | | | | | |
| Nongovernment Owned | 1,240 | 231 | 244 | Q | 3,565 | 2,127 | 2,072 | 995 | .35 | .11 | .12 | Q | 23.95 |
| Owner Occupied | 1,051 | 202 | 168 | Q | 2,905 | 1,861 | 1,328 | 848 | .36 | .11 | .13 | Q | 25.05 |
| Single Establishment | 892 | 193 | 160 | Q | 2,301 | 1,556 | 1,109 | 587 | .39 | .12 | .14 | Q | 26.95 |
| Multiple Establishment | 159 | 10 | Q | Q | 604 | 305 | Q | Q | .26 | .03 | Q | Q | 31.05 |
| Nonowner Occupied | 189 | Q | Q | Q | 660 | Q | Q | Q | .29 | Q | Q | Q | 31.39 |
| Single Establishment | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | b |
| Multiple Establishment | 125 | Q | Q | Q | 386 | Q | Q | Q | .32 | Q | Q | Q | 33.87 |
| Vacant | Q | Q | Q | Q | Q | Q | Q | NC | Q | Q | Q | NC | b |
| Government Owned | 456 | 215 | 131 | Q | 1,562 | 1,071 | 772 | Q | .29 | .20 | .17 | Q | 36.70 |
| Federal | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| State | Q | Q | Q | Q | Q | Q | Q | Q | .25 | Q | Q | Q | 79.86 |
| Local | 327 | 121 | Q | Q | 1,021 | 772 | 438 | Q | .32 | .16 | .23 | Q | 39.94 |
| Multibuilding Facility | | | | | | | | | | | | | |
| Not on Multibuilding Facility | 1,184 | 230 | 246 | Q | 3,715 | 1,551 | 1,865 | 665 | .32 | .15 | .13 | Q | 23.96 |
| Part of Multibuilding Facility | 512 | 216 | 130 | Q | 1,411 | 1,646 | 979 | 767 | .36 | .13 | .13 | Q | 34.80 |
| On Facility with Central Plant | Q | Q | Q | Q | 590 | 842 | 375 | Q | Q | Q | Q | Q | 49.64 |
| Percent Vacant at Least Three Months | | | | | | | | | | | | | |
| 0 | 1,312 | 372 | 307 | Q | 3,542 | 2,418 | 1,951 | 1,057 | .37 | .15 | .16 | Q | 24.27 |
| 1 to 50 | 241 | Q | Q | Q | 898 | 653 | 574 | Q | .27 | .10 | .07 | Q | 37.98 |
| 51 to 99 | Q | Q | Q | Q | Q | Q | Q | NC | Q | Q | Q | NC | b |
| 100 | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |

See footnotes at end of table.

Table 49. Fuel Oil Consumption and Conditional Energy Intensity by Census Region (Continued)

| Building Characteristics | Total Fuel Oil Consumption (million gallons) | | | | Total Floorspace of Buildings Using Fuel Oil (million square feet) | | | | Fuel Oil Energy Intensity (gallons/sq. ft.) | | | |
|--|--|----------|-------|-------|--|----------|-------|-------|---|----------|-------|-------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West |
| RSE Column Factor: | 0.016 | 1.003 | 1.395 | 0.999 | 0.677 | 0.762 | 0.968 | 1.021 | 0.554 | 1.002 | 1.000 | 1.000 |
| Months In Use Out of Past 12 Months | | | | | | | | | | | | |
| 0 to 8 | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| 9 to 11 | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| 12 | 1,476 | 412 | 292 | Q | 4,339 | 3,093 | 2,417 | 1,317 | 0.34 | 0.13 | 0.12 | Q |
| LOCATION | | | | | | | | | | | | |
| Metropolitan Status | | | | | | | | | | | | |
| Metropolitan | 1,390 | 317 | 221 | Q | 4,405 | 2,613 | 1,847 | 1,277 | .32 | .12 | .12 | Q |
| Nonmetropolitan | Q | 130 | 154 | Q | Q | 585 | 997 | Q | .42 | .22 | Q | Q |
| Climate Zone: 45-Year Average | | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | | |
| Over 7,000 HDD | 220 | 249 | NC | Q | 763 | 1,028 | NC | Q | .29 | .24 | NC | Q |
| 5,500-7,000 HDD | 856 | 118 | NC | Q | 2,199 | 1,476 | NC | Q | .39 | .08 | NC | Q |
| 4,000-5,499 HDD | 620 | Q | 191 | Q | 2,165 | Q | 1,268 | Q | .29 | Q | .15 | Q |
| Under 4,000 HDD | NC | NC | Q | Q | NC | NC | 989 | 851 | NC | NC | Q | Q |
| 2,000 CDD or More and -- | | | | | | | | | | | | |
| Under 4,000 HDD | NC | NC | Q | Q | NC | NC | 587 | Q | NC | NC | Q | Q |
| STRUCTURE | | | | | | | | | | | | |
| Floors | | | | | | | | | | | | |
| 1 | 397 | 155 | Q | Q | 952 | 530 | 674 | Q | .42 | .29 | Q | Q |
| 2 | 546 | 136 | Q | Q | 1,307 | 638 | 711 | Q | .42 | .21 | .11 | Q |
| 3 | 364 | 95 | 70 | Q | 1,113 | 421 | 386 | Q | .33 | .23 | .18 | Q |
| 4 to 6 | 285 | Q | Q | Q | 991 | 812 | Q | Q | .29 | Q | Q | Q |
| 7 or More | 103 | 14 | Q | Q | 764 | 796 | 470 | 493 | Q | .02 | Q | Q |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | | | | |
| Roof or Ceiling Insulation | 1,163 | 378 | 254 | Q | 3,650 | 2,585 | 2,157 | 1,205 | .32 | .15 | .12 | Q |
| Wall Insulation | 669 | 213 | Q | Q | 2,175 | 1,872 | 1,505 | 822 | .31 | .11 | .11 | Q |
| Storm or Multiple Glazing | 762 | 291 | 96 | Q | 2,613 | 2,285 | 1,211 | Q | .29 | .13 | .08 | Q |
| Tinted, Reflective, or Shading Glass | | | | | | | | | | | | |
| Glass | 368 | 75 | 79 | Q | 1,234 | 1,422 | 1,323 | 821 | .30 | .05 | .06 | Q |
| Exterior or Interior Shadings or Awnings | | | | | | | | | | | | |
| Weather Stripping or Caulking | 636 | 141 | 135 | Q | 2,183 | 1,597 | 1,171 | 813 | .29 | .09 | .12 | Q |
| None of the Above | 1,151 | 354 | 224 | Q | 3,602 | 2,771 | 2,131 | 936 | .32 | .13 | .11 | Q |
| ENERGY SOURCES AND END USES * | | | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | | | |
| Electricity | 1,683 | 446 | 374 | Q | 5,105 | 3,197 | 2,844 | 1,432 | .33 | .14 | .13 | Q |
| Natural Gas | 634 | 222 | Q | Q | 2,444 | 2,452 | 1,788 | 1,181 | .26 | .09 | .10 | Q |
| Fuel Oil | 1,691 | 436 | 357 | Q | 5,127 | 3,197 | 2,844 | 1,432 | .33 | .14 | .13 | Q |
| District Heat | 68 | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| Propane | 279 | Q | Q | Q | 711 | Q | Q | Q | .39 | Q | Q | Q |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| Energy End Uses (Solely or in Combination) | | | | | | | | | | | | |
| Heated Buildings | 1,695 | 445 | 372 | Q | 5,127 | 3,197 | 2,817 | 1,370 | .33 | .14 | .13 | Q |
| Air-Conditioned Buildings | 1,150 | 340 | 349 | Q | 3,824 | 2,896 | 2,426 | 1,313 | .30 | .12 | .14 | 0.04 |
| Buildings with Water Heating | 1,529 | 413 | 310 | Q | 4,795 | 3,108 | 2,534 | 1,382 | .32 | .13 | .12 | Q |
| Buildings with Cooking | 758 | 157 | 123 | Q | 2,395 | 1,737 | 1,219 | 885 | .32 | .09 | .10 | Q |
| Buildings with Manufacturing | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q |

See footnotes at end of table.

Table 49. Fuel Oil Consumption and Conditional Energy Intensity by Census Region (Continued)

| Building Characteristics | Total Fuel Oil Consumption (million gallons) | | | | Total Floorspace of Buildings Using Fuel Oil (million square feet) | | | | Fuel Oil Energy Intensity (gallons/sq. ft.) | | | | RSE Row Factor |
|--|--|----------|-------|-------|--|----------|-------|-------|---|----------|-------|-------|----------------|
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor | 0.818 | 1.093 | 1.335 | 8.900 | 0.677 | 0.782 | 0.860 | 1.321 | 0.564 | 1.062 | 1.120 | 1.053 | |
| Space-Heating Energy Source | | | | | | | | | | | | | |
| Fuel Oil | 1,633 | 434 | 349 | Q | 4,772 | 2,746 | 2,914 | 694 | 0.34 | 0.16 | 0.15 | Q | 22.78 |
| Main | 1,556 | 230 | 244 | Q | 3,860 | 518 | 1,117 | Q | .40 | .44 | .22 | Q | 25.78 |
| With Secondary | 326 | Q | Q | Q | 732 | Q | Q | Q | .45 | Q | Q | Q | 37.93 |
| Electricity Only | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Other Energy Sources or Combinations | 190 | Q | Q | Q | 498 | Q | Q | Q | .38 | Q | Q | Q | 43.31 |
| With No Secondary | 1,230 | 190 | 190 | Q | 3,129 | 396 | 852 | Q | .39 | .48 | .22 | Q | 29.72 |
| Secondary | 77 | 204 | Q | Q | 912 | 2,227 | 1,198 | Q | .08 | .09 | .09 | Q | 38.02 |
| Other Excluding Fuel Oil | Q | Q | Q | Q | 355 | 452 | 503 | 676 | Q | .02 | Q | Q | 39.04 |
| Building Not Heated | Q | Q | Q | Q | NC | NC | Q | Q | NC | NC | Q | Q | b |
| Main Space-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | Q | Q | 13 | Q | Q | Q | Q | Q | Q | Q | .02 | Q | 32.28 |
| Natural Gas | 73 | 133 | Q | Q | 671 | 2,119 | 994 | 932 | .11 | .06 | Q | Q | 37.56 |
| Fuel Oil | 1,556 | 230 | 244 | Q | 3,860 | 518 | 1,117 | Q | .40 | .44 | .22 | Q | 25.78 |
| District Heat | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | Q | Q | Q | Q | Q | Q | NC | NC | Q | Q | NC | NC | b |
| Other | Q | Q | Q | Q | NC | Q | Q | Q | NC | Q | NC | Q | b |
| Water-Heating Energy Source | | | | | | | | | | | | | |
| Fuel Oil | 732 | Q | Q | Q | 1,747 | Q | Q | Q | .42 | Q | Q | Q | 26.00 |
| Other Excluding Fuel Oil | 793 | 347 | 216 | Q | 3,048 | 2,923 | 2,261 | 1,256 | .26 | .12 | .10 | Q | 28.34 |
| Water Heating Not Performed | 167 | Q | Q | Q | 331 | Q | Q | Q | .50 | Q | Q | Q | 38.27 |
| HEATING AND COOLING | | | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | | | |
| Not Heated | Q | Q | Q | Q | Q | NC | Q | Q | Q | NC | Q | Q | b |
| 1 to 50 | 93 | Q | Q | Q | 436 | Q | Q | Q | .21 | Q | Q | Q | 42.11 |
| 51 to 99 | 289 | Q | Q | Q | 696 | Q | 704 | Q | Q | Q | Q | Q | 46.82 |
| 100 | 1,298 | 326 | 241 | Q | 3,983 | 2,409 | 1,912 | 777 | .33 | .14 | .13 | Q | 22.28 |
| Percent Cooled | | | | | | | | | | | | | |
| Not Cooled | 546 | Q | Q | Q | 1,302 | Q | Q | Q | .42 | Q | Q | Q | 22.18 |
| 1 to 50 | 726 | 175 | Q | Q | 2,090 | 995 | 456 | Q | .35 | .18 | .30 | Q | 32.41 |
| 51 to 99 | 228 | 119 | Q | Q | 859 | 1,049 | 958 | 557 | .26 | .11 | .11 | Q | 35.47 |
| 100 | 196 | 46 | 105 | Q | 875 | 852 | 1,012 | Q | .22 | Q | .10 | Q | 37.25 |
| LIGHTING | | | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | NC | NC | Q | Q | NC | NC | b |
| 1 to 50 | 250 | Q | Q | Q | 730 | Q | Q | Q | .34 | Q | Q | Q | 32.37 |
| 51 to 99 | 436 | 145 | Q | Q | 1,368 | 940 | 871 | 588 | .32 | .15 | Q | Q | 34.08 |
| 100 | 987 | 252 | 205 | Q | 2,942 | 1,877 | 1,424 | 765 | .34 | Q | .14 | Q | 27.66 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

NC No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 50. Fuel Oil Expenditures by Census Region

| Building Characteristics | Total Fuel Oil Expenditures (million dollars) | | | | Fuel Oil Expenditures (dollars) | | | | | | | | RSE Row Percent |
|--|--|----------|-------|------|------------------------------------|----------|-------|------|-----------------|----------|-------|------|-----------------------|
| | | | | | per Gallon | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| BUILDING SIZE | | | | | | | | | | | | | |
| All Buildings | 1,225 | 310 | 241 | Q | .72 | .71 | .68 | .70 | .24 | .10 | .08 | Q | 15.38 |
| Building Floorspace (Square Feet) | | | | | | | | | | | | | |
| 1,001 to 10,000 | 430 | 65 | 79 | Q | .81 | .77 | .80 | Q | .49 | .36 | .20 | Q | 14.37 |
| 10,001 to 100,000 | 552 | 167 | 114 | Q | .71 | .70 | .71 | .69 | .25 | .18 | .12 | Q | 18.09 |
| Over 100,000 | 243 | 77 | Q | Q | .63 | .70 | .49 | .65 | .12 | .04 | .03 | Q | 18.75 |
| Year Constructed | | | | | | | | | | | | | |
| 1945 or Before | 483 | 76 | Q | Q | .77 | .70 | Q | Q | .21 | Q | Q | Q | 18.01 |
| 1946 to 1959 | 259 | 71 | 69 | Q | .74 | .68 | .73 | Q | .33 | .14 | .10 | Q | 16.02 |
| 1960 to 1969 | 236 | 44 | Q | Q | .66 | .75 | .68 | Q | .23 | .08 | Q | Q | 20.22 |
| 1970 to 1979 | 171 | 49 | Q | Q | .70 | .75 | .54 | Q | .27 | Q | .11 | Q | 17.42 |
| 1980 to 1989 | 75 | Q | Q | Q | .68 | .71 | .68 | Q | .19 | Q | .02 | Q | 20.00 |
| BUILDING USE | | | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | | | |
| Assembly | 121 | Q | Q | Q | .80 | Q | .80 | Q | .22 | Q | .11 | Q | 14.18 |
| Education | 196 | 61 | Q | Q | .66 | .63 | Q | Q | .20 | .08 | Q | Q | 20.00 |
| Mercantile and Service | 326 | Q | Q | Q | .78 | Q | Q | Q | .35 | Q | Q | Q | 18.04 |
| Office | 154 | Q | 14 | Q | .77 | .71 | .76 | .70 | .16 | Q | Q | Q | 14.24 |
| Warehouse | 122 | Q | Q | Q | .63 | Q | Q | Q | .26 | Q | Q | Q | 20.36 |
| Other | 305 | 54 | 42 | Q | .71 | .72 | .64 | Q | .25 | .05 | .06 | Q | 20.47 |
| Weekly Operating Hours | | | | | | | | | | | | | |
| 48 or Fewer | 281 | 79 | Q | Q | .75 | .69 | .72 | Q | .23 | Q | .09 | Q | 18.04 |
| 49 to 84 | 487 | 102 | Q | Q | .76 | .73 | .77 | Q | .24 | .11 | .08 | Q | 14.90 |
| 85 to 168 | 456 | 129 | Q | Q | .68 | .71 | .57 | .67 | .25 | .08 | .09 | Q | 20.72 |
| Workers | | | | | | | | | | | | | |
| 9 or Fewer | 497 | 70 | 94 | Q | .80 | .78 | .84 | Q | .32 | .23 | .11 | Q | 18.01 |
| 10 to 99 | 491 | 128 | 98 | Q | .73 | .69 | .68 | Q | .25 | .11 | .13 | Q | 20.02 |
| 100 or More | 237 | 112 | Q | Q | .60 | .70 | .49 | .67 | .15 | .07 | .04 | Q | 25.40 |
| Ownership and Occupancy | | | | | | | | | | | | | |
| Nongovernment Owned | 928 | 165 | 158 | Q | .75 | .74 | .69 | .75 | .26 | .08 | .08 | .03 | 18.00 |
| Owner Occupied | 783 | 144 | 118 | Q | .75 | .74 | .75 | .76 | .27 | .08 | .09 | Q | 14.48 |
| Single Establishment | 659 | 137 | 113 | Q | .74 | .73 | .75 | .76 | .29 | .09 | .10 | Q | 20.24 |
| Multiple Establishment | 124 | Q | Q | Q | .78 | .76 | Q | Q | .20 | .02 | Q | Q | 15.49 |
| Nonowner Occupied | 145 | Q | Q | Q | .77 | Q | Q | Q | .22 | Q | Q | Q | 14.70 |
| Single Establishment | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | 14.76 |
| Multiple Establishment | 96 | Q | Q | Q | .77 | Q | Q | Q | .25 | Q | Q | Q | 20.21 |
| Vacant | Q | Q | Q | NC | Q | Q | Q | NC | Q | Q | Q | NC | 15.40 |
| Government Owned | 297 | 145 | 84 | Q | .65 | .68 | .65 | Q | .19 | .14 | .11 | Q | 20.00 |
| Federal | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | 14.40 |
| State | Q | Q | Q | Q | .61 | Q | Q | Q | .16 | Q | Q | Q | 20.00 |
| Local | 216 | 81 | Q | Q | .66 | .67 | .64 | Q | .21 | .10 | .14 | Q | 21.02 |
| Multibuilding Facility | | | | | | | | | | | | | |
| Not on Multibuilding Facility | 889 | 158 | 158 | Q | .75 | .71 | .67 | .69 | .24 | .10 | .08 | Q | 18.14 |
| Part of Multibuilding Facility | 335 | 152 | 84 | Q | .66 | .71 | .68 | .71 | .24 | .09 | .09 | Q | 22.05 |
| On Facility with Central Plant | Q | Q | Q | Q | .56 | .69 | .62 | Q | Q | Q | Q | Q | 18.48 |
| Percent Vacant at Least Three Months | | | | | | | | | | | | | |
| 0 | 952 | 258 | 194 | Q | .73 | .71 | .66 | .70 | .27 | .11 | .10 | Q | 20.00 |
| 1 to 50 | 174 | Q | 23 | Q | .72 | .71 | .61 | Q | .19 | .07 | .04 | Q | 22.00 |
| 51 to 99 | Q | Q | Q | NC | Q | Q | Q | NC | Q | Q | Q | NC | 15.40 |
| 100 | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | 15.40 |

See footnotes at end of table.

FUEL OIL

Table 50. Fuel Oil Expenditures by Census Region (Continued)

| Building Characteristics | Total Fuel Oil Expenditures (million dollars) | | | | Fuel Oil Expenditures (dollars) | | | | | | | | RSE Row Factor |
|--|---|----------|-------|-------|---------------------------------|----------|-------|-------|-----------------|----------|-------|-------|----------------|
| | | | | | per Gallon | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| Total Commercial | 1,549 | 1,362 | 1,370 | 2,741 | 0.477 | 0.452 | 0.466 | 0.288 | 0.881 | 1.586 | 1.563 | 2.597 | |
| Months in Use Out of Past 12 Months | | | | | | | | | | | | | |
| 0 to 8 | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 9 to 11 | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 12 | 1,073 | 286 | 183 | Q | 0.73 | 0.71 | 0.66 | 0.73 | 0.25 | 0.09 | 0.08 | Q | 15.44 |
| LOCATION | | | | | | | | | | | | | |
| Metropolitan Status | | | | | | | | | | | | | |
| Metropolitan | 1,013 | 222 | 142 | Q | .73 | .72 | .68 | .67 | .23 | .08 | .08 | Q | 15.55 |
| Nonmetropolitan | Q | 88 | 99 | Q | .68 | .70 | .67 | Q | .29 | .15 | .10 | Q | 28.67 |
| Climate Zone: 45-Year Average | | | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | | | |
| Over 7,000 HDD | 164 | 172 | NC | Q | .75 | .70 | NC | Q | .22 | .17 | NC | Q | 16.81 |
| 5,500-7,000 HDD | 598 | 80 | NC | Q | .70 | .72 | NC | Q | .27 | .05 | NC | Q | 25.84 |
| 4,000-5,499 HDD | 462 | Q | 139 | Q | .75 | Q | .74 | Q | .21 | Q | .11 | Q | 14.46 |
| Under 4,000 HDD | NC | NC | Q | Q | NC | NC | .57 | .67 | NC | NC | .07 | Q | 34.44 |
| 2,000 CDD or More and -- | | | | | | | | | | | | | |
| Under 4,000 HDD | NC | NC | Q | Q | NC | NC | .70 | Q | NC | NC | Q | Q | 47.45 |
| STRUCTURE | | | | | | | | | | | | | |
| Floors | | | | | | | | | | | | | |
| 1 | 297 | 109 | Q | Q | .75 | .73 | .63 | Q | .31 | .21 | .15 | Q | 18.08 |
| 2 | 391 | 94 | Q | Q | .72 | .70 | .73 | Q | .30 | .15 | .08 | Q | 22.07 |
| 3 | 274 | 65 | 54 | Q | .75 | .69 | .79 | Q | .25 | .15 | .14 | Q | 21.56 |
| 4 to 6 | 196 | Q | Q | Q | .69 | .71 | Q | Q | .20 | Q | Q | Q | 24.50 |
| 7 or More | 67 | 10 | Q | Q | .65 | .72 | .52 | .63 | Q | .01 | Q | Q | 20.04 |
| Building Shell Conservation | | | | | | | | | | | | | |
| Features (Solely or in Combination) | | | | | | | | | | | | | |
| Roof or Ceiling Insulation | 853 | 263 | 159 | Q | .74 | .71 | .66 | .68 | .23 | .10 | .07 | Q | 16.81 |
| Wall Insulation | 490 | 151 | 106 | Q | .74 | .73 | .65 | .67 | .23 | .08 | .07 | Q | 19.88 |
| Storm or Multiple Glazing | 562 | 203 | 65 | Q | .74 | .71 | .71 | Q | .22 | .09 | .05 | Q | 17.30 |
| Tinted, Reflective, or Shading | | | | | | | | | | | | | |
| Glass | 255 | 53 | 48 | Q | .69 | .72 | .65 | .61 | .21 | .04 | .04 | Q | 20.00 |
| Exterior or Interior Shadings or Awnings | | | | | | | | | | | | | |
| or Awnings | 460 | 96 | 85 | Q | .73 | .70 | .66 | .69 | .21 | .06 | .07 | Q | 16.44 |
| Weather Stripping or Caulking | 840 | 246 | 152 | Q | .73 | .71 | .71 | .70 | .23 | .09 | .07 | Q | 15.88 |
| None of the Above | 160 | Q | Q | Q | .65 | Q | Q | Q | .34 | Q | Q | Q | 55.77 |
| ENERGY SOURCES AND END USES * | | | | | | | | | | | | | |
| Energy Sources | | | | | | | | | | | | | |
| (Solely or In Combination) | | | | | | | | | | | | | |
| Electricity | 1,216 | 310 | 241 | Q | .72 | .71 | .68 | .70 | .24 | .10 | .08 | Q | 15.88 |
| Natural Gas | 438 | 150 | 102 | Q | .69 | .70 | .59 | .65 | .18 | .06 | .06 | Q | 20.63 |
| Fuel Oil | 1,225 | 310 | 241 | Q | .72 | .71 | .68 | .70 | .24 | .10 | .08 | Q | 15.38 |
| District Heat | 46 | Q | Q | Q | .68 | Q | Q | Q | Q | Q | Q | Q | 26.25 |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | 201 | Q | Q | Q | .72 | Q | Q | Q | .28 | Q | Q | Q | 25.16 |
| Other | Q | NC | Q | Q | Q | NC | Q | Q | Q | NC | Q | Q | b |
| Energy End Uses | | | | | | | | | | | | | |
| (Solely or In Combination) | | | | | | | | | | | | | |
| Heated Buildings | 1,225 | 310 | 241 | Q | .72 | .71 | .68 | .68 | .24 | .10 | .09 | Q | 14.62 |
| Air-Conditioned Buildings | 829 | 237 | 223 | 32 | .72 | .71 | .67 | .71 | .22 | .08 | .09 | 0.02 | 18.06 |
| Buildings with Water Heating | 1,098 | 285 | 197 | Q | .72 | .70 | .66 | .69 | .23 | .09 | .08 | Q | 16.96 |
| Buildings with Cooking | 516 | 102 | 77 | Q | .68 | .66 | .64 | .68 | .22 | .06 | .06 | Q | 21.11 |
| Buildings with Manufacturing | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |

See footnotes at end of table.

Table 50. Fuel Oil Expenditures by Census Region (Continued)

| Building Characteristics | Total Fuel Oil Expenditures (million dollars) | | | | Fuel Oil Expenditures (dollars) | | | | | | | | RSE Row Factor |
|--|---|----------|-------|-------|---------------------------------|----------|-------|-------|-----------------|----------|-------|-------|----------------|
| | | | | | per Gallon | | | | per Square Foot | | | | |
| | North-east | Mid-west | South | West | North-east | Mid-west | South | West | North-east | Mid-west | South | West | |
| RSE Column Factor: | 1.235 | 1.562 | 1.970 | 2.741 | 0.277 | 0.452 | 0.459 | 0.295 | 0.691 | 1.000 | 1.513 | 2.047 | |
| Space-Heating Energy Source | | | | | | | | | | | | | |
| Fuel Oil | 1,184 | 309 | 236 | Q | 0.73 | 0.71 | 0.67 | 0.68 | 0.25 | 0.11 | 0.10 | Q | 15.80 |
| Main | 1,129 | 163 | 173 | Q | .73 | .71 | .71 | Q | .29 | .31 | .15 | Q | 15.50 |
| With Secondary | 226 | Q | Q | Q | .69 | Q | Q | Q | .31 | Q | Q | Q | 21.20 |
| Electricity Only | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Other Energy Sources or Combinations | 128 | Q | Q | Q | .67 | Q | Q | Q | .26 | Q | Q | Q | 23.14 |
| With No Secondary | 903 | 137 | 138 | Q | .73 | .72 | .72 | Q | .29 | .35 | .16 | Q | 15.71 |
| Secondary | 56 | 146 | Q | Q | .72 | .71 | .59 | Q | .06 | .07 | .05 | Q | 25.80 |
| Other Excluding Fuel Oil | Q | Q | Q | Q | .70 | .76 | .76 | .68 | Q | c | Q | Q | 22.01 |
| Building Not Heated | NC | NC | Q | Q | NC | NC | Q | NC | NC | NC | Q | Q | b |
| Main Space-Heating Energy Source | | | | | | | | | | | | | |
| Electricity | Q | Q | Q | Q | Q | Q | .77 | Q | Q | Q | .01 | Q | 15.80 |
| Natural Gas | 51 | 91 | Q | Q | .73 | .72 | .52 | .68 | .08 | .04 | .05 | Q | 20.74 |
| Fuel Oil | 1,129 | 163 | 173 | Q | .73 | .71 | .71 | Q | .29 | .31 | .15 | Q | 15.50 |
| District Heat | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Propane | Q | Q | NC | NC | Q | Q | NC | NC | Q | Q | NC | NC | b |
| Other | Q | NC | Q | Q | Q | NC | Q | Q | Q | NC | Q | Q | b |
| Water-Heating Energy Source | | | | | | | | | | | | | |
| Fuel Oil | 533 | Q | Q | Q | .73 | Q | Q | Q | .31 | Q | Q | Q | 13.67 |
| Other Excluding Fuel Oil | 565 | 248 | 146 | Q | .71 | .72 | .68 | .67 | .19 | .08 | .06 | Q | 15.52 |
| Water Heating Not Performed | 127 | Q | Q | Q | .77 | Q | Q | Q | .38 | Q | Q | Q | 22.04 |
| HEATING AND COOLING | | | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | | | |
| Not Heated | Q | NC | Q | Q | Q | NC | Q | Q | Q | NC | Q | Q | b |
| 1 to 50 | 74 | Q | Q | Q | .80 | Q | Q | Q | .17 | Q | Q | Q | 23.56 |
| 51 to 99 | 199 | Q | Q | Q | .69 | Q | .60 | Q | .29 | Q | .10 | Q | 42.57 |
| 100 | 941 | 226 | 163 | Q | .73 | .71 | .71 | .68 | .24 | .09 | .09 | Q | 13.82 |
| Percent Cooled | | | | | | | | | | | | | |
| Not Cooled | 395 | Q | Q | Q | .73 | Q | Q | Q | .30 | Q | Q | Q | 12.23 |
| 1 to 50 | 516 | 121 | 82 | Q | .71 | .70 | .63 | Q | .25 | .12 | .18 | Q | 23.59 |
| 51 to 99 | 165 | 83 | 69 | Q | .73 | .71 | .64 | .78 | .19 | .08 | .07 | Q | 24.16 |
| 100 | 148 | 33 | 72 | Q | .76 | .77 | .75 | Q | .17 | Q | .07 | Q | 18.20 |
| LIGHTING | | | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | | | |
| Not Lit | Q | Q | NC | NC | Q | Q | NC | NC | Q | Q | NC | NC | b |
| 1 to 50 | 200 | Q | Q | Q | .80 | Q | Q | Q | .27 | Q | Q | Q | 15.14 |
| 51 to 99 | 311 | 100 | 68 | Q | .71 | .70 | .58 | .66 | .23 | .11 | .08 | Q | 21.27 |
| 100 | 700 | 175 | 133 | Q | .71 | .71 | .68 | .71 | .24 | .09 | .09 | Q | 18.24 |

▪ Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

c Value rounds to zero in the units displayed.

NC No cases in responding sample.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 51. Consumption and Conditional Energy Intensity for Buildings Heated with Fuel Oil

| Building Characteristics | Total Fuel Oil Consumption (million gallons) | | | Total Floorspace of Buildings Using Fuel Oil (million square feet) | | | Fuel Oil Energy Intensity (gallons/sq. ft.) | | | RSE Row Factor | |
|--|--|-------------------------|-------------------|--|-------------------------|-------------------|---|-------------------------|-------------------|----------------|--|
| | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | | |
| | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | |
| RSE Column Factor | 0.698 | 0.692 | 1.719 | 0.705 | 0.693 | 1.018 | 0.696 | 0.794 | 1.806 | | |
| All Buildings | 2,459.3 | 2,056.3 | 403.0 | 10,526 | 5,599 | 4,927 | 0.23 | 0.37 | 0.08 | 15.42 | |
| Building Floorspace (Square Feet) | | | | | | | | | | | |
| 1,001 to 5,000 | 419.0 | 400.4 | Q | 802 | 743 | Q | .52 | .54 | Q | 19.71 | |
| 5,001 to 10,000 | 296.2 | 272.7 | Q | 682 | 563 | Q | .43 | .48 | Q | 38.36 | |
| 10,001 to 25,000 | 479.1 | 441.3 | Q | 1,380 | 1,125 | Q | .35 | .39 | Q | 19.36 | |
| 25,001 to 50,000 | 325.6 | 316.1 | 9.5 | 1,216 | 887 | 329 | .27 | .36 | .03 | 24.45 | |
| 50,001 to 100,000 | 383.1 | 266.9 | 116.2 | 1,450 | 744 | 706 | .26 | .36 | Q | 38.29 | |
| 100,001 to 200,000 | 314.8 | Q | Q | 1,816 | Q | 921 | .17 | Q | Q | 38.44 | |
| 200,001 to 500,000 | 157.7 | Q | 76.7 | 1,290 | Q | 1,051 | .12 | Q | .07 | 29.79 | |
| Over 500,000 | 83.8 | Q | 24.3 | 1,891 | Q | 1,489 | .04 | Q | Q | 35.72 | |
| Year Constructed | | | | | | | | | | | |
| 1899 or Before | 123.2 | 121.8 | Q | 406 | 291 | Q | .30 | .42 | Q | 36.01 | |
| 1900 to 1919 | 177.2 | 154.5 | Q | 794 | 567 | Q | .22 | .27 | Q | 39.24 | |
| 1920 to 1945 | 491.9 | 455.9 | Q | 2,398 | 1,544 | 853 | .21 | .30 | Q | 22.10 | |
| 1946 to 1959 | 548.3 | 482.4 | Q | 1,868 | 1,172 | 697 | .29 | .41 | Q | 24.94 | |
| 1960 to 1969 | 498.4 | 421.8 | 76.5 | 2,051 | 1,002 | 1,050 | .24 | .42 | .07 | 28.53 | |
| 1970 to 1979 | 417.4 | 330.5 | Q | 1,640 | 733 | 907 | .25 | .45 | Q | 29.82 | |
| 1980 to 1983 | 67.2 | Q | Q | 668 | Q | Q | .10 | Q | Q | 36.80 | |
| 1984 to 1986 | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| 1987 to 1989 | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| BUILDING USE | | | | | | | | | | | |
| Principal Building Activity | | | | | | | | | | | |
| Assembly | 225.7 | 203.6 | Q | 1,022 | 791 | Q | .22 | .26 | Q | 23.27 | |
| Education | 506.4 | 434.1 | 72.3 | 2,152 | 1,205 | 947 | .24 | .36 | .08 | 27.14 | |
| Food Sales | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Food Service | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Health Care | 112.4 | Q | 45.6 | 1,198 | Q | 1,065 | .09 | Q | .04 | 30.64 | |
| Lodging | 60.0 | Q | Q | 404 | Q | Q | .15 | Q | Q | 48.44 | |
| Mercantile and Service | 535.5 | 503.8 | Q | 1,444 | 1,099 | Q | .37 | .46 | Q | 22.27 | |
| Office | 294.8 | 259.2 | 35.5 | 1,819 | 723 | 1,095 | .16 | .36 | .03 | 28.82 | |
| Parking Garage | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Warehouse | 362.9 | 222.7 | Q | 1,342 | 819 | Q | .27 | .27 | Q | 42.23 | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Vacant | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Weekly Operating Hours | | | | | | | | | | | |
| 39 or Fewer | 183.5 | 181.3 | Q | 749 | 635 | Q | .25 | .29 | Q | 23.23 | |
| 40 to 48 | 466.9 | 395.2 | Q | 2,484 | 1,267 | 1,218 | .19 | .31 | Q | 24.10 | |
| 49 to 60 | 385.5 | 362.1 | Q | 1,868 | 1,316 | 552 | .21 | .28 | .04 | 22.06 | |
| 61 to 84 | 472.8 | 416.4 | Q | 1,478 | 908 | 570 | .32 | .46 | .10 | 24.82 | |
| 85 to 167 | 558.3 | 378.9 | Q | 1,928 | 1,004 | 924 | .29 | .38 | .19 | 30.17 | |
| 168 (Open Continuously) | 392.3 | 322.4 | 69.9 | 2,019 | 469 | 1,550 | .19 | .69 | .05 | 28.15 | |
| Workers | | | | | | | | | | | |
| 4 or Fewer | 567.2 | 563.6 | Q | 1,702 | 1,467 | Q | .34 | .38 | Q | 20.52 | |
| 5 to 9 | 244.4 | 225.4 | Q | 1,023 | 833 | Q | .24 | .27 | Q | 23.30 | |
| 10 to 19 | 272.2 | 233.9 | Q | 866 | 579 | Q | .31 | .40 | Q | 28.31 | |
| 20 to 49 | 500.6 | 464.5 | Q | 1,365 | 962 | 403 | .37 | .48 | Q | 22.01 | |
| 50 to 99 | 236.1 | 179.5 | Q | 1,493 | 783 | Q | .16 | .23 | Q | 37.17 | |
| 100 to 249 | 389.5 | Q | Q | 1,414 | 517 | 897 | .28 | .43 | Q | 39.67 | |
| 250 or More | 229.3 | Q | 64.8 | 2,664 | Q | 2,206 | .09 | Q | .03 | 29.68 | |

See footnote at end of table.

Table 51. Consumption and Conditional Energy Intensity for Buildings Heated with Fuel Oil (Continued)

| Building Characteristics | Total Fuel Oil Consumption (million gallons) | | | Total Floorspace of Buildings Using Fuel Oil (million square feet) | | | Fuel Oil Energy Intensity (gallons/sq. ft.) | | | RSE Row Factor | |
|--------------------------------------|--|-------------------------|-------------------|--|-------------------------|-------------------|---|-------------------------|-------------------|----------------|--|
| | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | | |
| | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | |
| RSE Column Factor | 0.989 | 0.992 | 1.719 | 0.706 | 0.698 | 1.071 | 0.698 | 0.704 | 1.808 | | |
| Ownership and Occupancy | | | | | | | | | | | |
| Nongovernment Owned | 1,683.1 | 1,424.5 | 258.6 | 7,223 | 4,021 | 3,203 | 0.23 | 0.35 | 0.08 | 17.15 | |
| Owner Occupied | 1,397.5 | 1,193.3 | 204.3 | 5,686 | 3,057 | 2,629 | .25 | .39 | .08 | 17.75 | |
| Single Establishment | 1,226.9 | 1,036.6 | 190.4 | 4,817 | 2,645 | 2,172 | .25 | .39 | .09 | 20.27 | |
| Multiple Establishment | 170.6 | 156.7 | 13.9 | 869 | 413 | 456 | .20 | .38 | .03 | 20.23 | |
| Nonowner Occupied | 285.6 | 231.2 | Q | 1,537 | 963 | Q | .19 | .24 | Q | 26.85 | |
| Single Establishment | Q | 77.0 | Q | 933 | 539 | Q | .14 | .14 | Q | 40.89 | |
| Multiple Establishment | 130.0 | Q | Q | 489 | Q | Q | .27 | Q | Q | 26.82 | |
| Vacant | Q | Q | NC | Q | Q | Q | Q | Q | NC | b | |
| Government Owned | 776.2 | 631.8 | 144.4 | 3,303 | 1,578 | 1,725 | .23 | .40 | .08 | 26.09 | |
| Federal | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| State | 184.2 | Q | Q | 794 | Q | Q | Q | Q | Q | 46.34 | |
| Local | 560.3 | 479.0 | 81.3 | 2,245 | 1,179 | 1,065 | .25 | .41 | .08 | 27.76 | |
| Multibuilding Facility | | | | | | | | | | | |
| Not on Multibuilding Facility | 1,644.0 | 1,448.4 | Q | 6,659 | 4,236 | 2,423 | .25 | .34 | .08 | 14.80 | |
| Part of Multibuilding Facility | 815.3 | 607.9 | 207.4 | 3,867 | 1,362 | 2,505 | .21 | .45 | .08 | 25.54 | |
| On Facility with Central Plant | Q | Q | 148.6 | 1,845 | Q | 1,518 | Q | Q | .10 | 31.20 | |
| LOCATION | | | | | | | | | | | |
| Census Region | | | | | | | | | | | |
| Northeast | 1,632.7 | 1,555.6 | 77.1 | 4,772 | 3,860 | 912 | .34 | .40 | .08 | 20.16 | |
| Midwest | 434.2 | 230.0 | 204.2 | 2,746 | 518 | 2,227 | .16 | .44 | .09 | 23.87 | |
| South | 349.4 | 243.7 | Q | 2,314 | 1,117 | 1,198 | .15 | .22 | .09 | 34.85 | |
| West | Q | Q | Q | 694 | Q | Q | Q | Q | Q | 55.82 | |
| Census Division | | | | | | | | | | | |
| Northeast | | | | | | | | | | | |
| New England | 649.7 | 611.7 | Q | 1,838 | 1,611 | Q | .35 | .38 | Q | 17.52 | |
| Middle Atlantic | 983.0 | 943.9 | 39.1 | 2,934 | 2,250 | 684 | .34 | .42 | .06 | 27.30 | |
| Midwest | | | | | | | | | | | |
| East North Central | 271.0 | 115.1 | 155.9 | 1,626 | 320 | 1,305 | .17 | .36 | .12 | 26.88 | |
| West North Central | 163.2 | Q | Q | 1,120 | Q | 922 | Q | Q | Q | 33.29 | |
| South | | | | | | | | | | | |
| South Atlantic | 296.1 | 212.5 | Q | 1,754 | 1,012 | 742 | .17 | .21 | Q | 38.85 | |
| East South Central | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| West South Central | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| West | | | | | | | | | | | |
| Mountain | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Pacific | Q | Q | Q | 476 | Q | Q | Q | Q | Q | 55.84 | |
| Metropolitan Status | | | | | | | | | | | |
| Metropolitan | 1,879.9 | 1,596.0 | 283.9 | 8,296 | 4,140 | 4,156 | .23 | .39 | .07 | 14.87 | |
| Nonmetropolitan | 579.4 | 460.3 | Q | 2,230 | 1,459 | 771 | .26 | .32 | .15 | 39.74 | |
| Climate Zone: 45-Year Average | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | |
| Over 7,000 HDD | 459.5 | 361.3 | Q | 1,753 | 1,006 | 746 | .26 | .36 | Q | 15.89 | |
| 5,500-7,000 HDD | 939.1 | 811.6 | 127.5 | 3,343 | 1,775 | 1,569 | .28 | .46 | .08 | 25.05 | |
| 4,000-5,499 HDD | 892.2 | 793.9 | Q | 3,889 | 2,345 | 1,544 | .23 | .34 | .06 | 19.47 | |
| Under 4,000 HDD | Q | Q | Q | 1,165 | Q | 771 | Q | Q | Q | 38.85 | |
| 2,000 CDD or More and -- | | | | | | | | | | | |
| Under 4,000 HDD | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |

See footnote at end of table.

FUEL OIL

Table 51. Consumption and Conditional Energy Intensity for Buildings Heated with Fuel Oil (Continued)

| Building Characteristics | Total Fuel Oil Consumption (million gallons) | | | Total Floorspace of Buildings Using Fuel Oil (million square feet) | | | Fuel Oil Energy Intensity (gallons/sq. ft.) | | | RSE Row Factor | |
|--|--|-------------------------|-------------------|--|-------------------------|-------------------|---|-------------------------|-------------------|----------------|--|
| | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | | |
| | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | |
| RSE Column Factor | 1.000 | 1.000 | 1.000 | 0.700 | 0.600 | 1.016 | 0.620 | 0.734 | 1.000 | | |
| 1989 Degree-Days | | | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | | | |
| Over 7,000 HDD | 670.1 | 556.5 | Q | 2,308 | 1,306 | 1,002 | 0.29 | 0.43 | Q | 33.15 | |
| 5,500-7,000 HDD | 1,047.0 | 872.2 | 174.8 | 4,544 | 2,273 | 2,272 | .23 | .38 | .08 | 16.07 | |
| 4,000-5,499 HDD | 589.4 | 553.8 | Q | 2,312 | 1,596 | 717 | .25 | .35 | Q | 25.80 | |
| Under 4,000 HDD | Q | Q | Q | 986 | Q | 640 | Q | Q | Q | 33.97 | |
| 2,000 CDD or More and -- | | | | | | | | | | | |
| Under 4,000 HDD | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| STRUCTURE Floors | | | | | | | | | | | |
| 1 | 714.0 | 593.5 | Q | 2,030 | 1,386 | 643 | .35 | .43 | Q | 19.39 | |
| 2 | 756.8 | 617.7 | 139.0 | 2,726 | 1,740 | 986 | .28 | .35 | .14 | 25.09 | |
| 3 | 493.7 | 442.7 | Q | 1,835 | 1,265 | 570 | .27 | .35 | Q | 25.09 | |
| 4 to 6 | 353.7 | 286.9 | 66.8 | 2,205 | 818 | 1,387 | .16 | .35 | .05 | 27.10 | |
| 7 or More | 141.1 | Q | 25.6 | 1,730 | Q | 1,341 | .08 | Q | .02 | 27.02 | |
| Wall Materials | | | | | | | | | | | |
| Masonry | 1,974.2 | 1,643.0 | 331.2 | 8,190 | 4,423 | 3,767 | .24 | .37 | .09 | 16.82 | |
| Siding or Shingles | 213.7 | 210.0 | Q | 670 | 605 | Q | .32 | .35 | Q | 33.01 | |
| Metal Panels | 123.7 | 92.6 | Q | 593 | 299 | Q | .21 | .31 | Q | 20.04 | |
| Concrete Panels | Q | Q | Q | 876 | Q | 687 | .12 | Q | Q | 47.07 | |
| Window Glass | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Roof Materials | | | | | | | | | | | |
| Built-Up | 1,220.9 | 1,001.3 | 219.6 | 5,237 | 2,257 | 2,980 | .23 | .44 | .07 | 16.85 | |
| Shingles (Not Wood) | 510.8 | 497.5 | Q | 1,979 | 1,592 | Q | .26 | .31 | Q | 24.00 | |
| Metal Surfacing | 205.4 | 192.1 | Q | 707 | 579 | Q | .29 | .33 | Q | 27.50 | |
| Synthetic or Rubber | 413.5 | 270.8 | Q | 1,471 | 530 | 941 | .28 | .51 | Q | 33.00 | |
| Slate or Tile | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Concrete | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Wooden Materials | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | | | |
| Roof or Ceiling Insulation | 1,740.0 | 1,405.5 | 334.5 | 7,694 | 3,825 | 3,869 | .23 | .37 | .09 | 16.85 | |
| Wall Insulation | 1,002.0 | 748.8 | 253.2 | 5,162 | 2,261 | 2,901 | .19 | .33 | .09 | 19.33 | |
| Storm or Multiple Glazing | 1,103.1 | 906.0 | 197.1 | 5,563 | 2,558 | 3,005 | .20 | .35 | .07 | 17.70 | |
| Tinted, Reflective, or Shading Glass | 483.4 | 391.7 | 91.7 | 3,537 | 1,061 | 2,476 | .14 | .37 | .04 | 19.00 | |
| Exterior or Interior Shadings or Awnings | 881.1 | 767.0 | 114.0 | 4,516 | 2,049 | 2,467 | .20 | .37 | .05 | 16.45 | |
| Weather Stripping or Caulking | 1,684.8 | 1,384.3 | 300.5 | 7,815 | 3,602 | 4,213 | .22 | .38 | .07 | 16.80 | |
| None of the Above | 303.8 | Q | Q | 1,095 | 717 | Q | Q | .38 | Q | 46.33 | |
| ENERGY SOURCES AND END USES* | | | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | | | |
| Electricity | 2,447.0 | 2,044.0 | 403.0 | 10,505 | 5,577 | 4,927 | .23 | .37 | .08 | 16.82 | |
| Natural Gas | 997.2 | 703.0 | 294.2 | 6,386 | 1,985 | 4,400 | .16 | .35 | .07 | 18.80 | |
| Fuel Oil | 2,459.3 | 2,056.3 | 403.0 | 10,526 | 5,599 | 4,927 | .23 | .37 | .08 | 16.42 | |
| District Heat | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| District Chilled Water | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Propane | 453.9 | 331.8 | Q | 1,344 | 877 | Q | .34 | .38 | Q | 36.10 | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |

See footnote at end of table.

Table 51. Consumption and Conditional Energy Intensity for Buildings Heated with Fuel Oil (Continued)

| Building Characteristics | Total Fuel Oil Consumption (million gallons) | | | Total Floorspace of Buildings Using Fuel Oil (million square feet) | | | Fuel Oil Energy Intensity (gallons/sq. ft.) | | |
|---|--|-------------------------|-------------------|--|-------------------------|-------------------|---|-------------------------|-------------------|
| | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | |
| | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating |
| | | | | | | | | | |
| Energy End Uses (Solely or in Combination) | | | | | | | | | |
| Heated Buildings | 2,459.3 | 2,056.3 | 403.0 | 10,526 | 5,599 | 4,927 | 0.23 | 0.37 | 0.08 |
| Air-Conditioned Buildings | 1,784.0 | 1,409.3 | 374.7 | 8,415 | 3,754 | 4,661 | .21 | .38 | .08 |
| Buildings with Water Heating | 2,204.3 | 1,811.0 | 393.3 | 9,828 | 4,986 | 4,842 | .22 | .36 | .08 |
| Buildings with Cooking | 1,019.0 | 887.0 | 132.0 | 5,109 | 2,179 | 2,930 | .20 | .41 | .05 |
| Buildings with Manufacturing | Q | Q | Q | 960 | Q | Q | Q | Q | Q |
| Space-Heating Energy Source | | | | | | | | | |
| Fuel Oil | 2,459.3 | 2,056.3 | 403.0 | 10,526 | 5,599 | 4,927 | .23 | .37 | .08 |
| Main | 2,056.3 | 2,056.3 | -- | 5,599 | 5,599 | -- | .37 | .37 | -- |
| With Secondary | 423.3 | 423.3 | -- | 1,146 | 1,146 | -- | .37 | .37 | -- |
| Electricity Only | 192.1 | 192.1 | -- | 465 | 465 | -- | .41 | .41 | -- |
| Other Energy Sources or Combinations | 231.2 | 231.2 | -- | 682 | 682 | -- | .34 | .34 | -- |
| With No Secondary | 1,633.0 | 1,633.0 | -- | 4,453 | 4,453 | -- | .37 | .37 | -- |
| Secondary | 403.0 | -- | 403.0 | 4,927 | -- | 4,927 | .08 | -- | .08 |
| Other Excluding Fuel Oil | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Building Not Heated | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Main Space-Heating Energy Source | | | | | | | | | |
| Electricity | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| Natural Gas | 292.7 | Q | 278.3 | 3,898 | Q | 3,827 | .08 | Q | .07 |
| Fuel Oil | 2,056.3 | 2,056.3 | -- | 5,599 | 5,599 | -- | .37 | .37 | -- |
| District Heat | 41.2 | Q | Q | Q | Q | Q | Q | Q | Q |
| Propane | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| Other | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ability to Switch Main Heating Fuel | | | | | | | | | |
| No Alternate | 1,723.9 | 1,590.0 | Q | 5,300 | 4,097 | 1,203 | .33 | .39 | Q |
| Alternate Main Heating Fuel | | | | | | | | | |
| Electricity | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| Natural Gas | 314.2 | 309.5 | Q | 949 | 890 | Q | .33 | .35 | Q |
| Fuel Oil | 279.1 | Q | 261.9 | 3,681 | Q | 3,579 | .08 | Q | .07 |
| Propane | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| Other | Q | Q | NC | Q | Q | NC | Q | Q | NC |
| Air-Conditioning Energy Source | | | | | | | | | |
| Fuel Oil | Q | Q | Q | Q | Q | Q | Q | Q | Q |
| Other Excluding Fuel Oil | 1,762.9 | 1,389.6 | 373.4 | 8,305 | 3,687 | 4,618 | .21 | .38 | .08 |
| Air-Conditioning Not Performed | 675.2 | 646.9 | Q | 2,112 | 1,845 | Q | .32 | .35 | Q |

See footnote at end of table.

Table 51. Consumption and Conditional Energy Intensity for Buildings Heated with Fuel Oil (Continued)

| Building Characteristics | Total Fuel Oil Consumption (million gallons) | | | Total Floorspace of Buildings Using Fuel Oil (million square feet) | | | Fuel Oil Energy Intensity (gallons/sq. ft.) | | | RSE Row Factor | |
|--|--|-------------------------|-------------------|--|-------------------------|-------------------|---|-------------------------|-------------------|----------------|--|
| | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | | |
| | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | |
| | 0.000 | 0.000 | 1.000 | 0.000 | 0.075 | 0.093 | 0.014 | 0.714 | 1.078 | | |
| Water-Heating Energy Source | | | | | | | | | | | |
| Fuel Oil | 831.8 | 827.1 | Q | 2,089 | 1,967 | Q | 0.40 | 0.42 | Q | 21.07 | |
| Other Excluding Fuel Oil | 1,372.5 | 983.9 | 388.6 | 7,739 | 3,019 | 4,720 | .18 | .33 | 0.08 | 19.52 | |
| Water Heating Not Performed | 254.9 | 245.2 | Q | 699 | 613 | Q | .36 | .40 | Q | 34.18 | |
| Cooking Energy Source | | | | | | | | | | | |
| Fuel Oil | Q | Q | NC | Q | Q | Q | Q | Q | NC | b | |
| Other Excluding Fuel Oil | 922.4 | 790.4 | 132.0 | 4,962 | 2,038 | 2,924 | .19 | .39 | .05 | 22.38 | |
| Cooking Not Performed | 1,440.3 | 1,169.3 | 271.0 | 5,418 | 3,420 | 1,997 | .27 | .34 | .14 | 17.48 | |
| Manufacturing Energy Source | | | | | | | | | | | |
| Fuel Oil | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Other Excluding Fuel Oil | Q | Q | Q | 833 | Q | Q | Q | Q | Q | 56.95 | |
| Manufacturing Not Performed | 2,130.7 | 1,871.9 | 258.8 | 9,567 | 5,310 | 4,257 | .22 | .35 | .06 | 12.87 | |
| HEATING AND COOLING | | | | | | | | | | | |
| Percent Heated | | | | | | | | | | | |
| Not Heated | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| 1 to 50 | 187.1 | 113.6 | Q | 843 | 592 | Q | .22 | .19 | Q | 50.62 | |
| 51 to 99 | 422.2 | 322.0 | Q | 1,993 | 658 | 1,335 | .21 | .49 | Q | 37.98 | |
| 100 | 1,834.0 | 1,604.8 | 229.3 | 7,675 | 4,334 | 3,341 | .24 | .37 | .07 | 12.10 | |
| Percent Cooled | | | | | | | | | | | |
| Not Cooled | 675.2 | 646.9 | Q | 2,112 | 1,845 | Q | .32 | .35 | Q | 16.82 | |
| 1 to 50 | 994.3 | 831.0 | Q | 3,407 | 2,095 | 1,313 | .29 | .40 | .12 | 26.12 | |
| 51 to 99 | 455.4 | 287.2 | 168.2 | 2,652 | 757 | 1,895 | .17 | .38 | .09 | 27.18 | |
| 100 | 334.2 | 291.1 | 43.1 | 2,355 | 902 | 1,453 | .14 | .32 | .03 | 24.48 | |
| Year Main Central Chiller Installed | | | | | | | | | | | |
| 1959 or Before | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| 1960 to 1969 | Q | Q | Q | 783 | Q | 570 | Q | Q | Q | 31.87 | |
| 1970 to 1979 | Q | Q | Q | 745 | Q | 628 | Q | Q | Q | 21.04 | |
| 1980 to 1986 | 82.0 | Q | 47.2 | 1,057 | Q | 882 | .08 | Q | .05 | 30.69 | |
| 1987 to 1989 | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Year Packaged Cooling System Installed | | | | | | | | | | | |
| 1959 or Before | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| 1960 to 1969 | Q | Q | Q | 816 | Q | 512 | Q | Q | Q | 39.29 | |
| 1970 to 1979 | 263.5 | 218.7 | 44.8 | 1,249 | 512 | 737 | .21 | .43 | .06 | 28.01 | |
| 1980 to 1986 | 332.2 | 237.3 | Q | 1,478 | 802 | 676 | .22 | .30 | .14 | 24.81 | |
| 1987 to 1989 | 198.7 | 101.0 | Q | 1,130 | 247 | Q | .18 | .41 | Q | 30.51 | |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | | | |
| Present in Building | 597.2 | 463.2 | 133.9 | 3,993 | 1,205 | 2,788 | .15 | .38 | .05 | 21.37 | |
| Not Present | 1,862.1 | 1,593.1 | Q | 6,533 | 4,394 | 2,139 | .29 | .36 | .13 | 18.82 | |
| LIGHTING | | | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | | | |
| Not Lit | Q | Q | NC | Q | Q | Q | Q | Q | NC | b | |
| 1 to 50 | 341.8 | 307.5 | Q | 1,598 | 1,206 | Q | .21 | .25 | Q | 20.45 | |
| 51 to 99 | 699.4 | 580.4 | Q | 3,140 | 1,353 | 1,787 | .22 | .43 | Q | 17.69 | |
| 100 | 1,393.0 | 1,143.4 | 249.6 | 5,678 | 2,976 | 2,703 | .25 | .38 | .09 | 20.38 | |

See footnotes at end of table.

Table 51. Consumption and Conditional Energy Intensity for Buildings Heated with Fuel Oil (Continued)

| Building Characteristics | Total Fuel Oil Consumption (million gallons) | | | Total Floorspace of Buildings Using Fuel Oil (million square feet) | | | Fuel Oil Energy Intensity (gallons/sq. ft.) | | | RSE Flow Factor | |
|--|--|-------------------------|-------------------|--|-------------------------|-------------------|---|-------------------------|-------------------|--------------------|--|
| | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | All Buildings Heated with Fuel Oil | Buildings with Fuel Oil | | | |
| | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | Main Heating | Secondary Heating | | |
| Electricity as Main Space-Heating Energy Source | 0.990 | 0.992 | 1.000 | 0.996 | 0.875 | 0.993 | 0.914 | 0.714 | 1.575 | | |
| ENERGY MANAGEMENT | | | | | | | | | | | |
| Occupant Control | | | | | | | | | | | |
| Any Control of Heating | 1,110.3 | 989.6 | 120.7 | 4,318 | 2,746 | 1,572 | 0.26 | 0.36 | 0.08 | 16.30 | |
| With Thermostats | 1,010.1 | 897.1 | 113.0 | 3,878 | 2,470 | 1,408 | .26 | .36 | .08 | 16.19 | |
| Any Control of Cooling | 949.7 | 806.5 | 143.2 | 3,789 | 1,942 | 1,846 | .25 | .42 | .08 | 20.05 | |
| With Thermostats | 734.5 | 611.4 | 123.1 | 3,449 | 1,730 | 1,719 | .21 | .35 | .07 | 20.86 | |
| Reduced Use During Off-Hours | | | | | | | | | | | |
| Heating Only | 584.5 | 550.0 | Q | 2,020 | 1,663 | Q | .29 | .33 | Q | 16.01 | |
| Cooling Only | 164.4 | 142.9 | Q | 591 | 301 | Q | .28 | .47 | Q | 35.52 | |
| Heating and Cooling | 1,178.0 | 968.1 | 209.9 | 6,319 | 3,006 | 3,313 | .19 | .32 | .06 | 16.48 | |
| Computerized Energy Management and Control System | | | | | | | | | | | |
| Present in Building | 313.5 | 219.3 | 94.2 | 3,031 | 628 | 2,402 | .10 | .35 | .04 | 24.87 | |
| Controls Heating and Cooling | 312.6 | 218.6 | 94.0 | 2,858 | 622 | 2,236 | .11 | .35 | .04 | 24.56 | |
| Controls Lighting | Q | Q | Q | 652 | Q | Q | Q | Q | Q | 64.31 | |
| Controls Other | Q | Q | Q | Q | Q | Q | Q | Q | Q | b | |
| Other Energy Management | | | | | | | | | | | |
| Regular HVAC Maintenance | 1,937.3 | 1,571.3 | 366.0 | 8,439 | 4,142 | 4,297 | .23 | .38 | .09 | 16.38 | |
| Participated in Utility Conservation Program | 438.3 | 375.1 | 63.2 | 2,717 | 1,096 | 1,621 | .16 | .34 | .04 | 26.35 | |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

^a No applicable RSE row factor.

^b No cases in responding sample.

^c Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

-- Data not applicable.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

DISTRICT HEAT

Table 52. District Heat Consumption

| Building Characteristics | All Buildings Using District Heat | | | District Heat Consumption | | | | | Percent Change From Previous Year |
|--|-----------------------------------|----------------------------------|--|---------------------------|------------------------|--------------------------------|--------------------------|------------------------------|---|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion pounds) | per Building (thousand pounds) | per Square Foot (pounds) | per Worker (thousand pounds) | |
| TYPE OF BUILDINGS | 1,020 | 1,024 | 0.844 | 1,148 | 1,148 | 1,070 | 0.271 | 10.85 | |
| All Buildings | 98 | 6,578 | 67 | 585 | 585 | 5,984 | 88.96 | 56.5 | |
| Building Floorspace (Square Feet) | | | | | | | | | |
| 1,001 to 5,000 | Q | Q | Q | Q | Q | Q | Q | Q | |
| 5,001 to 10,000 | Q | Q | Q | Q | Q | Q | Q | Q | |
| 10,001 to 25,000 | 30 | 540 | 18 | 63 | 63 | 2,100 | 117.32 | 79.4 | |
| 25,001 to 50,000 | 13 | 498 | 37 | Q | Q | Q | Q | Q | |
| 50,001 to 100,000 | 11 | 838 | 75 | 119 | 119 | 10,658 | 141.95 | 108.7 | |
| 100,001 to 200,000 | 8 | 1,179 | 146 | 106 | 106 | 13,063 | 89.64 | 71.4 | |
| 200,001 to 500,000 | 5 | 1,264 | 274 | 76 | 76 | 16,404 | 59.86 | 40.7 | |
| Over 500,000 | 2 | 2,111 | 1,058 | 133 | 133 | 66,859 | 63.17 | 31.3 | |
| Year Constructed | | | | | | | | | |
| 1899 or Before | Q | Q | Q | Q | Q | Q | Q | Q | |
| 1900 to 1919 | Q | 264 | 33 | 15 | 15 | 1,924 | 57.84 | 55.6 | |
| 1920 to 1945 | 21 | 1,276 | 61 | Q | Q | Q | 88.09 | 51.0 | |
| 1946 to 1959 | 18 | Q | 87 | Q | Q | 6,712 | 76.81 | 44.1 | |
| 1960 to 1969 | 22 | 1,214 | 54 | 156 | 156 | 6,982 | 128.34 | 82.1 | |
| 1970 to 1979 | 11 | 1,227 | 107 | 110 | 110 | 9,579 | 89.39 | 76.6 | |
| 1980 to 1983 | Q | Q | Q | Q | Q | Q | Q | Q | |
| 1984 to 1986 | Q | Q | Q | Q | Q | Q | Q | Q | |
| 1987 to 1989 | Q | Q | Q | Q | Q | Q | Q | Q | |
| BUILDING USE | | | | | | | | | |
| Principal Building Activity | | | | | | | | | |
| Assembly | 15 | 828 | 54 | 49 | 49 | 3,206 | 59.47 | Q | |
| Education | 16 | Q | Q | Q | Q | Q | 82.29 | 78.6 | |
| Food Sales | Q | Q | Q | Q | Q | Q | Q | Q | |
| Food Service | Q | Q | Q | Q | Q | Q | Q | Q | |
| Health Care | 4 | 680 | 181 | 92 | 92 | 24,513 | 135.12 | 76.5 | |
| Lodging | 13 | 693 | 54 | Q | Q | Q | Q | Q | |
| Mercantile and Service | Q | Q | Q | Q | Q | Q | Q | Q | |
| Office | 23 | 2,316 | 101 | 167 | 167 | 7,285 | 72.07 | 29.0 | |
| Parking Garage | Q | Q | Q | Q | Q | Q | Q | Q | |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | Q | |
| Warehouse | Q | Q | Q | Q | Q | Q | Q | Q | |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | |
| Vacant | Q | Q | Q | Q | Q | Q | Q | Q | |
| Weekly Operating Hours | | | | | | | | | |
| 39 or Fewer | Q | Q | Q | Q | Q | Q | Q | Q | |
| 40 to 48 | 19 | 929 | 48 | 105 | 105 | 5,469 | 113.26 | 80.4 | |
| 49 to 60 | 14 | 1,184 | 85 | 66 | 66 | Q | 55.98 | 27.0 | |
| 61 to 84 | Q | 971 | 80 | 60 | 60 | 4,890 | Q | Q | |
| 85 to 167 | 10 | Q | Q | Q | Q | Q | 62.30 | 55.1 | |
| 168 (Open Continuously) | 35 | 2,153 | 61 | 272 | 272 | 7,749 | 126.58 | 83.9 | |
| Workers | | | | | | | | | |
| 4 or Fewer | 24 | Q | 17 | Q | Q | 835 | 50.42 | 486.8 | |
| 5 to 9 | Q | Q | Q | Q | Q | Q | Q | Q | |
| 10 to 19 | 8 | 188 | 25 | 16 | 16 | 2,123 | 86.35 | 163.3 | |
| 20 to 49 | 23 | 905 | 39 | Q | Q | Q | Q | Q | |
| 50 to 99 | 12 | 638 | 51 | Q | Q | Q | Q | Q | |
| 100 to 249 | 9 | 897 | 100 | 99 | 99 | 10,986 | 109.99 | 69.9 | |
| 250 or More | 8 | 3,248 | 406 | 225 | 225 | 28,108 | 69.25 | 31.2 | |

See footnote at end of table.

Table 52. District Heat Consumption (Continued)

| Building Characteristics | All Buildings Using District Heat | | | District Heat Consumption | | | | | RSE Row Factor |
|---|-----------------------------------|----------------------------------|--|---------------------------|------------------------|--------------------------------|--------------------------|------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion pounds) | per Building (thousand pounds) | per Square Foot (pounds) | per Worker (thousand pounds) | |
| RSE Column Factor: | 1.003 | 1.024 | 0.944 | 1.003 | 1.003 | 1.003 | 0.771 | 1.003 | |
| Ownership and Occupancy | | | | | | | | | |
| Nongovernment Owned | 55 | 3,365 | 61 | 284 | 284 | 5,121 | 84.32 | 47.0 | 27.99 |
| Owner Occupied | 51 | 3,086 | 60 | 263 | 263 | 5,155 | 85.21 | 48.6 | 29.61 |
| Single Establishment | 45 | 2,019 | 44 | 228 | 228 | 5,006 | 112.82 | 85.6 | 28.91 |
| Multiple Establishment | 6 | 1,067 | Q | 35 | 35 | Q | 32.99 | 12.8 | 31.00 |
| Nonowner Occupied | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Single Establishment | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Multiple Establishment | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Vacant | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Government Owned | 43 | 3,213 | 75 | 301 | 301 | 7,059 | 93.83 | 69.8 | 25.65 |
| Federal | 7 | Q | 153 | Q | Q | 8,938 | 58.43 | 41.9 | 21.00 |
| State | 23 | 1,657 | 71 | 201 | 201 | 8,621 | 121.27 | 89.5 | 31.70 |
| Local | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Multibuilding Facility | | | | | | | | | |
| Not on Multibuilding Facility | 7 | 1,292 | Q | 58 | 58 | Q | 44.93 | 17.5 | 33.74 |
| Part of Multibuilding Facility | 91 | 5,286 | 58 | 527 | 527 | 5,767 | 98.73 | 74.9 | 21.35 |
| On Facility with Central Plant | 82 | 4,436 | 54 | 476 | 476 | 5,792 | 107.26 | 83.9 | 22.39 |
| Percent Vacant at Least Three Months | | | | | | | | | |
| Months | | | | | | | | | |
| 0 | 77 | 4,006 | 52 | 412 | 412 | 5,318 | 102.77 | 71.1 | 20.51 |
| 1 to 50 | 10 | 1,829 | 187 | 131 | 131 | 13,383 | 71.41 | 34.0 | 34.34 |
| 51 to 99 | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 100 | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Months in Use Out of Past 12 Months | | | | | | | | | |
| 0 to 8 | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 9 to 11 | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 12 | 78 | 6,021 | 77 | 555 | 555 | 7,133 | 92.21 | 55.7 | 20.92 |
| LOCATION | | | | | | | | | |
| Census Region | | | | | | | | | |
| Northeast | 29 | 2,236 | 78 | 179 | 179 | 6,267 | 80.14 | Q | 35.35 |
| Midwest | 16 | 1,509 | 97 | 159 | 159 | 10,206 | 105.28 | 68.1 | 23.94 |
| South | Q | 1,583 | 51 | 126 | 126 | Q | Q | 69.4 | 36.84 |
| West | 23 | Q | 54 | 121 | 121 | 5,241 | 97.14 | 63.9 | 24.75 |
| Census Division | | | | | | | | | |
| Northeast | | | | | | | | | |
| New England | Q | Q | 50 | Q | Q | Q | Q | Q | 48.60 |
| Middle Atlantic | 21 | 1,866 | Q | 127 | 127 | Q | 68.27 | 33.0 | 32.92 |
| Midwest | | | | | | | | | |
| East North Central | 9 | 845 | 94 | 88 | 88 | 9,752 | 104.05 | 73.9 | 29.18 |
| West North Central | 7 | Q | 101 | Q | Q | 10,832 | 106.85 | 62.1 | 25.72 |
| South | | | | | | | | | |
| South Atlantic | Q | Q | Q | Q | Q | Q | Q | Q | b |
| East South Central | Q | Q | Q | Q | Q | Q | Q | Q | b |
| West South Central | Q | Q | Q | Q | Q | Q | Q | Q | b |
| West | | | | | | | | | |
| Mountain | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Pacific | 12 | 517 | 44 | Q | Q | 4,144 | 94.38 | 48.9 | 31.07 |
| Metropolitan Status | | | | | | | | | |
| Metropolitan | 85 | 6,283 | 74 | 532 | 532 | 6,267 | 84.72 | 52.7 | 21.46 |
| Nonmetropolitan | Q | Q | Q | Q | Q | Q | Q | Q | b |

See footnote at end of table.

DISTRICT HEAT

Table 52. District Heat Consumption (Continued)

| Building Characteristics | All Buildings Using District Heat | | | District Heat Consumption | | | | | 1989 Heat Factor |
|--|-----------------------------------|----------------------------------|--|---------------------------|------------------------|--------------------------------|--------------------------|------------------------------|------------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion pounds) | per Building (thousand pounds) | per Square Foot (pounds) | per Worker (thousand pounds) | |
| Climate Zone: 45-Year Average | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | |
| Over 7,000 HDD | 6 | 425 | 76 | Q | Q | 15,635 | 206.31 | Q | 33.86 |
| 5,500-7,000 HDD | 34 | 2,202 | 65 | 199 | 199 | 5,921 | 90.45 | 66.4 | 24.42 |
| 4,000-5,499 HDD | 25 | 2,118 | 86 | 152 | 152 | 6,199 | 71.84 | 35.0 | 35.00 |
| Under 4,000 HDD | Q | 1,171 | 62 | 83 | 83 | Q | 70.65 | 48.9 | 37.41 |
| 2,000 CDD or More and -- | | | | | | | | | |
| Under 4,000 HDD | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 1989 Degree-Days | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | |
| Over 7,000 HDD | 9 | 808 | 90 | Q | Q | 12,795 | Q | Q | 33.86 |
| 5,500-7,000 HDD | 43 | 2,741 | 64 | 254 | 254 | 5,947 | 92.51 | 69.5 | 24.41 |
| 4,000-5,499 HDD | 14 | 1,337 | 98 | 84 | 84 | 6,193 | 62.98 | 25.4 | 35.07 |
| Under 4,000 HDD | Q | 1,037 | 59 | Q | Q | Q | 67.19 | 47.6 | 37.41 |
| 2,000 CDD or More and -- | | | | | | | | | |
| Under 4,000 HDD | Q | Q | Q | Q | Q | Q | Q | Q | b |
| STRUCTURE | | | | | | | | | |
| Floors | | | | | | | | | |
| 1 | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 2 | 32 | 851 | 27 | 70 | 70 | 2,218 | 82.83 | 83.8 | 33.86 |
| 3 | 18 | 1,145 | 65 | Q | Q | Q | Q | Q | 24.41 |
| 4 to 6 | 16 | 1,662 | 102 | 168 | 168 | 10,297 | 101.22 | 84.8 | 30.23 |
| 7 or More | 9 | 2,612 | 288 | 177 | 177 | 19,548 | 67.89 | 31.7 | 24.41 |
| Wall Materials | | | | | | | | | |
| Masonry | 65 | 3,911 | 60 | 385 | 385 | 5,917 | 98.41 | 65.8 | 22.12 |
| Siding or Shingles | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Metal Panels | Q | Q | Q | Q | Q | Q | Q | Q | 35.07 |
| Concrete Panels | Q | 1,292 | 80 | 113 | 113 | 6,963 | 87.11 | 65.2 | 35.07 |
| Window Glass | Q | Q | Q | 23 | 23 | Q | Q | Q | 33.06 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Roof Materials | | | | | | | | | |
| Built-Up | 48 | 3,351 | 69 | 309 | 309 | 6,375 | 92.15 | 53.2 | 20.52 |
| Shingles (Not Wood) | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Metal Surfacing | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Synthetic or Rubber | 15 | 1,375 | 92 | Q | Q | Q | Q | Q | 33.76 |
| Slate or Tile | 10 | 339 | 35 | 40 | 40 | 4,176 | 118.15 | 101.0 | 33.74 |
| Concrete | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Wooden Materials | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | |
| Roof or Ceiling Insulation | 79 | 5,208 | 66 | 459 | 459 | 5,851 | 88.19 | 58.8 | 22.12 |
| Wall Insulation | 45 | 2,931 | 65 | 265 | 265 | 5,862 | 90.45 | 62.8 | 24.41 |
| Storm or Multiple Glazing | 26 | 2,348 | 89 | 212 | 212 | 8,009 | 90.20 | 58.9 | 24.41 |
| Tinted, Reflective, or Shading Glass | 20 | 3,195 | 158 | 246 | 246 | 12,148 | 77.12 | 44.3 | 20.52 |
| Exterior or Interior Shadings or Awnings | 47 | 4,364 | 92 | 331 | 331 | 6,966 | 75.76 | 46.0 | 24.41 |
| Weather Stripping or Caulking | 75 | 5,665 | 75 | 495 | 495 | 6,592 | 87.32 | 53.9 | 24.41 |
| None of the Above | Q | Q | Q | Q | Q | Q | Q | Q | b |

See footnote at end of table.

Table 52. District Heat Consumption (Continued)

| Building Characteristics | All Buildings Using District Heat | | | District Heat Consumption | | | | | RSE Row Factor |
|--|-----------------------------------|----------------------------------|--|---------------------------|------------------------|--------------------------------|--------------------------|------------------------------|-------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion pounds) | per Building (thousand pounds) | per Square Foot (pounds) | per Worker (thousand pounds) | |
| RSE Column Factor: | 1.063 | 1.000 | 0.944 | 1.146 | 1.149 | 1.076 | 0.771 | 1.000 | |
| ENERGY SOURCES AND END USES^a | | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | | |
| Electricity | 98 | 6,578 | 67 | 585 | 585 | 5,964 | 88.96 | 56.5 | 22.18 |
| Natural Gas | 27 | 3,415 | 127 | 290 | 290 | 10,811 | 84.98 | 47.0 | 20.04 |
| Fuel Oil | 9 | 1,413 | 150 | 143 | 143 | 15,193 | 101.21 | 49.6 | 38.36 |
| District Heat | 98 | 6,578 | 67 | 585 | 585 | 5,964 | 88.96 | 56.5 | 20.75 |
| District Chilled Water | 17 | 1,604 | 97 | 147 | 147 | 8,828 | 91.33 | 65.1 | 32.46 |
| Propane | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Energy End Uses (Solely or in Combination) | | | | | | | | | |
| Heated Buildings | 98 | 6,562 | 67 | 584 | 584 | 5,953 | 88.99 | 56.4 | 20.75 |
| Air-Conditioned Buildings | 74 | 5,957 | 80 | 506 | 506 | 6,821 | 84.92 | 50.9 | 21.19 |
| Buildings with Water Heating | 88 | 6,458 | 73 | 580 | 580 | 6,574 | 89.81 | 56.7 | 20.92 |
| Buildings with Cooking | 25 | 3,902 | 157 | 298 | 298 | 11,984 | 76.44 | 42.7 | 27.83 |
| Buildings with Manufacturing | 14 | Q | Q | Q | Q | Q | 64.50 | 48.5 | 24.85 |
| Energy End-Use Combinations | | | | | | | | | |
| Heated Buildings | | | | | | | | | |
| With Air Conditioning | | | | | | | | | |
| With Water Heating and Cooking | 22 | 3,805 | 173 | 283 | 283 | 12,851 | 74.31 | 40.8 | 27.80 |
| With Water Heating, Without Cooking | 50 | 2,111 | 42 | 221 | 221 | 4,436 | 104.48 | 74.3 | 21.30 |
| Without Water Heating or Cooking | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Without Air Conditioning | | | | | | | | | |
| With Water Heating and Cooking | Q | Q | Q | Q | Q | Q | Q | Q | b |
| With Water Heating, Without Cooking | 14 | 430 | 32 | Q | Q | Q | Q | Q | 40.03 |
| Without Water Heating or Cooking | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | Q | -- | -- | Q | Q | Q | Q | Q | -- |
| All Other Combinations | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Space-Heating Energy Source | | | | | | | | | |
| District Heat | 94 | 6,065 | 64 | 520 | 520 | 5,524 | 85.69 | 54.4 | 20.98 |
| Main | 93 | 5,961 | 64 | 511 | 511 | 5,484 | 85.67 | 54.7 | 21.23 |
| With Secondary | 20 | 1,152 | 57 | 134 | 134 | 6,629 | 116.00 | Q | 39.39 |
| Electricity Only | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Other Energy Sources or Combinations | 6 | 677 | 120 | 60 | 60 | 10,627 | 88.66 | 42.2 | 37.68 |
| With No Secondary | 73 | 4,809 | 66 | 377 | 377 | 5,168 | 78.40 | 50.5 | 22.62 |
| Secondary | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Other Excluding District Heat | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Building Not Heated | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Main Space-Heating Energy Source | | | | | | | | | |
| Electricity | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Natural Gas | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Fuel Oil | Q | Q | Q | Q | Q | Q | Q | Q | b |
| District Heat | 93 | 5,961 | 64 | 511 | 511 | 5,484 | 85.67 | 54.7 | 21.23 |
| Propane | -- | -- | -- | Q | Q | Q | -- | -- | -- |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b |

See footnote at end of table.

DISTRICT HEAT

Table 52. District Heat Consumption (Continued)

| Building Characteristics | All Buildings Using District Heat | | | District Heat Consumption | | | | | RSE Row Factor |
|---|-----------------------------------|----------------------------------|--|---------------------------|------------------------|--------------------------------|--------------------------|------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion pounds) | per Building (thousand pounds) | per Square Foot (pounds) | per Worker (thousand pounds) | |
| RSE Column Factor: | 1.042 | 0.987 | 0.934 | 1.105 | 1.105 | 1.118 | 0.774 | 0.985 | |
| Air-Conditioning Energy Source | | | | | | | | | |
| District Heat | 2 | Q | 368 | Q | Q | 25,024 | 68.06 | 36.7 | 25.13 |
| Other Excluding District Heat | 72 | 5,066 | 71 | 445 | 445 | 6,206 | 87.89 | 53.8 | 22.84 |
| Air-Conditioning Not Performed | 24 | 620 | 26 | Q | Q | Q | Q | Q | 26.46 |
| Water-Heating Energy Source | | | | | | | | | |
| District Heat | 48 | 4,686 | 97 | 447 | 447 | 9,252 | 95.32 | 63.1 | 23.19 |
| Other Excluding District Heat | 40 | 1,772 | 44 | 133 | 133 | 3,337 | 75.23 | 42.3 | 31.71 |
| Water Heating Not Performed | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Cooking Energy Source | | | | | | | | | |
| District Heat | 5 | 991 | 218 | 104 | 104 | 22,833 | 104.64 | 52.7 | 33.99 |
| Other Excluding District Heat | 20 | 2,910 | 143 | 195 | 195 | 9,561 | 66.84 | 38.8 | 33.40 |
| Cooking Not Performed | 73 | 2,676 | 37 | 287 | 287 | 3,918 | 107.23 | 85.3 | 22.03 |
| Manufacturing Energy Source | | | | | | | | | |
| District Heat | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Other Excluding District Heat | 12 | Q | Q | Q | Q | Q | 56.99 | 41.1 | 21.21 |
| Manufacturing Not Performed | 84 | 5,288 | 63 | 502 | 502 | 5,996 | 94.93 | 58.1 | 21.17 |
| HEATING AND COOLING | | | | | | | | | |
| Percent Heated | | | | | | | | | |
| Not Heated | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 51 to 99 | 15 | 1,169 | 77 | 59 | 59 | 3,858 | 50.22 | 27.0 | 35.10 |
| 100 | 80 | 5,256 | 66 | 519 | 519 | 6,478 | 98.76 | 63.8 | 21.30 |
| Percent Cooled | | | | | | | | | |
| Not Cooled | 24 | 620 | 26 | Q | Q | Q | Q | Q | 26.46 |
| 1 to 50 | 24 | 1,089 | 46 | 113 | 113 | 4,809 | 104.11 | Q | 30.72 |
| 51 to 99 | 15 | 1,765 | 114 | 137 | 137 | 8,850 | 77.60 | 42.7 | 22.91 |
| 100 | 35 | 3,103 | 88 | 256 | 256 | 7,278 | 82.36 | 47.4 | 31.21 |
| Heating Equipment (Solely or in Combination) | | | | | | | | | |
| Furnaces | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Boilers | 11 | 622 | 58 | 50 | 50 | 4,629 | Q | 47.3 | 36.62 |
| Individual Space Heaters | 24 | 2,220 | 92 | 189 | 189 | 7,797 | 84.92 | 61.3 | 32.94 |
| Packaged Heating Units | 7 | 605 | 84 | Q | Q | 6,959 | 82.89 | Q | 31.23 |
| Heat Pumps | 7 | 531 | 78 | Q | Q | 5,783 | 73.93 | 37.0 | 35.67 |
| Air Ducts | 60 | 5,603 | 93 | 430 | 430 | 7,111 | 76.76 | 46.8 | 23.88 |
| Heating or Reheating Coils | 40 | 4,657 | 115 | 339 | 339 | 8,372 | 72.80 | 42.8 | 25.97 |
| Fan-Coil Units | 31 | 3,109 | 100 | 267 | 267 | 8,594 | 85.90 | 54.7 | 23.86 |
| Steam or Hot Water Radiators or Baseboards | 58 | 3,898 | 67 | 378 | 378 | 6,505 | 96.86 | 54.2 | 23.28 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Cooling Equipment (Solely or in Combination) | | | | | | | | | |
| Central Chillers | 17 | 3,467 | 202 | 228 | 228 | 13,239 | 65.65 | 35.2 | 28.89 |
| Individual Air Conditioners | 34 | 1,844 | 54 | 185 | 185 | 5,478 | 100.53 | 55.1 | 23.89 |
| Packaged Cooling Units | 35 | 3,214 | 91 | 254 | 254 | 7,169 | 79.12 | 41.5 | 28.69 |
| Heat Pumps | 6 | 642 | 103 | Q | Q | 7,867 | 76.17 | 36.2 | 30.52 |
| Air Ducts | 52 | 5,009 | 96 | 392 | 392 | 7,500 | 78.23 | 45.7 | 25.38 |
| Fan-Coil Units | 23 | 3,745 | 166 | 272 | 272 | 12,048 | 72.60 | 40.5 | 26.68 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b |

See footnotes at end of table.

Table 52. District Heat Consumption (Continued)

| Building Characteristics | All Buildings Using District Heat | | | District Heat Consumption | | | | | RSE Row Factor |
|--|-----------------------------------|----------------------------------|--|---------------------------|------------------------|--------------------------------|--------------------------|------------------------------|-------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion pounds) | per Building (thousand pounds) | per Square Foot (pounds) | per Worker (thousand pounds) | |
| RSE Column Factor | 1.042 | 0.967 | 0.967 | 0.967 | 0.967 | 0.967 | 0.967 | 0.967 | |
| Year Main Central Chiller Installed | | | | | | | | | |
| 1959 or Before | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 1960 to 1969 | 6 | Q | 251 | Q | Q | 16,242 | 64.78 | 39.4 | 20.06 |
| 1970 to 1979 | Q | 491 | 171 | 39 | 39 | 13,766 | 80.39 | Q | 20.40 |
| 1980 to 1986 | 3 | Q | 365 | Q | Q | 21,984 | Q | Q | 24.53 |
| 1987 to 1989 | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Year Packaged Cooling System Installed | | | | | | | | | |
| 1959 or Before | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 1960 to 1969 | Q | Q | Q | Q | Q | Q | 97.61 | 49.0 | 20.06 |
| 1970 to 1979 | 11 | 529 | 47 | 68 | 68 | 6,026 | 129.59 | 62.1 | 27.95 |
| 1980 to 1986 | Q | Q | Q | 54 | 54 | Q | 46.08 | Q | 46.02 |
| 1987 to 1989 | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Computer Area with Separate Air-Conditioning System | | | | | | | | | |
| Present in Building | 23 | 3,508 | 153 | 316 | 316 | 13,764 | 90.11 | 50.7 | 22.73 |
| Not Present | 75 | 3,070 | 41 | 269 | 269 | 3,581 | 87.65 | Q | 23.76 |
| LIGHTING AND REFRIGERATION | | | | | | | | | |
| Percent Lit When Open | | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | Q | Q | Q | Q | Q | Q | Q | Q | b |
| 51 to 99 | 24 | 2,211 | 92 | 145 | 145 | 6,005 | 65.49 | Q | 51.46 |
| 100 | 64 | 4,114 | 64 | 423 | 423 | 6,620 | 102.74 | 64.8 | 20.06 |
| Percent Lit When Closed | | | | | | | | | |
| Not Lit | 45 | 1,762 | 39 | 193 | 193 | 4,293 | 109.30 | 84.3 | 20.01 |
| 1 to 50 | 51 | 4,376 | 86 | 334 | 334 | 6,557 | 76.43 | 46.8 | 27.77 |
| 51 to 99 | Q | 416 | Q | Q | Q | 26,188 | Q | Q | 41.67 |
| 100 | Q | Q | Q | Q | Q | Q | Q | Q | b |
| Lighting Equipment (Solely or in Combination) | | | | | | | | | |
| Incandescent Lamps | 58 | 5,024 | 86 | 443 | 443 | 7,583 | 88.14 | 50.5 | 21.72 |
| Fluorescent Lamps | 94 | 6,549 | 70 | 583 | 583 | 6,224 | 89.07 | 56.4 | 20.75 |
| High-Intensity Discharge Lamps | 22 | 3,649 | 165 | 222 | 222 | 10,024 | 60.74 | 39.7 | 34.96 |
| Other Lamps | Q | Q | Q | Q | Q | Q | Q | Q | b |
| High-Efficiency Ballasts | 41 | 3,176 | 78 | 280 | 280 | 6,885 | 88.05 | 57.1 | 22.87 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | | |
| Commercial | | | | | | | | | |
| Refrigeration Units | 24 | 4,055 | 172 | 322 | 322 | 13,615 | 79.38 | 43.5 | 25.11 |
| Freezers | 19 | 3,825 | 206 | 307 | 307 | 16,582 | 80.34 | 43.1 | 26.61 |
| Residential | | | | | | | | | |
| Refrigerators | 63 | 5,450 | 86 | 511 | 511 | 8,102 | 93.84 | 56.3 | 20.19 |
| Freezers | 16 | 2,189 | 133 | 202 | 202 | 12,320 | 92.41 | 65.4 | 26.52 |
| Ice-Making Machines | 28 | 4,442 | 156 | 352 | 352 | 12,374 | 79.18 | 44.5 | 24.05 |
| Refrigerated Vending Machines | 56 | 5,524 | 98 | 491 | 491 | 8,713 | 88.82 | 53.9 | 21.42 |
| Water Coolers | 81 | 5,803 | 72 | 549 | 549 | 6,805 | 94.61 | 59.8 | 19.37 |
| Other | Q | Q | Q | Q | Q | Q | Q | Q | b |

See footnotes at end of table.

DISTRICT HEAT

Table 52. District Heat Consumption (Continued)

| Building Characteristics | All Buildings Using District Heat | | | District Heat Consumption | | | | | RSE Row Factor |
|--|-----------------------------------|----------------------------------|--|---------------------------|------------------------|--------------------------------|--------------------------|------------------------------|-------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (trillion Btu) | Total (billion pounds) | per Building (thousand pounds) | per Square Foot (pounds) | per Worker (thousand pounds) | |
| RSE Column Factor: | 1.042 | 0.007 | 0.004 | 1.105 | 1.105 | 1.118 | 1.120 | 1.120 | |
| ENERGY MANAGEMENT | | | | | | | | | |
| Occupant Control | | | | | | | | | |
| Any Control of Heating | 37 | 1,927 | 53 | 206 | 206 | 5,629 | 106.89 | 72.9 | 26.66 |
| With Thermostats | 34 | 1,884 | 55 | 203 | 203 | 5,955 | 107.82 | 73.6 | 26.66 |
| Any Control of Cooling | 41 | 2,244 | 55 | 223 | 223 | 5,451 | 99.55 | 64.5 | 27.10 |
| With Thermostats | 37 | 2,160 | 58 | 216 | 216 | 5,824 | 100.07 | 64.7 | 27.06 |
| Reduced Use During Off-Hours | | | | | | | | | |
| Heating Only | 15 | 542 | 36 | Q | Q | Q | Q | Q | 24.45 |
| Cooling Only | 7 | 408 | 55 | Q | Q | 7,144 | 130.10 | Q | 26.66 |
| Heating and Cooling | 38 | 4,160 | 111 | 289 | 289 | 7,693 | 69.55 | 40.9 | 26.66 |
| Computerized Energy Management and Control System | | | | | | | | | |
| Present in Building | 24 | 3,752 | 159 | 272 | 272 | 11,499 | 72.54 | 48.3 | 26.66 |
| Controls Heating and Cooling | 23 | 3,724 | 159 | 271 | 271 | 11,559 | 72.70 | 48.5 | 26.66 |
| Controls Lighting | 2 | Q | Q | Q | Q | 25,250 | 72.43 | 45.8 | 26.66 |
| Controls Other | 2 | Q | 266 | Q | Q | 23,602 | 88.88 | 54.0 | 26.66 |
| Other Energy Management | | | | | | | | | |
| Regular HVAC Maintenance | 86 | 6,045 | 71 | 530 | 530 | 6,188 | 87.69 | 54.7 | 21.69 |
| Participated in Utility Conservation Program | 20 | 1,672 | 84 | 154 | 154 | 7,771 | 92.32 | 64.2 | 33.66 |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

nc No cases in responding sample.

q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

— Data not applicable.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table 53. District Heat Expenditures

| Building Characteristics | All Buildings Using District Heat | | | District Heat Expenditures | | | | RSE Row Factor |
|--|-----------------------------------|----------------------------------|--|----------------------------|---------------------------------|---------------------------|------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) | |
| RSE Column Factor | 1.000 | 1.109 | 0.958 | 1.350 | 1.221 | 0.919 | 0.518 | |
| All Buildings | | | | | | | | |
| All Buildings | 98 | 6,578 | 67 | 3,857 | 39.3 | 0.59 | 6.59 | 16.03 |
| Building Floorspace (Square Feet) | | | | | | | | |
| 1,001 to 5,000 | Q | Q | Q | Q | Q | Q | Q | b |
| 5,001 to 10,000 | Q | Q | Q | Q | Q | Q | Q | b |
| 10,001 to 25,000 | 30 | 540 | 18 | 334 | 11.1 | .62 | 5.27 | 24.00 |
| 25,001 to 50,000 | 13 | 498 | 37 | 479 | Q | Q | Q | 16.55 |
| 50,001 to 100,000 | 11 | 838 | 75 | 738 | 66.1 | .88 | 6.20 | 22.81 |
| 100,001 to 200,000 | 8 | 1,179 | 146 | 641 | 79.3 | .54 | 6.07 | 24.42 |
| 200,001 to 500,000 | 5 | 1,264 | 274 | 565 | 122.6 | .45 | 7.47 | 16.07 |
| Over 500,000 | 2 | 2,111 | 1,058 | 958 | 480.6 | .45 | 7.19 | 20.67 |
| Year Constructed | | | | | | | | |
| 1899 or Before | Q | Q | Q | Q | Q | Q | Q | b |
| 1900 to 1919 | Q | 264 | 33 | 107 | 13.5 | .40 | 7.00 | 28.05 |
| 1920 to 1945 | 21 | 1,276 | 61 | Q | Q | .59 | 6.66 | 33.57 |
| 1946 to 1959 | 18 | Q | 87 | 788 | 43.6 | .50 | 6.50 | 24.54 |
| 1960 to 1969 | 22 | 1,214 | 54 | 903 | 40.5 | .74 | 5.80 | 26.21 |
| 1970 to 1979 | 11 | 1,227 | 107 | 766 | 66.8 | .62 | 6.98 | 23.34 |
| 1980 to 1983 | Q | Q | Q | Q | Q | Q | Q | b |
| 1984 to 1986 | Q | Q | Q | Q | Q | Q | Q | b |
| 1987 to 1989 | Q | Q | Q | Q | Q | Q | Q | b |
| BUILDING USE | | | | | | | | |
| Principal Building Activity | | | | | | | | |
| Assembly | 15 | 828 | 54 | 349 | Q | .42 | 7.09 | 36.44 |
| Education | 16 | Q | Q | Q | Q | .49 | 6.01 | 16.46 |
| Food Sales | Q | Q | Q | Q | Q | Q | Q | b |
| Food Service | Q | Q | Q | Q | Q | Q | Q | b |
| Health Care | 4 | 680 | 181 | Q | 159.5 | .88 | 6.51 | 32.19 |
| Lodging | 13 | 693 | 54 | Q | Q | Q | 6.12 | 22.28 |
| Mercantile and Service | Q | Q | Q | Q | Q | Q | Q | b |
| Office | 23 | 2,316 | 101 | 1,207 | 52.7 | .52 | 7.23 | 26.40 |
| Parking Garage | Q | Q | Q | Q | Q | Q | Q | b |
| Public Order and Safety | Q | Q | Q | Q | Q | Q | Q | b |
| Warehouse | Q | Q | Q | Q | Q | Q | Q | b |
| Other | Q | Q | Q | Q | Q | Q | Q | b |
| Vacant | Q | Q | Q | Q | Q | Q | Q | b |
| Weekly Operating Hours | | | | | | | | |
| 39 or Fewer | Q | Q | Q | Q | Q | Q | Q | b |
| 40 to 48 | 19 | 929 | 48 | 646 | 33.6 | .70 | 6.14 | 31.22 |
| 49 to 60 | 14 | 1,184 | 85 | 557 | Q | .47 | 8.40 | 21.43 |
| 61 to 84 | Q | 971 | 80 | 383 | 31.3 | .39 | 6.41 | 30.56 |
| 85 to 167 | 10 | Q | Q | Q | Q | .36 | 5.77 | 26.07 |
| 168 (Open Continuously) | 35 | 2,153 | 61 | 1,786 | 50.8 | .83 | 6.55 | 24.49 |
| Workers | | | | | | | | |
| 4 or Fewer | 24 | Q | 17 | Q | Q | .35 | 6.87 | 26.00 |
| 5 to 9 | Q | Q | Q | Q | Q | Q | Q | b |
| 10 to 19 | 8 | 188 | 25 | 109 | 14.3 | .58 | 6.74 | 20.58 |
| 20 to 49 | 23 | 905 | 39 | Q | Q | .94 | 6.30 | 26.57 |
| 50 to 99 | 12 | 638 | 51 | Q | 32.1 | .63 | Q | 27.36 |
| 100 to 249 | 9 | 897 | 100 | 587 | 65.4 | .65 | 5.95 | 19.79 |
| 250 or More | 8 | 3,248 | 406 | 1,622 | 202.7 | .50 | 7.21 | 21.34 |

See footnote at end of table.

DISTRICT HEAT

Table 53. District Heat Expenditures (Continued)

| Building Characteristics | All Buildings Using District Heat | | | District Heat Expenditures | | | | RSE Row Factor |
|--------------------------------------|-----------------------------------|----------------------------------|--|----------------------------|---------------------------------|---------------------------|------------------------------|-------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) | |
| Past 12 Months | | | | 1,500 | 1.251 | 0.516 | 0.516 | |
| Ownership and Occupancy | | | | | | | | |
| Nongovernment Owned | 55 | 3,365 | 61 | 1,876 | 33.9 | 0.56 | 6.61 | 24.00 |
| Owner Occupied | 51 | 3,086 | 60 | 1,755 | 34.4 | .57 | 6.67 | 25.14 |
| Single Establishment | 45 | 2,019 | 44 | 1,423 | 31.3 | .70 | 6.25 | 28.29 |
| Multiple Establishment | 6 | 1,067 | Q | 332 | Q | .31 | 9.42 | 16.70 |
| Nonowner Occupied | Q | Q | Q | Q | Q | Q | Q | b |
| Single Establishment | Q | Q | Q | Q | Q | Q | Q | b |
| Multiple Establishment | Q | Q | Q | Q | Q | Q | Q | b |
| Vacant | Q | Q | Q | Q | Q | Q | Q | b |
| Government Owned | 43 | 3,213 | 75 | 1,981 | 46.4 | .62 | 6.57 | 21.00 |
| Federal | 7 | Q | 153 | Q | 59.8 | .39 | 6.69 | 18.67 |
| State | 23 | 1,657 | 71 | 1,294 | 55.5 | .78 | 6.44 | 27.10 |
| Local | Q | Q | Q | Q | Q | Q | Q | b |
| Multibuilding Facility | | | | | | | | |
| Not on Multibuilding Facility | 7 | 1,292 | Q | 515 | 76.8 | .40 | 8.88 | 25.73 |
| Part of Multibuilding Facility | 91 | 5,286 | 58 | 3,342 | 36.6 | .63 | 6.34 | 20.55 |
| On Facility with Central Plant | 82 | 4,436 | 54 | 2,910 | 35.4 | .66 | 6.12 | 22.67 |
| Percent Vacant at Least Three Months | | | | | | | | |
| 0 | 77 | 4,006 | 52 | 2,651 | 34.2 | .66 | 6.44 | 16.37 |
| 1 to 50 | 10 | 1,829 | 187 | 955 | 97.9 | .52 | 7.32 | 25.22 |
| 51 to 99 | Q | Q | Q | Q | Q | Q | Q | b |
| 100 | Q | Q | Q | Q | Q | Q | Q | b |
| Months In Use Out of Past 12 Months | | | | | | | | |
| 0 to 8 | Q | Q | Q | Q | Q | Q | Q | b |
| 9 to 11 | Q | Q | Q | Q | Q | Q | Q | b |
| 12 | 78 | 6,021 | 77 | 3,630 | 46.6 | .60 | 6.54 | 18.24 |
| LOCATION | | | | | | | | |
| Census Region | | | | | | | | |
| Northeast | 29 | 2,236 | 78 | 1,286 | 45.0 | .58 | 7.18 | 28.79 |
| Midwest | 16 | 1,509 | 97 | 1,081 | 69.5 | .72 | 6.81 | 21.67 |
| South | Q | 1,583 | 51 | 816 | Q | .52 | 6.49 | 41.90 |
| West | 23 | Q | 54 | Q | Q | .54 | 5.55 | 28.16 |
| Census Division | | | | | | | | |
| Northeast | | | | | | | | |
| New England | Q | Q | 50 | Q | Q | Q | 5.66 | 49.31 |
| Middle Atlantic | 21 | 1,866 | Q | 993 | Q | .53 | 7.79 | 26.69 |
| Midwest | | | | | | | | |
| East North Central | 9 | 845 | 94 | 546 | 60.5 | .65 | 6.20 | 23.44 |
| West North Central | 7 | Q | 101 | Q | 81.8 | .81 | 7.55 | 19.35 |
| South | | | | | | | | |
| South Atlantic | Q | Q | Q | Q | Q | Q | Q | b |
| East South Central | Q | Q | Q | Q | Q | Q | Q | b |
| West South Central | Q | Q | Q | Q | Q | Q | Q | b |
| West | | | | | | | | |
| Mountain | Q | Q | Q | Q | Q | Q | Q | b |
| Pacific | 12 | 517 | 44 | 275 | 23.4 | .53 | 5.64 | 30.62 |
| Metropolitan Status | | | | | | | | |
| Metropolitan | 85 | 6,283 | 74 | 3,511 | 41.3 | .56 | 6.59 | 18.77 |
| Nonmetropolitan | Q | Q | Q | Q | Q | Q | Q | b |

See footnote at end of table.

Table 53. District Heat Expenditures (Continued)

| Building Characteristics | All Buildings Using District Heat | | | District Heat Expenditures | | | | RSE Row Factor | |
|--|-----------------------------------|----------------------------------|--|----------------------------|---------------------------------|---------------------------|------------------------------|----------------|--|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) | | |
| | 1.206 | 1.168 | 0.860 | 1,460 | 1.291 | 0.818 | 0.516 | | |
| RSE Column Factor: | | | | | | | | | |
| Climate Zone: 45-Year Average | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | |
| Over 7,000 HDD | 6 | 425 | 76 | Q | 92.4 | 1.22 | 5.91 | 33.66 | |
| 5,500-7,000 HDD | 34 | 2,202 | 65 | 1,229 | 36.5 | .56 | 6.17 | 24.00 | |
| 4,000-5,499 HDD | 25 | 2,118 | 86 | 1,176 | 47.9 | .56 | 7.73 | 27.90 | |
| Under 4,000 HDD | Q | 1,171 | 62 | 540 | 28.6 | .46 | 6.53 | 31.43 | |
| 2,000 CDD or More and -- | | | | | | | | | |
| Under 4,000 HDD | Q | Q | Q | Q | Q | Q | Q | b | |
| 1989 Degree-Days | | | | | | | | | |
| Under 2,000 CDD and -- | | | | | | | | | |
| Over 7,000 HDD | 9 | 808 | 90 | 709 | 79.1 | .88 | 6.19 | 33.25 | |
| 5,500-7,000 HDD | 43 | 2,741 | 64 | 1,637 | 38.4 | .60 | 6.45 | 24.01 | |
| 4,000-5,499 HDD | 14 | 1,337 | 98 | 674 | 49.6 | .50 | 8.00 | 29.98 | |
| Under 4,000 HDD | Q | 1,037 | 59 | 446 | 25.5 | .43 | 6.40 | 31.60 | |
| 2,000 CDD or More and -- | | | | | | | | | |
| Under 4,000 HDD | Q | Q | Q | Q | Q | Q | Q | b | |
| STRUCTURE | | | | | | | | | |
| Floors | | | | | | | | | |
| 1 | Q | Q | Q | Q | Q | Q | Q | b | |
| 2 | 32 | 851 | 27 | 397 | 12.5 | .47 | 5.63 | 32.78 | |
| 3 | 18 | 1,145 | 65 | Q | Q | Q | 6.45 | 27.37 | |
| 4 to 6 | 16 | 1,662 | 102 | 1,011 | 61.9 | .61 | 6.01 | 24.06 | |
| 7 or More | 9 | 2,612 | 288 | 1,435 | 158.2 | .55 | 8.09 | 20.17 | |
| Wall Materials | | | | | | | | | |
| Masonry | 65 | 3,911 | 60 | 2,589 | 39.8 | .66 | 6.73 | 18.51 | |
| Siding or Shingles | Q | Q | Q | Q | Q | Q | Q | b | |
| Metal Panels | Q | Q | Q | Q | Q | Q | Q | b | |
| Concrete Panels | Q | 1,292 | 80 | 638 | 39.5 | .49 | 5.67 | 31.53 | |
| Window Glass | Q | Q | Q | 192 | Q | Q | 8.30 | 26.64 | |
| Other | Q | Q | Q | Q | Q | Q | Q | b | |
| Roof Materials | | | | | | | | | |
| Built-Up | 48 | 3,351 | 69 | 1,917 | 39.6 | .57 | 6.21 | 20.31 | |
| Shingles (Not Wood) | Q | Q | Q | Q | Q | Q | Q | b | |
| Metal Surfacing | Q | Q | Q | Q | Q | Q | Q | b | |
| Synthetic or Rubber | 15 | 1,375 | 92 | 746 | Q | .54 | 6.41 | 33.09 | |
| Slate or Tile | 10 | 339 | 35 | 281 | 29.3 | .83 | 7.03 | 26.42 | |
| Concrete | Q | Q | Q | Q | Q | Q | Q | b | |
| Wooden Materials | Q | Q | Q | Q | Q | Q | Q | b | |
| Other | Q | Q | Q | Q | Q | Q | Q | b | |
| Building Shell Conservation Features (Solely or in Combination) | | | | | | | | | |
| Roof or Ceiling Insulation | 79 | 5,208 | 66 | 2,997 | 38.2 | .58 | 6.52 | 20.84 | |
| Wall Insulation | 45 | 2,931 | 65 | 1,730 | 38.2 | .59 | 6.52 | 23.27 | |
| Storm or Multiple Glazing | 26 | 2,348 | 89 | 1,464 | 55.4 | .62 | 6.91 | 21.43 | |
| Tinted, Reflective, or Shading Glass | 20 | 3,195 | 158 | 1,669 | 82.3 | .52 | 6.77 | 24.17 | |
| Exterior or Interior Shadings or Awnings | 47 | 4,364 | 92 | 2,377 | 50.1 | .54 | 7.19 | 21.14 | |
| Weather Stripping or Caulking | 75 | 5,665 | 75 | 3,249 | 43.3 | .57 | 6.57 | 20.14 | |
| None of the Above | Q | Q | Q | Q | Q | Q | Q | b | |

See footnote at end of table.

DISTRICT HEAT

Table 53. District Heat Expenditures (Continued)

| Building Characteristics | All Buildings Using District Heat | | | District Heat Expenditures | | | | RSE Row Factor |
|--|-----------------------------------|----------------------------------|--|----------------------------|---------------------------------|---------------------------|------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) | |
| RSE Column Factor | 1.000 | 1.000 | 0.000 | 1.000 | 1.000 | 0.010 | 0.516 | |
| ENERGY SOURCES AND END USES* | | | | | | | | |
| Energy Sources (Solely or in Combination) | | | | | | | | |
| Electricity | 98 | 6,578 | 67 | 3,857 | 39.3 | 0.59 | 6.59 | 18.97 |
| Natural Gas | 27 | 3,415 | 127 | 1,928 | 71.8 | .56 | 6.64 | 23.94 |
| Fuel Oil | 9 | 1,413 | 150 | 860 | 91.3 | .61 | 6.01 | 32.58 |
| District Heat | 98 | 6,578 | 67 | 3,857 | 39.3 | .59 | 6.59 | 18.03 |
| District Chilled Water | 17 | 1,604 | 97 | 972 | 58.5 | .61 | 6.63 | 27.03 |
| Propane | Q | Q | Q | Q | Q | Q | Q | b |
| Other | Q | Q | Q | Q | Q | Q | Q | b |
| Energy End Uses (Solely or in Combination) | | | | | | | | |
| Heated Buildings | 98 | 6,562 | 67 | 3,847 | 39.2 | .59 | 6.59 | 18.03 |
| Air-Conditioned Buildings | 74 | 5,957 | 80 | 3,359 | 45.3 | .56 | 6.64 | 19.00 |
| Buildings with Water Heating | 88 | 6,458 | 73 | 3,824 | 43.3 | .59 | 6.59 | 18.20 |
| Buildings with Cooking | 25 | 3,902 | 157 | 2,111 | 84.8 | .54 | 7.08 | 23.46 |
| Buildings with Manufacturing | 14 | Q | Q | Q | Q | .39 | 6.00 | 19.07 |
| Energy End-Use Combinations | | | | | | | | |
| Heated Buildings | | | | | | | | |
| With Air Conditioning | | | | | | | | |
| With Water Heating and | | | | | | | | |
| Cooking | 22 | 3,805 | 173 | 1,989 | 90.4 | .52 | 7.03 | 23.45 |
| With Water Heating, | | | | | | | | |
| Without Cooking | 50 | 2,111 | 42 | 1,350 | 27.1 | .64 | 6.12 | 17.80 |
| Without Water Heating or | | | | | | | | |
| Cooking | Q | Q | Q | Q | Q | Q | Q | b |
| Without Air Conditioning | | | | | | | | |
| With Water Heating and | | | | | | | | |
| Cooking | Q | Q | Q | Q | Q | Q | Q | b |
| With Water Heating, | | | | | | | | |
| Without Cooking | 14 | 430 | 32 | Q | Q | Q | 5.90 | 38.05 |
| Without Water Heating or | | | | | | | | |
| Cooking | Q | Q | Q | Q | Q | Q | Q | b |
| Buildings Without Heating, Air Conditioning, Water Heating, or Cooking | -- | -- | -- | Q | -- | Q | -- | -- |
| All Other Combinations | Q | Q | Q | Q | Q | Q | Q | b |
| Space-Heating Energy Source | | | | | | | | |
| District Heat | 94 | 6,065 | 64 | 3,432 | 36.5 | .57 | 6.60 | 17.70 |
| Main | 93 | 5,961 | 64 | 3,408 | 36.6 | .57 | 6.67 | 17.63 |
| With Secondary | 20 | 1,152 | 57 | 702 | 34.8 | .61 | 5.25 | 31.90 |
| Electricity Only | Q | Q | Q | Q | Q | Q | Q | b |
| Other Energy Sources or Combinations | 6 | 677 | 120 | 297 | 52.6 | .44 | 4.95 | 36.40 |
| With No Secondary | 73 | 4,809 | 66 | 2,707 | 37.1 | .56 | 7.18 | 17.95 |
| Secondary | Q | Q | Q | Q | Q | Q | Q | b |
| Other Excluding District Heat | Q | Q | Q | Q | Q | Q | Q | b |
| Building Not Heated | Q | Q | Q | Q | Q | Q | Q | b |
| Main Space-Heating Energy Source | | | | | | | | |
| Electricity | Q | Q | Q | Q | Q | Q | Q | b |
| Natural Gas | Q | Q | Q | Q | Q | Q | Q | b |
| Fuel Oil | Q | Q | Q | Q | Q | Q | Q | b |
| District Heat | 93 | 5,961 | 64 | 3,408 | 36.6 | .57 | 6.67 | 17.63 |
| Propane | -- | -- | -- | Q | -- | Q | -- | -- |
| Other | Q | Q | Q | Q | Q | Q | Q | b |

See footnote at end of table.

Table 53. District Heat Expenditures (Continued)

| Building Characteristics | All Buildings Using District Heat | | | District Heat Expenditures | | | |
|---|-----------------------------------|----------------------------------|--|----------------------------|---------------------------------|---------------------------|------------------------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) |
| RSE Category | 1,165 | 1,119 | 1,067 | 1,067 | 1,067 | 1,067 | 1,067 |
| Air-Conditioning Energy Source | | | | | | | |
| District Heat | 2 | Q | 368 | 414 | 170.7 | 0.46 | 6.82 |
| Other Excluding District Heat | 72 | 5,066 | 71 | 2,945 | 41.0 | .58 | 6.61 |
| Air-Conditioning Not Performed | 24 | 620 | 26 | Q | Q | Q | 6.29 |
| Water-Heating Energy Source | | | | | | | |
| District Heat | 48 | 4,686 | 97 | 3,047 | 63.1 | .65 | 6.82 |
| Other Excluding District Heat | 40 | 1,772 | 44 | 776 | 19.4 | .44 | 5.82 |
| Water Heating Not Performed | Q | Q | Q | Q | Q | Q | Q |
| Cooking Energy Source | | | | | | | |
| District Heat | 5 | 991 | 218 | Q | 163.6 | .75 | 7.16 |
| Other Excluding District Heat | 20 | 2,910 | 143 | 1,368 | 67.2 | .47 | 7.03 |
| Cooking Not Performed | 73 | 2,676 | 37 | 1,747 | 23.9 | .65 | 6.09 |
| Manufacturing Energy Source | | | | | | | |
| District Heat | Q | Q | Q | Q | Q | Q | Q |
| Other Excluding District Heat | 12 | Q | Q | Q | Q | .35 | 6.17 |
| Manufacturing Not Performed | 84 | 5,288 | 63 | 3,358 | 40.1 | .64 | 6.69 |
| HEATING AND COOLING | | | | | | | |
| Percent Heated | | | | | | | |
| Not Heated | Q | Q | Q | Q | Q | Q | Q |
| 1 to 50 | Q | Q | Q | Q | Q | Q | Q |
| 51 to 99 | 15 | 1,169 | 77 | 467 | 30.7 | .40 | 7.96 |
| 100 | 80 | 5,256 | 66 | 3,341 | 41.7 | .64 | 6.44 |
| Percent Cooled | | | | | | | |
| Not Cooled | 24 | 620 | 26 | Q | Q | Q | 6.29 |
| 1 to 50 | 24 | 1,089 | 46 | 722 | 30.6 | .66 | 6.37 |
| 51 to 99 | 15 | 1,765 | 114 | 1,020 | 65.9 | .58 | 7.45 |
| 100 | 35 | 3,103 | 88 | 1,617 | 46.0 | .52 | 6.33 |
| Heating Equipment (Solely or in Combination) | | | | | | | |
| Furnaces | Q | Q | Q | Q | Q | Q | Q |
| Boilers | 11 | 622 | 58 | 281 | 26.0 | .45 | Q |
| Individual Space Heaters | 24 | 2,220 | 92 | 1,205 | Q | .54 | 6.39 |
| Packaged Heating Units | 7 | 605 | 84 | 297 | 41.2 | .49 | 5.91 |
| Heat Pumps | 7 | 531 | 78 | 216 | 31.8 | .41 | 5.49 |
| Air Ducts | 60 | 5,603 | 93 | 2,969 | 49.1 | .53 | 6.90 |
| Heating or Reheating Coils | 40 | 4,657 | 115 | 2,392 | 59.1 | .51 | 7.06 |
| Fan-Coil Units | 31 | 3,109 | 100 | 1,869 | 60.1 | .60 | 7.00 |
| Steam or Hot Water Radiators or Baseboards | 58 | 3,898 | 67 | 2,519 | 43.4 | .65 | 6.67 |
| Other | Q | Q | Q | Q | Q | Q | Q |
| Cooling Equipment (Solely or in Combination) | | | | | | | |
| Central Chillers | 17 | 3,467 | 202 | 1,645 | 95.7 | .47 | 7.23 |
| Individual Air Conditioners | 34 | 1,844 | 54 | 1,253 | 37.0 | .68 | 6.76 |
| Packaged Cooling Units | 35 | 3,214 | 91 | 1,641 | 46.3 | .51 | 6.45 |
| Heat Pumps | 6 | 642 | 103 | 309 | 49.8 | .48 | 6.33 |
| Air Ducts | 52 | 5,009 | 96 | 2,631 | 50.4 | .53 | 6.71 |
| Fan-Coil Units | 23 | 3,745 | 166 | 1,939 | 85.9 | .52 | 7.13 |
| Other | Q | Q | Q | Q | Q | Q | Q |

See footnotes at end of table.

DISTRICT HEAT

Table 53. District Heat Expenditures (Continued)

| Building Characteristics | All Buildings Using District Heat | | | District Heat Expenditures | | | | RSE Row Factor |
|--|-----------------------------------|----------------------------------|--|----------------------------|---------------------------------|---------------------------|------------------------------|----------------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) | |
| RSE Column Factor | 1.333 | 1.318 | 0.625 | 0.508 | | | | |
| Year Main Central Chiller Installed | | | | | | | | |
| 1959 or Before | Q | Q | Q | Q | Q | Q | Q | b |
| 1960 to 1969 | 6 | Q | 251 | 680 | 115.1 | .46 | 7.09 | 28.85 |
| 1970 to 1979 | Q | 491 | 171 | 306 | 106.8 | .62 | 7.76 | 31.34 |
| 1980 to 1986 | 3 | Q | 365 | Q | 159.8 | .44 | 7.27 | 38.69 |
| 1987 to 1989 | Q | Q | Q | Q | Q | Q | Q | b |
| Year Packaged Cooling System Installed | | | | | | | | |
| 1959 or Before | Q | Q | Q | Q | Q | Q | Q | b |
| 1960 to 1969 | Q | Q | Q | Q | Q | .52 | 5.34 | 40.94 |
| 1970 to 1979 | 11 | 529 | 47 | 435 | 38.3 | .82 | 6.36 | 31.39 |
| 1980 to 1986 | Q | Q | Q | Q | Q | .38 | 8.22 | 30.20 |
| 1987 to 1989 | Q | Q | Q | Q | Q | Q | Q | b |
| Computer Area with Separate Air-Conditioning System | | | | | | | | |
| Present in Building | 23 | 3,508 | 153 | 2,121 | 92.3 | .60 | 6.71 | 21.97 |
| Not Present | 75 | 3,070 | 41 | 1,736 | 23.1 | .57 | 6.45 | 21.61 |
| LIGHTING AND REFRIGERATION | | | | | | | | |
| Percent Lit When Open | | | | | | | | |
| Not Lit | Q | Q | Q | Q | Q | Q | Q | b |
| 1 to 50 | Q | Q | Q | Q | Q | Q | Q | b |
| 51 to 99 | 24 | 2,211 | 92 | 1,073 | 44.5 | .49 | 7.41 | 26.81 |
| 100 | 64 | 4,114 | 64 | 2,650 | 41.5 | .64 | 6.27 | 19.62 |
| Percent Lit When Closed | | | | | | | | |
| Not Lit | 45 | 1,762 | 39 | 1,318 | 29.4 | .75 | 6.85 | 20.76 |
| 1 to 50 | 51 | 4,376 | 86 | 2,195 | 43.0 | .50 | 6.56 | 24.06 |
| 51 to 99 | Q | 416 | Q | Q | 153.6 | Q | 5.87 | 40.6* |
| 100 | Q | Q | Q | Q | Q | Q | Q | b |
| Lighting Equipment (Solely or in Combination) | | | | | | | | |
| Incandescent Lamps | 58 | 5,024 | 86 | 2,922 | 50.0 | .58 | 6.60 | 18.39 |
| Fluorescent Lamps | 94 | 6,549 | 70 | 3,842 | 41.0 | .59 | 6.59 | 18.03 |
| High-Intensity Discharge Lamps | 22 | 3,649 | 165 | 1,589 | 71.9 | .44 | 7.17 | 26.04 |
| Other Lamps | Q | Q | Q | Q | Q | Q | Q | b |
| High-Efficiency Ballasts | 41 | 3,176 | 78 | 1,883 | 46.4 | .59 | 6.73 | 21.95 |
| Refrigeration Equipment (Solely or in Combination) | | | | | | | | |
| Commercial | | | | | | | | |
| Refrigeration Units | 24 | 4,055 | 172 | 2,176 | 92.0 | .54 | 6.76 | 22.25 |
| Freezers | 19 | 3,825 | 206 | 2,079 | 112.2 | .54 | 6.76 | 23.65 |
| Residential | | | | | | | | |
| Refrigerators | 63 | 5,450 | 86 | 3,334 | 52.8 | .61 | 6.52 | 17.43 |
| Freezers | 16 | 2,189 | 133 | 1,401 | 85.3 | .64 | 6.93 | 26.77 |
| Ice-Making Machines | 28 | 4,442 | 156 | 2,465 | 86.7 | .55 | 7.01 | 21.39 |
| Refrigerated Vending Machines | 56 | 5,524 | 98 | 3,271 | 58.1 | .59 | 6.67 | 18.05 |
| Water Coolers | 81 | 5,803 | 72 | 3,559 | 44.1 | .61 | 6.48 | 19.17 |
| Other | Q | Q | Q | Q | Q | Q | Q | b |

See footnotes at end of table.

Table 53. District Heat Expenditures (Continued)

| Building Characteristics | All Buildings Using District Heat | | | District Heat Expenditures | | | | Source |
|--|-----------------------------------|----------------------------------|--|----------------------------|---------------------------------|---------------------------|------------------------------|--------|
| | Number of Buildings (thousand) | Floorspace (million square feet) | Floorspace per Building (thousand square feet) | Total (million dollars) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) | |
| | 1,118 | 1,047 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | |
| ENERGY MANAGEMENT | | | | | | | | |
| Occupant Control | | | | | | | | |
| Any Control of Heating | 37 | 1,927 | 53 | 1,385 | 37.9 | .72 | 6.72 | |
| With Thermostats | 34 | 1,884 | 55 | 1,363 | 39.9 | .72 | 6.71 | |
| Any Control of Cooling | 41 | 2,244 | 55 | 1,502 | 36.6 | .67 | 6.72 | |
| With Thermostats | 37 | 2,160 | 58 | 1,451 | 39.1 | .67 | 6.71 | |
| Reduced Use During Off-Hours | | | | | | | | |
| Heating Only | 15 | 542 | 36 | Q | Q | Q | 5.80 | |
| Cooling Only | 7 | 408 | 55 | 332 | 44.7 | .81 | 6.26 | |
| Heating and Cooling | 38 | 4,160 | 111 | 1,999 | 53.1 | .48 | 6.91 | |
| Computerized Energy Management and Control System | | | | | | | | |
| Present in Building | 24 | 3,752 | 159 | 1,788 | 75.6 | .48 | 6.57 | |
| Controls Heating and Cooling | 23 | 3,724 | 159 | 1,780 | 76.0 | .48 | 6.57 | |
| Controls Lighting | 2 | Q | Q | Q | Q | .35 | 4.86 | |
| Controls Other | 2 | Q | 266 | Q | 164.1 | .62 | 6.95 | |
| Other Energy Management | | | | | | | | |
| Regular HVAC Maintenance | 86 | 6,045 | 71 | 3,457 | 40.4 | .57 | 6.52 | |
| Participated in Utility Conservation Program | 20 | 1,672 | 84 | 977 | 49.2 | .58 | 6.33 | |

* Statistics presented under the "Energy Sources and End Uses" headings represent overall consumption for all end uses combined, not consumption of a particular fuel for a particular end use. For example, the row labelled "Electricity" under "Main Space-Heating Energy Source" gives overall consumption statistics for all buildings that use electricity for main space heating, not statistics on electricity consumed for main space heating. Such end-use data are not available from this survey. See "Energy Sources Used - Building and Supplier Survey Estimates" in Appendix B, "Nonsampling and Sampling Errors."

b No applicable RSE row factor.

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

-- Data not applicable.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding RSE column and RSE row factors. • See Glossary for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Appendix A

How the Survey Was Conducted

A structure under construction with walls and/or roof still incomplete at the time of interview is out of scope for the CBECS.

OFFICE BUILDING

Appendix A

How the Survey Was Conducted

Introduction

The Commercial Buildings Energy Consumption Survey (CBECS) is conducted by the Energy Information Administration (EIA) to provide basic statistical information on the consumption of, and expenditures for, energy in U.S. commercial buildings, along with data on energy-related characteristics of these buildings. To obtain this information, a survey was conducted based upon a sample of commercial buildings selected according to the sample design requirements described in the "Sample Design" section below. A "building," as opposed to an "establishment," was chosen as the basic unit for the CBECS because a building is the consuming unit.

This is the fourth in a series of surveys for this sector. Previous surveys were conducted in 1979, 1983, and 1986 under the name Nonresidential Buildings Energy Consumption Survey or NBECS. Although the survey name was changed, the design remains essentially the same. For consistency, all the surveys will be referred to as CBECS in this report.

The CBECS was conducted in two major stages. In the first stage, information about the selected buildings was collected in the Building Characteristics Survey through voluntary personal interviews with the buildings' owners, managers, or tenants. These data were collected on Forms EIA-871A, Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire (consists of the Building Questionnaire together with the Authorization Form); EIA-871H, the asbestos questions collected for the Environmental Protection Agency (EPA); and EIA-871G, Construction Improvements and Maintenance and Repairs Supplement, for the Census Bureau (Forms EIA-871H and EIA-871G incorporated as Sections R and S of Form EIA-871A, respectively). The Authorization Form was used to secure the release of the buildings' energy consumption records to the data collection contractor during the Energy Suppliers Survey, which is the second stage.

In the second stage, the Energy Suppliers Survey, data concerning the actual consumption of energy were obtained from records maintained by energy suppliers to the building. This information was obtained by means of a mail survey conducted under EIA's mandatory data collection authority using Forms EIA-871C through F. An adjunct to the Energy Suppliers Survey, the Facility Survey, was collected using Form EIA-871B. Under EIA's direction, a survey research firm conducted both the personal interviews for the Building Characteristics Survey and the mail survey of energy suppliers.

This is the second report from the 1989 CBECS and includes data from both the Building Characteristics Survey and the Energy Suppliers Survey. The first report, *Characteristics of Commercial Buildings 1989*, was based solely on the Building Characteristics Survey data and was published in June 1991.

This appendix has the following main sections: Sample Design, Building Characteristics Survey, and Energy Suppliers Survey. The latter two sections focus on the procedures for collecting and processing the survey data. In addition, there are sections on Public Use Data Preparation, Confidentiality, and a section for each

of the special data collections for the Bureau of the Census and the Environmental Protection Agency. Copies of all the data collection questionnaires used in both stages of the 1989 CBECS (Forms EIA-871A through H) are shown in Appendix F of this report.

Sample Design

In the CBECS, the individual building is the basic sample unit. (See the "Glossary" for the definition of a "commercial building" as used in this survey.) For the 1989 CBECS, 8,791 buildings were selected for inclusion in the sample using an area probability sample supplemented by lists of large buildings. A total of 6,659 sample buildings were selected by use of multistage area probability methods as explained below. A supplementary sample of 2,132 buildings was obtained by sampling from lists of large and specialized buildings within the same Primary Sampling Units (PSU) as were selected for the multistage area sample. Because "large" buildings had a higher probability of being selected into the sample than "small" buildings, certain very large buildings that had been included in previous CBECS were also included in the 1989 CBECS. Except for these few buildings, the 1989 sample did not overlap with the earlier survey samples. However, the 1989 sample was selected from the same penultimate sampling units as the 1986 sample. That is, buildings were selected within the PSU's originally selected for the 1986 sample. For the area sample, buildings were selected within the same segments as were used for the 1986 sample.

The sample design for the 1989 CBECS was based on the 1986 CBECS sample with the following changes:

- The number of PSU's was reduced by 10 to cut costs in the 1989 CBECS. The dropped PSU's were selected by subsampling PSU's from entirely non-Metropolitan Statistical Area (MSA) strata in each of the four Census regions.
- The reduction in number of PSU's was accompanied by a reduction in the number of buildings in the sample; that is, there was no attempt to "replace" in other PSU's the buildings that would have been selected from the deleted PSU's. An additional weighting factor was introduced in the 1989 sample design to compensate for the reduced sampling rate in entirely non-MSA strata.
- A subset of the 1989 area segments was randomly selected to be updated for new construction since 1986. Segments estimated in advance (from the 1986 data) to have larger numbers of new buildings had higher probability of being selected as "update" segments. In the "nonupdate" segments, the sample of buildings for 1989 was selected only from the 1986 listings.

In the update segments, the 1986 listings were updated to include newly constructed buildings and buildings newly converted to commercial use. The within-segment sampling rates for old buildings were the same as the sampling rates for nonupdated segments. Higher within-segment sampling rates for new (or newly listed) buildings were established to reflect the fact that such buildings could be selected only from updated segments.

- Dodge Reports on new construction projects¹³ were added to the list frame to help identify buildings constructed during the period between the 1986 and 1989 surveys.

The following two subsections concerning the area sample and the list sample components provide more details about the sample design and selection.

¹³Dodge Reports are collected, maintained, and distributed by the F.W. Dodge Division of the McGraw-Hill Information Systems Company, New York.

Multistage Area Probability Sample

The area component of the 1989 CBECS sample used a four-stage cluster sampling design: Selecting Primary Sampling Units (PSU), Selecting Secondary Sampling Units (SSU), Selecting Segments, and Selecting Buildings (Figure A1).

Selecting Primary Sampling Units (PSU)

To prepare for the first-stage sample approximately 3,100 counties and independent cities of the United States were grouped into 1,799 PSU's. A PSU typically consists of one or more contiguous counties, such as a metropolitan area with surrounding suburban counties or a set of one or more rural counties. Essentially, the same PSU's were selected for both the 1989 CBECS and the 1987 Residential Energy Consumption Survey (RECS).^[3] The two survey designs diverged at the second and subsequent stages.

PSU's with similar characteristics were grouped to form 129 strata. Characteristics used to define the strata were Census divisions, MSA or non-MSA status, the predominant residential heating fuel in 1980, and climate zone.^[3] The design of efficient area samples requires that the area segments be as nearly equal in size as possible. An example of a measure of size is the number of households reported in the 1980 Census. For CBECS, population is correlated with the survey's characteristic of interest--commercial buildings. Within each stratum, one PSU was selected with probability proportional to its 1980 Census population.

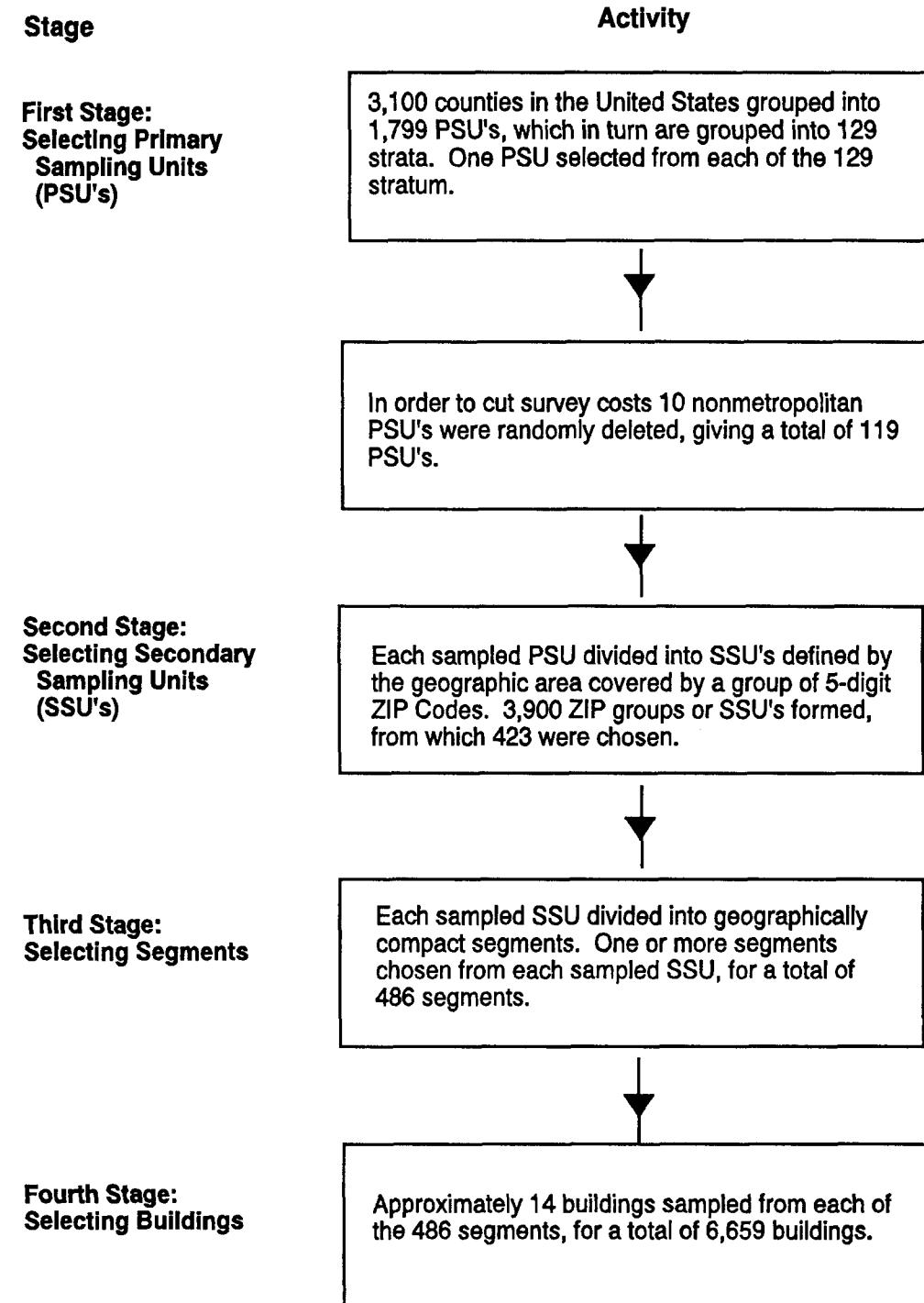
Probability-proportional-to-size (PPS) sampling is commonly used to take advantage of existing knowledge about the sample units, in order to improve the reliability of survey estimates. For quantities roughly proportional to these measures of size, estimates based on PPS sampling have lower variances than estimates based on equal-probability sampling. Despite being a measure of people rather than of buildings, the 1980 population of a PSU was a useful measure of size because of its relationship with commercial activity and energy consumption.

Thirty-two PSU's had populations large enough for each of these PSU's to form a stratum by itself, so that each was selected with certainty. For the noncertainty PSU's, the Keyfitz method was used to assign selection probabilities.^[5] This method enhanced the probability of inclusion of specific PSU's that had been selected for the previous RECS, while, at the same time, ensuring that the current RECS selection probabilities were still proportional to 1980 population levels. Controlled selection was used to improve the geographic coverage of the sample by maximizing the number of different States represented by the sampled PSU's.^[4] Finally, 10 non-MSA PSU's were randomly deleted from the initial sample of PSU's to reduce survey costs for the 1989 CBECS.

Selecting Secondary Sampling Units (SSU)

To form second-stage sampling units for CBECS, each sampled PSU was divided into areas corresponding to 5-digit ZIP Codes.^[2] ZIP Codes covering small areas or representing individual buildings or post office boxes were grouped together with larger area ZIP Codes. All second-stage sample units are, thus, referred to as ZIP groups. A total of about 3,900 ZIP groups were formed within the sampled PSU's. Of these, 423 were selected using probabilities proportional to a second-stage measure of size. Having been designed to reflect the level of commercial activity, this measure of size was the estimated number of buildings in the ZIP group. This measure of size was computed for each ZIP group using employment data from the U.S. Department of

Figure A1. Multistage Area Probability Sample Stages and Activities



Source: Energy Information Administration, Office of Energy Markets and End Use, 1989 Commercial Buildings Energy Consumption Survey.

Commerce, Bureau of the Census' 1983 County Business Patterns (CBP) reports, and employee occupancy rates in different building types obtained from the 1979 CBECS.

The ZIP code group measure of size was used to select ZIP codes for inclusion in the sample, using a procedure that was closely integrated with the selection of the third-stage units. The 129 sampled PSU's were sorted into cells defined by Census region and MSA/non-MSA status. The size for each cell was defined as the sum of the PSU-weighted measures of size of all ZIP groups in the PSU's of that cell. The desired number of third-stage sample units (prior to deletion of the 10 non-MSA PSU's) were allocated to the cells proportional to the cell sizes. The third-stage units were then suballocated to the PSU's within the cells, again using the ZIP code group measure of size.

Within each PSU, a controlled selection procedure was used to allocate third-stage units to the ZIP groups within that PSU, such that ZIP groups of various measures of size were represented in the sample. A ZIP group was considered to be selected into the sample if one or more third-stage units were allocated to it. Of the ZIP groups sampled, most were selected once. However, some ZIP groups with large measures of size were selected two or more times. A total of 509 selections occurred within the original sample of 129 PSU's, representing 444 unique ZIP code groups. The number of times that a ZIP group was selected corresponded to the number of third-stage sample units to be drawn into the sample from that ZIP group.

Selecting Segments

The third-stage sample unit was a segment, that consisted of a geographically compact area containing roughly 100 nonresidential buildings. Sampled ZIP code groups were divided into segments based on field mapping and rough counting of nonresidential buildings. Within the original sample of 129 PSU's, a total of 509 segments were selected from within sampled ZIP groups using equal probability sampling. If the field mapping and counting procedures were performed in all PSU's and ZIP code groups nationwide, approximately 43,260 potential segments would result. Thus, the 509 segments actually selected represented a sampling rate of roughly 1 in 85 segments nationwide. Within PSU's and ZIP groups, the segments were selected such that 509 of the 43,260 potential segments nationwide were sampled with equal overall probabilities. However, due to the subsampling of PSU's mentioned earlier, segments in the non-MSA PSU's in the 119 PSU's designated for the 1989 CBECS had overall probabilities of selection equal to approximately three-fourths of the probabilities of selection of segments in the MSA PSU's. A total of 486 segments were chosen for the 1989 CBECS.

Once segments were selected, preparations were made for the fourth stage of sampling, which was the selection of commercial buildings from within segments. With a few exceptions, a building, for purposes of the CBECS, is defined as a structure totally enclosed by walls extending from the foundation to the roof. A commercial building was one that housed some type of commercial activity. (See the "Glossary" for a complete definition of a commercial building.) Field workers canvassed each sampled segment on foot, identifying and listing the addresses of all commercial buildings. These workers also estimated the square footage and apparent principal usage of listed buildings. This information was subsequently used to assign buildings to strata for sampling.

Since the sample for the 1989 CBECS was based on the 1986 CBECS sample, a complete relisting (updating) of 200 of the originally sampled 509 segments was done for the 1989 CBECS to take into account any buildings newly constructed or converted *to* commercial use after the earlier survey, as well as those demolished or converted *from* commercial use. The selection of the 200 update segments was made randomly within strata defined on the basis of advance estimates of the number of newly constructed buildings in the segment. Since the update segments represented a stratified subsample of the original sample of segments,

new buildings in these segments could be appropriately weighted to provide national estimates of newly constructed buildings. The remaining segments were not updated and thus were weighted to reflect only those buildings in existence at the time of the 1986 CBECS.

To avoid double counting, buildings in nonupdate segments that were constructed after the 1986 listings were not eligible for the sample, since such new construction was already represented by the weighted update sample. For this reason, if a sample building in a nonupdate segment was found during the interview to have a construction year later than 1987, the building was deleted from the survey on the assumption that it was a new building on the site of an old listing. Nonupdate segment buildings reported as constructed in 1987 were retained if they otherwise matched the 1986 listing description.

Selecting Buildings

Buildings were sampled within size/usage strata with equal probability. However, sampling fractions varied between strata so that strata containing large buildings were sampled more intensively than strata containing small buildings. For example, while the stratum of office buildings with less than 10,000 square feet was sampled at an overall rate of only 1 in 1,530, the stratum of office buildings with 50,000 square feet or more was sampled at a rate of 1 in 230. This stratified sampling is similar to PPS sampling in that each uses measures of size (but in a different way) to increase the reliability of estimates of square footage and energy consumption.

Approximately 14 buildings were sampled from each of the 486 segments. The number of buildings included in the CBECS varied from the number sampled, depending on what the interviewer actually found at the building. If during the interview a sample selection turned out to be a facility (for example, a campus or complex) of two or three buildings rather than a single building, all buildings in the facility were taken into the sample. Facilities of four or more buildings were subsampled.

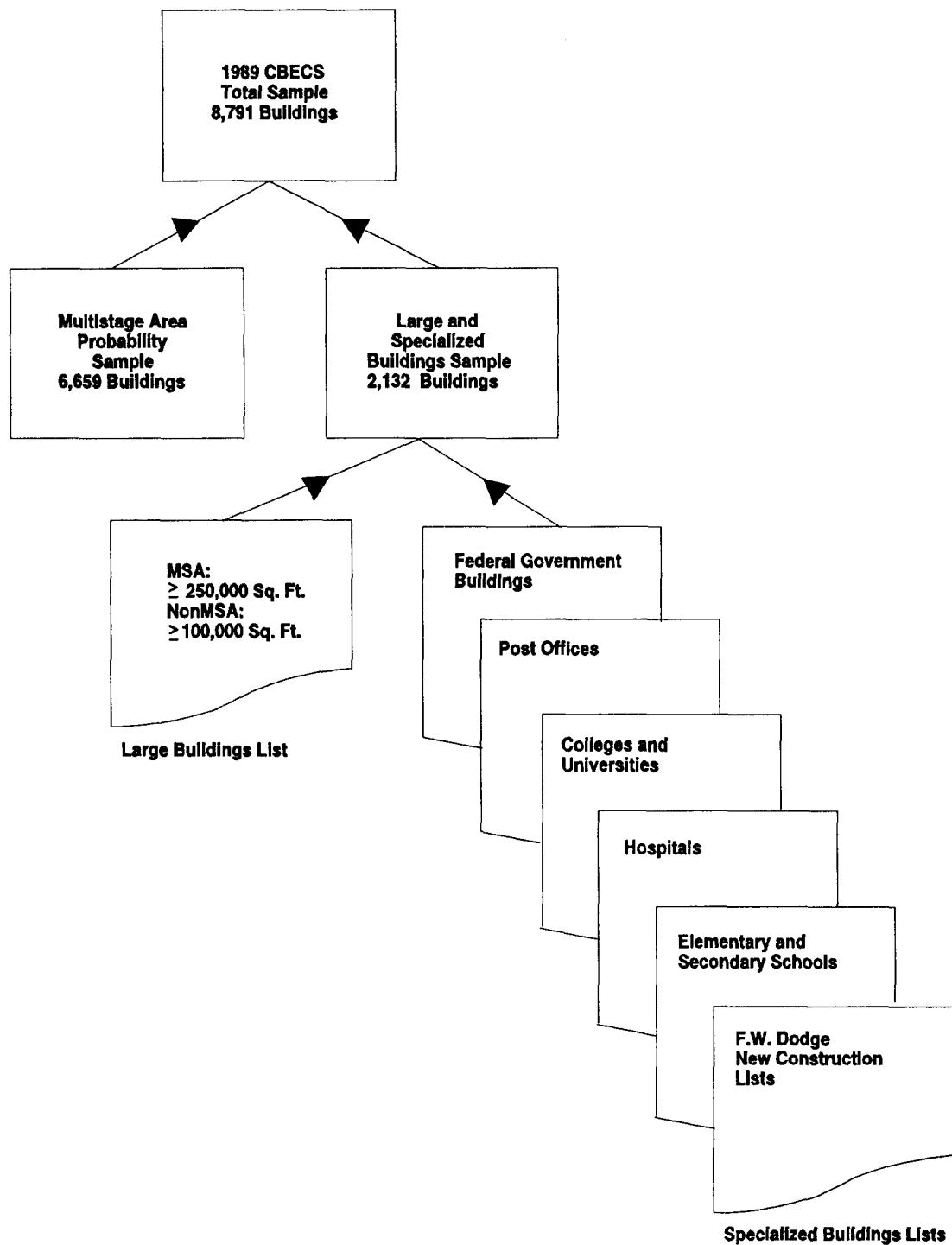
A final total of 6,659 buildings was selected into the multistage area probability sample.

Supplementary Sample from Lists of Large and Specialized Buildings

To ensure adequate coverage of buildings that were significant energy users, the multistage area probability sample was supplemented within each selected PSU by a sample from a list of "large" buildings or facilities. Also, a supplementary sample was drawn from seven lists of specialized buildings to improve the precision of energy consumption estimates for certain types of buildings (Figure A2).

In PSU's that were MSA's, the list of large buildings contained buildings with 250,000 or more square feet of enclosed floorspace. In the non-MSA PSU's, this list contained buildings of 100,000 square feet or more. The list was compiled through inquiries with Chambers of Commerce, other local sources, and special directories. The seven lists of specialized buildings were limited to certain types of buildings or facilities with 50,000 square feet or more. These lists were (1) hospitals, (2) colleges and universities, (3) elementary and secondary schools, (4) post offices, (5) Federal Government buildings, (6) Dodge reports for "small" new construction projects (50,000 to 250,000 square feet) and (7) Dodge reports for "large" new construction projects (over 250,000 square feet). These lists of specialized buildings were used for three reasons. First, they contained many large buildings and thus helped ensure accurate coverage of significant energy users. (The Dodge reports ensured better representation in the sample of newly constructed large buildings.) Second, the special lists ensured good coverage for certain building types that are distinguished separately in CBECS reports, such as those used for health care and education. Third, the lists compensated for inadequacies in the measures of size developed for ZIP groups using the 1983 CBP reports. These reports do not cover employees exempt

Figure A2. 1989 CBECS Sample Design



Source: Energy Information Administration, Office of Energy Markets and End Use, 1989 Commercial Buildings Energy Consumption

from the Social Security System, such as the majority of the Federal workforce. The weighting procedure used for the final sample does not require that the supplemental lists be comprehensive to produce unbiased estimates. However, the more complete these lists are, the more efficient the sample design is.

The lists within each sampled PSU were stratified by building size and general usage, and buildings were sampled with equal probability within strata. (In many cases, building size in square feet was estimated from available data such as the number of beds for hospitals, or the number of students for education buildings.)

As in the area sample, strata containing large buildings were sampled more intensively than strata of small buildings. Also, as with the area probability sample, if a selected unit turned out to be a facility with three or fewer buildings, all were taken into the sample. Otherwise, buildings on the facility were subsampled.

The eight lists (that is, the large buildings list and seven specialized building lists) were sampled independently. The problem of overlap was handled by unduplicating the large buildings list to the extent possible and by using a "priorities" approach whereby, a building present on a higher priority list was disregarded if it was selected only from a lower priority list. The priorities of the lists, in descending order, were as follows: (1) hospitals, (2) colleges and universities, (3) elementary and secondary schools, (4) post offices, (5) large buildings lists, (6) Federal Government buildings (7) Dodge reports over 250,000 square feet and (8) Dodge reports 50,000 to 250,000 square feet. For example, if a given building was present on the hospitals list, its selection from another list was disregarded.[2])

For the Dodge reports on large construction projects (over 250,000 feet), a complete list of projects in each sampled PSU was obtained, and a sample was drawn from that list. Thus, it was possible to determine if a building sampled from some other source was also included in this Dodge list. For small Dodge projects (between 50,000 and 250,000 square feet) only a sample was obtained. Therefore, there was no way to verify whether a building that by definition should have been covered by this list was in fact included in the list from which that sample was drawn. For this reason, this "conceptual list" was given lowest priority.

There was also a problem of overlap between the list sample and the multistage area probability sample. Computation of joint probabilities of selection would be somewhat intractable in the complex design. Instead, a less efficient, but unbiased, procedure was adopted where buildings were made self-representing if they were sampled from an area segment and also appeared on one of the list frames.[1] A new building sampled from an update segment of the area sample and between 50,000 and 250,000 square feet in size was assumed to appear on the (unverifiable) Dodge list for that size range. Smaller new buildings were assumed not to appear on Dodge lists, and larger ones were checked against the complete lists that were obtained for this size range.

A total of 1,660 list entries were sampled. Because some entries were multibuilding facilities, the final list sample comprised 2,132 individual buildings.

Building Characteristics Survey

Description of the Target Population

The target population for the 1989 CBECS consisted of all commercial buildings in the United States larger than 1,000 square feet. Thus, to be eligible for the survey, a building had to satisfy three criteria: (1) it had to meet the survey's definition of a building, (2) it had to be used primarily for some commercial purpose, and (3) it had to measure 1,001 square feet or more. The eligibility of a building for inclusion in this survey was evaluated at three different times: during the initial listing of the sample, at the time the interviewer observed the building, and during the interviewing of the building owner or manager. At the stages of listing and interviewer observation, eligibility was determined using somewhat looser criteria. These broader standards ensured that marginal cases were screened ultimately by interviewing a knowledgeable respondent, rather than on the basis of lister or interviewer judgment.

The first eligibility criterion, the building definition, has been used consistently in all the CBECS. The second criterion, commercial activity, has been more strictly interpreted in each of the successive surveys, to concentrate attention on a well-defined population that does not overlap those covered by other EIA surveys.

The third criterion, size, was added in the 1986 CBECS process to eliminate the very small buildings, which form a large, inherently ill-defined group of marginal structures. These buildings contribute minimally to total commercial floorspace and energy consumption of the overall sample, yet different, reasonable decisions on how to identify them could lead to substantial variations in building counts.

The definition of a building was the same one used in previous CBECS's, that is, a structure totally enclosed by walls that extend from the foundation to the roof and intended for human access. Thus, structures such as water, radio, and television towers were excluded from the survey. Also excluded were: (1) partially open structures, such as lumber yards; (2) enclosed structures that people usually do not enter, such as pumping stations and cooling towers at electric power plants; (3) enclosed structures that are not buildings, such as oil tanks, statues, and monuments; and (4) dilapidated or uncompleted buildings missing a roof or a wall. Structures that were included in the survey by specific exception despite not being "totally enclosed by walls," were parking garages and structures on pillars.

The second criterion was that a building had to be primarily used for some commercial purpose; that is, more than 50 percent of the building's floorspace must be devoted to activities that are neither residential, industrial, or agricultural. Buildings that were 100 percent residential and farm buildings, such as barns, were out of scope for the 1989 survey (as in previous surveys) and should not have been included during the listing stage. The primary use of the sampled building is the governing consideration for this criterion. That is, if an administrative office building within an industrial complex was the sampled building, it was considered in scope since its principal building activity is commercial. However, if the sampled building was an industrial processing plant within the same complex, it would be out of scope because its principal activity is industrial. Buildings used for industrial purposes and for processing of agricultural products were included in the listing stage. During the interviewing stage, interviewers were instructed not to begin interviews at buildings where they observed 75 percent or more of the floorspace was used for residential, industrial, or agricultural purposes. Once the interview began, screening questions instructed the interviewer to terminate the interview if the respondent indicated half or more than half of the square footage was used for residential, industrial, or agricultural purposes. In previous surveys, buildings used primarily for residential purposes, but having *any* commercial activity, were included in the survey and report tables. Beginning in 1986, if more than 50 percent of the floorspace of these buildings were used for residential purposes they were excluded from CBECS. Interviewers retired 121 cases prior to beginning the interview and terminated 936 interviews because the building's use was not predominantly commercial.

The third criterion was that a commercial building had to measure more than 1,000 square feet (about twice the size of a two-car garage) to be considered in scope for the 1989 CBECS. Buildings measuring less than 1,000 square feet were excluded at two stages. First, buildings of less than 500 square feet were included in listings from nonupdate segments, but were excluded from the update segment listings. Interviewers did not begin interviews when they observed a building to be 500 square feet or less; 154 cases were retired for this reason. Second, screening questions asked during the interview instructed the interviewer to terminate when the square footage was 1,000 square feet or less. Interviewers terminated 521 interviews because the building did not meet the size criterion.

Response Rates

As mentioned in the Sample Design section, the total sample of the 1989 CBECS consisted of 8,791 buildings, 6,659 from the area sample and 2,132 from the list sample (Table A1). Of these, 6,352 buildings were eligible for interviewing, 4,770 from the area sample and 1,582 from the list sample. Of the total number of buildings eligible for interview, interviews were completed at 92.5 percent, or 5,877 buildings.

Authorization forms, used to secure the release of the buildings' energy consumption records, were obtained for 91.1 percent of interviews completed (5,167 of 5,670 buildings) where energy was used in the buildings.

Table A1. Number and Distribution of 1989 CBECS Sample Buildings by Building Disposition

| Building Disposition | Number of Buildings | Percent of All Buildings | Percent of Eligible Buildings |
|----------------------------------|---------------------|--------------------------|-------------------------------|
| <u>Total Sample</u> | | | |
| Total | 8,791 | 100.0 | NA |
| Eligible for Interview | 6,352 | 72.2 | 100.0 |
| Interviewed | 5,877 | 66.8 | 92.5 |
| Not Interviewed | 475 | 5.4 | 7.5 |
| Not Eligible for Interview | 2,439 | 27.8 | NA |
| <u>Area Sample</u> | | | |
| Total | 6,659 | 100.0 | NA |
| Eligible for Interview | 4,770 | 71.6 | 100.0 |
| Interviewed | 4,389 | 65.9 | 92.0 |
| Not Interviewed | 381 | 5.7 | 8.0 |
| Not Eligible for Interview | 1,889 | 28.4 | NA |
| <u>List Sample</u> | | | |
| Total | 2,132 | 100.0 | NA |
| Eligible for Interview | 1,582 | 74.2 | 100.0 |
| Interviewed | 1,488 | 69.8 | 94.1 |
| Not Interviewed | 94 | 4.4 | 5.9 |
| Not Eligible for Interview | 550 | 25.8 | NA |

NA Not applicable.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1989 Commercial Buildings Energy Consumption Survey.

Data Collection

Data Collection Procedures

Initial contacts with the building representatives were made through an introductory letter sent to them at each building in the survey sample. The letter, signed by the Director of the Office of Energy Markets and End Use of the EIA, was addressed to the building owner or manager. The letter explained that the building had been selected for the survey, introduced the survey contractor, assured the building manager that the data would remain confidential, and discussed the uses and needs for the CBECS data in setting national energy policies. To protect confidentiality, the letter was addressed by the survey contractor after it was signed at EIA.

The data were collected by personal interviews conducted from August 7, 1989 through November 30, 1989. Interviewers visited all sampled buildings in person to ascertain if the structure met the eligibility requirements of the survey. They also used this opportunity to identify an individual associated with the building who met the survey criteria for a building representative and who could serve as that building's respondent. The respondent could be the owner of the building, a tenant, a hired building manager or engineer, or a spokesperson for a management company. Table A2 shows the number of in-person contacts by the interviewer, which were required to obtain a completed 1989 CBECS Building Questionnaire.

Table A2. Number of In-Person Contacts to Obtain a Completed Building Questionnaire

| Number of In-Person Contacts | Completed Interviews | Percent |
|--|----------------------|--------------|
| 1 | 1,775 | 30.2 |
| 2 | 1,919 | 32.7 |
| 3 | 1,123 | 19.1 |
| 4 | 532 | 9.1 |
| 5+ | 452 | 7.7 |
| Not Reported/ Telephone Interview | 76 | 1.3 |
| Total | 5,877 | 100.0 |

Source: Energy Information Administration, Office of Energy Markets and End Use, 1989 Commercial Buildings Energy Consumption Survey.

A limited number of interviews were conducted by telephone. This occurred either as part of a nonresponse conversion effort, or if a knowledgeable building respondent was not located in the same PSU as the sampled building. However, in all cases, an interviewer had first visited and observed the sampled building.

Building Questionnaire Changes

The CBECS Building Questionnaire (Form EIA-871A) was basically the same as that used in the previous three surveys. However, experience with the prior surveys resulted in changes being made to resolve ambiguities and permit better description of the characteristics of the building. These wording and structural changes were made to improve data quality. The Building Questionnaire is shown in Appendix F.

For the 1989 CBECS, entire sections of the questionnaire were redesigned to make them easier for the respondent to understand. The heating and cooling equipment sections were reconfigured and simplified to include just one list for each use, combining both distribution and production equipment. The "Energy Conservation Features" section was shortened and simplified, and the reference to energy audits was eliminated.

Due to budget constraints, 10 nonmetropolitan PSU's were dropped from the sample frame (see the Sample Design section of this appendix for more details), and billing data were no longer collected from propane suppliers to the building in the "Energy Supplier" portion of the 1989 CBECS. However, the Building Characteristics Survey respondents were still asked if propane was used in the building; this information is included in the tables of the 1989 CBECS, *Commercial Buildings Characteristics 1989* report, (DOE/EIA-0246(89)).

To reflect growing concerns over the use of chlorofluorocarbons (CFC's), several questions were added concerning the presence of different types of refrigeration equipment and the installation date of the main chiller or packaged air-conditioning equipment. These data could be used to estimate the amount and type of CFC's currently present in the commercial buildings sector.

Interest in cogeneration is increasing, thus questions were added to the 1989 CBECS Building Questionnaire on the amount of energy cogenerated, nameplate capacity, whether the building was interconnected to a utility and whether the building was designated as a Qualifying Facility under the Public Utilities Regulatory Policies Act of 1978 (PURPA).

In addition, the 1989 CBECS asked for the first time, whether the sampled building was part of a multibuilding facility and, if so, whether the multibuilding facility had a central physical plant that produced district heating, district cooling, or electricity. The purpose of this question was to provide information needed for a follow-up survey on the facility's generation of district heating, district cooling, and electricity--including cogeneration, even if that generation took place in a building that might be out of scope for the CBECS.

Changes in specific data items that resulted from experience with the previous surveys included:

- "Concrete" was added as a response category for type of roofing material.
- "Masonry" became a single exterior wall material category; the distinction between masonry over wood or steel or solid masonry was eliminated.
- "Indoor enclosed parking garage" was added as a separate building activity.
- The distinction between "energy-efficient" and "standard" light-bulbs was eliminated.
- Secondary water heating fuel was dropped.

Other additional new questions concerned the presence of an environmentally-controlled space for computers and respondent participation in a utility-sponsored conservation program.

Data were also gathered at the request, and with the financial support, of Federal agencies other than DOE. Section R, EIA-871H, Asbestos in Buildings, was added for and funded by the Environmental Protection Agency (EPA). The content of Section S, EIA-871G, Construction Improvements and Maintenance and Repairs Supplement, collected by the EIA as an agent for the Bureau of the Census, was modified as a result of experience gained during the 1986 CBECS. Since all respondents were asked the Census-sponsored questions in the 1989 CBECS, (versus only half in 1986), these questions were included as part of the Building Questionnaire as opposed to a separate questionnaire. (For additional discussions pertaining to the EPA and Census-funded questions, see the sections on each at the end of this appendix.)

The Interview

Each interview began with a series of screening questions designed to verify the building's address, location within the segment boundaries, and eligibility for the survey. Respondents were asked about the building as a whole rather than individual establishments located within the building.

The completed building interview lasted an average of 36 minutes. This included the time for the interviewer to ascertain and record whether the listing was correct, to ask all questions on the Building Characteristics Questionnaire, and to obtain a signed authorization form from the respondent. On average, the EPA section took an additional four minutes and the Census section added six minutes to the interview. The EPA and Census sections of the Building Questionnaire were each submitted for clearance and approval to the U.S. Office of Management and Budget separately by the sponsoring agency.

The average time for each completed case (including interviewer preparation, travel, callbacks, interviewing, and editing time) was 5 hours and 36 minutes. Each interviewer conducted an average of 42 interviews. However, there was great variability by interviewers, from the normal process, with 12 interviewers each completing 10 or fewer interviews, while 4 interviewers each completed between 90 and 100.

Interviewer Training and Supervision

The data were collected by the contractor's field staff, which consisted of 140 interviewers under the supervision of 6 regional supervisors and their assistants, as well as a central office staff consisting of a project manager, a field director, and a subsampling assistant. The six regional supervisors and their assistants were trained at a 4-day supervisor training session. They were trained in data collection, field office procedures, and quality control. The supervisors were also trained to serve as small-group leaders at the interviewer training sessions.

Three and one-half days of interviewer training sessions were held at two locations during August 1989. All interviewers working on CBECS were trained at one of these sessions or at a replacement interviewer-training course held in September. Twenty-seven of the interviewing staff had worked on the 1986 CBECS. Of the 140 interviewers, 123 had some prior interviewing experience, and 17 had no prior interviewing experience.

Each training session was conducted by the contractor's central office staff with the assistance of the regional supervisors. EIA personnel observed both sessions, and Census Bureau and EPA personnel attended at least one session each. The sessions covered the background of the CBECS, the definition of a building, finding the sampled building, a question-by-question review of the questionnaire, and administrative information. New interviewers were trained in general interviewing techniques. A variety of training techniques were used including lectures, slide presentations, and small-group practice sessions on interviewing and administering the questionnaire. All interviewers had completed four scripted-practice interviews by the conclusion of the training session. Each trainee's performance was monitored and evaluated by the regional supervisors and only those judged qualified were given field assignments. Every interviewer was provided with a CBECS "Interviewer's Manual," which included step-by-step instructions for planning, conducting, and recording interviews and question-by-question specifications describing the intent of each question, definitions of terms used in the survey, and instructions detailing how each question was to be asked.

Several steps were taken to ensure that the interviews were conducted as intended. Completed questionnaires were field edited twice, once by the interviewer and once by the supervisor before being mailed to the central office for data processing. For more information about how the data were edited, see the section on "Data Editing."

In addition, the regional supervisor conducted a validation of a random sample of 10 percent of each interviewer's work. Interviewers were informed that a sample of their work would be validated, but they were not informed which cases would be checked. The regional supervisors telephoned the respondents identified on the interview to confirm that the interview had been conducted and to verify several key data items.

Corrective actions were taken when problems with an interviewers' performance were identified. These actions included monitoring the interviewer's work more closely, retraining the interviewer on the sections of the questionnaire causing the problems, and, as a last resort, dismissal of the interviewer. Overall, 17 percent of cases were validated.

Minimizing Nonresponse

Several approaches were employed in the effort to minimize nonresponse. As previously noted, before the initial contact with the building representative was made, a letter was sent from the Director of the Office of Energy Markets and End Use to the owner or manager of each building. Then, during the field period, the interviewer assigned to the building was authorized to make up to four callbacks at different times of the day throughout the week to minimize the number of building representatives not contacted. After four failed callbacks, the interviewer and supervisor discussed the case and additional callbacks could be authorized. Field supervisors also notified the home office of potential refusals and the field director sent personalized letters addressing individual concerns and urging participation. Approximately 230 such letters were mailed, with completed interviews obtained for one-quarter of these buildings.

There were three categories of nonresponse for CBECS: refusals, cases where the knowledgeable respondent was located outside of the sample PSU, and cases where the respondent was unavailable during the field data collection period. In November 1989, 483 refusals and other cases of nonresponse were reviewed; 78 refusals and 15 other nonresponse cases were selected as viable candidates for nonresponse conversion. Individualized letters explaining the importance of the survey were mailed to the cases selected for nonresponse conversion. The cases were assigned to telephone interviewers with special training and experience in refusal conversion strategies. The nonresponse conversion effort resulted in 5 ineligible cases and 28 of the remaining 88 cases (or 32 percent) being turned into completed interviews.

An additional type of nonresponse conversion dealt with respondents who declined to sign the authorization forms that would allow consumption records to be released by their energy suppliers. Personalized written requests for signed authorization forms were mailed for all buildings for which energy usage had been reported and a signed form had not been obtained by an interviewer. Such requests were mailed to 522 buildings interviewed by field staff and to the 28 buildings for which interviews were conducted by telephone. A total of 155 signed authorizations were received by mail as a result of these efforts.

Data Editing

Data editing for the Building Characteristics Survey occurred at several points during data collection and processing. As mentioned in the previous section, questionnaires were edited twice in the field before being sent to the central office. The first field edit was performed by the interviewer after completing the interview and before submitting it to the field supervisor. During this edit, the interviewer checked the form for legibility and completeness. Once received by the field supervisor, the form underwent a second field edit using the "Field-Edit Form" to check a set of 17 specified data items. The purpose of this field edit was to provide the supervisor, the data collection contractor, and the interviewer with continuous feedback on the quality of the data being collected. The supervisor mailed a copy of the form to the interviewer and discussed the results of these edits in weekly telephone conferences with each interviewer and mailed a copy of the field-edit form with each questionnaire to the contractor's central office.

After the contractor received the questionnaire, it was manually edited and prepared for data entry. The scan edit checked for completeness and logical consistency and identified cases with missing data. Certain data were designated as key data items. These key data items required telephone data retrieval if they were missing from the questionnaire.

Cases proceeded to coding and data entry after telephone data retrieval was completed. Preparation for data entry involved checking the accuracy of the questionnaire skip patterns and checking that only allowable values or codes were entered. All data entry was performed with 100 percent verification of all keystrokes.

The contractor took several steps to resolve inconsistencies or ambiguities in the data. First, answers to other parts of the questionnaire were reviewed to see if they might help explain the problem. The interviewers had been asked to write comments after the interview or to explain any special cases in the margin of the questionnaire. These notes were relied upon extensively in this part of the review and were very helpful in explaining some of the inconsistencies. EIA personnel reviewed some of the hard-to-resolve cases and provided technical guidance on how to reconcile some questionnaire responses. When these efforts failed to resolve a problem, especially if it concerned the energy sources or heating and cooling equipment, the contractor contacted the respondent by telephone.

Telephone contacts to clarify both questionable or missing information were made to the respondents for 1,108 buildings, 19 percent of all completed cases. All changes made to any questionnaire response as a result of these reviews were carefully documented and explained on an error resolution sheet attached to the questionnaire.

Next, the data were machine edited to ensure further completeness and logical consistency, and to verify that the values fell within allowable codes or within acceptable ranges. Items failing these edits were reviewed by trained editors to assess the nature of the problem and determine how to correct it. These edit failures were most often due to problems in coding or data entry. Items failing edits that could not be resolved were referred to the contractors' supervisory-level personnel for review and resolution. EIA personnel also provided technical guidance for the error-resolution process.

As the last step, prior to delivery of the data tape to the EIA, the contractor produced data frequencies and crosstabulations. These were reviewed to search for outlying values and inconsistencies that the edits may not have identified.

Data Preparation for Report

Draft data tapes from the Building Characteristics Survey portion of the 1989 CBECS were received by EIA from the survey contractor in July and September 1990. EIA data analysts reviewed and processed the data to prepare them for the final data tape. Crosstabulations were run to check for internal consistency of the data, and 1989 CBECS data were compared with data from previous CBECS. Questions concerning data accuracy or values were referred to the survey contractor for verification. Respondents were recontacted to verify responses when possible. The final authority on some of the data items was based on an EIA staff judgment.

If retrieval of missing data for one or more items failed, or if retrieval was not performed because the item was not a key data item, data values were supplied by imputation. For a description of the imputation process, see Appendix B, "Nonsampling and Sampling Errors."

Energy Suppliers Survey

During the Building Characteristics Survey, each respondent was asked to provide the name, address, and account numbers of all suppliers of energy to the building. In addition, respondents were asked to sign the Authorization Form at the end of the Building Questionnaire. Copies of this form were sent to the suppliers to secure the release of the buildings' billing records to EIA's survey contractor. Attempts were made to

contact all suppliers of electricity, natural gas, fuel oil, district steam, hot water, and chilled water that were identified during the Building Characteristics Survey.

This section deals specifically with the Energy Suppliers Survey, describing the forms, response rates, data collection and processing procedures, and data preparation for the statistical reports.

Energy Suppliers Forms

Each supplier of electricity, natural gas, fuel oil, district steam, hot water, and chilled water to a sampled building, was asked to provide consumption and expenditures data on a mailed survey form. Response to the form was mandatory for the supplier. The format of the form varied by the type of energy supplied and whether or not a signed authorization form had been obtained. To meet these varying needs, six data-collection instruments were developed, four were in booklet or folder form and two were single sheets printed on two-part chemical transfer paper. The forms were color-coded by the energy supplied and numbered according to the format. Following is a list of the survey forms; see Appendix F of this report for copies of these forms.

- Form EIA-871C-1: Building Natural Gas Usage Form (pink)
- Form EIA-871C-2: Worksheet for Natural Gas Usage (2-part paper)
- Form EIA-871D: District Heating and Cooling Usage Form (blue)
- Form EIA-871E-1: Building Electricity Usage Form (yellow)
- Form EIA-871E-2: Worksheet for Electricity Usage (2-part paper)
- Form EIA-871F: Building Fuel Oil Usage (green)

Note: Form EIA-871B, Facility Form (on gold paper) was fielded as an adjunct to the Energy Suppliers Survey. However, it is different from the other six supplier forms listed above. See the sections on "Changes from Previous Surveys" and "Facility Survey" that follow for more information on this form, which was used for the first time in the 1989 CBECS.

The reporting form for each energy source had one of two types of formats:

1. The basic form (Type-1) was used when an authorization form had been obtained. In a departure from previous surveys, the same form was used whether there was only one customer in the building or many customers. In the latter case, the supplier was asked to provide data for the building summed over all the customers in the building.
2. The worksheet (Type-2) was a special one-page form on two-part paper used when an authorization form had not been obtained. The supplier was requested to aggregate cost and consumption data for a group of sampled buildings and to report the yearly totals. The special two-part paper was designed so that only the total for all the buildings appeared on the sheet returned to EIA. This form was used only for suppliers of electricity and natural gas.

Both form types asked for data summed over several customers. The basic form was for summation across customers or accounts within a *single* building in the sample, while the worksheet was for summation across all accounts in a *group* of buildings.

Suppliers were not required to transcribe data onto the survey forms. Responses were accepted in any format (including computer printouts), as long as the necessary information was provided. Respondents to the basic form were not required to compute the sums across customers, but could report data for each account in the building, leaving the actual aggregation to be performed by EIA.

Since there were differences in data items by energy source, there were corresponding variations in the reporting forms as well. The electricity forms requested kilowatt (kW) demand; the natural gas forms included

transportation gas, as well as provision for reporting variable units of measures (such as therms, cubic feet or 1,000 cubic feet); the fuel oil forms requested fuel-tank data; and the district heating and cooling forms asked for information concerning the entire district or system.

Despite the above-mentioned differences, the forms for the different fuels were similar in terms of the data requested. In each case, the supplier was asked to report the following data: (1) quantity consumed or delivered; (2) cost; (3) unit of measure; (4) dates of deliveries or consumption; and (5) number of customers included in both the consumption and cost data reported on the form.

The data were requested for a 14-month period between December 1, 1988 and January 31, 1990. The 14-month period was required to ensure that data would cover a full calendar year no matter what the actual billing period had been. For example, if the billing period began on the 10th of each month, the first bill would be from December 10 through January 9. The bills were then prorated (annualized) to obtain data for the calendar year. (See Appendix B, "Nonsampling and Sampling Errors," for details on the annualization procedures.)

Changes from Previous Surveys

There were two major changes in the Energy Suppliers Survey portion of the 1989 CBECS. The first was the addition of the Facility Form in order to capture more information about multibuilding facilities or complexes that had their own central plant that supplied energy. (See the section above for more details on this new data collection form). The second major change from previous surveys was that billing information was no longer collected from suppliers of bottled gas or propane to the CBECS buildings. The elimination of this part of the Energy Suppliers Survey was undertaken due to budgetary constraints for the 1989 CBECS. Since propane only accounted for approximately 1 percent of all energy consumption in commercial buildings in the 1986 survey, it was thought that this action would not impair quality of the 1989 CBECS data.

Another change was the consolidation of form types within the different energy sources. In previous surveys, separate survey forms were used when a building had one or more customer accounts. For the 1989 CBECS, there was no differentiation in forms by number of customer accounts in the building--the same basic form was used whether or not aggregation within the building was required.

Also, a question asking the suppliers of electricity, natural gas, and fuel oil, "whether they classified the building in their records as residential, commercial, industrial, commercial/industrial or other" was added to the 1989 survey. This question was added in order to help EIA in its comparison of figures from EIA supply and consumption data surveys. (See Appendix C, "CBECS Coverage Related to EIA Supply Surveys.") EIA collects data from two distinct sources. The "supply" surveys measure the quantity of fuel (including electricity) produced and/or supplied to the market, along with other information related to the fuel's production and supply. The second group of surveys, "consumption" surveys, such as CBECS, collect data from samples of end-use customers. These surveys gather information on the types of fuels used by the consumer, the purposes for which each fuel is used, and the characteristics of the users.

In the supply surveys, annual data are collected on sales or deliveries to end-use consumers. In many cases, suppliers classify their end-use sales by rate classification, which may not be consistent with other definitions of the sectors. Electric and natural gas utility companies have different rate structures, typically based on the customer's consumption level for different categories of customers. For example, low consumption is classified as "residential," intermediate consumption is classified as "commercial," and high levels of consumption are classified as "industrial." The utility then specifies how much fuel it supplied to the different sectors by totaling the quantity supplied under these rate classes. To the extent there is not a one-to-one correspondence between the economic activity of the customers and the rate schedule at which they are billed, there will be a misclassification of end-use sector supply data. Therefore, in order to assess the impact of any misclassification, the utilities were asked to report how they classified the account for the building sampled in CBECS. (See Appendix B, "Nonsampling and Sampling Errors," for a discussion of rate classes.)

In addition to the above changes, each supplier form had some additional modifications. For the Electricity Form (EIA-871E-1.), the following changes in 1989 were:

- Schedule B, "Usage Disaggregated by End Use" was dropped. This optional schedule was introduced in the 1986 CBECS to allow electricity suppliers to report information by metered end use, if it was more convenient for the supplier. However, this form was not used by the suppliers in the 1986 CBECS and was, therefore, dropped in the 1989 survey.
- Billed kilowatt demand column was dropped. It had been added in the 1986 CBECS, but the quality of the data reported in this column was not good and it was dropped after consultations with the energy suppliers.
- A question asking for the number of accounts opened and closed, by time period, was added to aid in the identification of valid partial records.
- The rate features question, added in 1986, was dropped after suppliers indicated that the building respondents were more likely to have this information. Consequently, this question was added to the Building Questionnaire for the 1989 CBECS.

A column was added to the Fuel Oil Form (EIA-871F), asking if the delivery indicated on the form was the first delivery to this customer. It was added to ascertain if all the deliveries were reported. For instance, previously, if the first reported delivery was in March 1989, there was no way of knowing whether this was the first delivery by this fuel oil supplier to the customer or whether the supplier just did not have records covering earlier deliveries. This column could also indicate whether further contact with the building respondent was necessary to identify other fuel oil suppliers. Since fuel oil is the one fuel type that can be readily provided by different suppliers, it is often necessary to locate more than one supplier.

As a result of consultations with natural gas suppliers, the Natural Gas Form (EIA-871C-1) was changed by: (1) dropping the question about interruptible service and the backup fuel for the building (the building respondent should be the source for these data, especially the backup fuel); and (2) the addition of a request for transportation gas volumes and the expenditures associated with these volumes. Transportation gas or "direct purchase" gas is gas that the customer buys directly from the natural gas producer or broker, which is then transported via the utility pipelines to the building or complex. These customers can often negotiate a lower price than when buying directly from the local natural gas utility, since transportation gas customers are usually large campuses or complexes using large amounts of natural gas.

The District Heating and Cooling Usage Form (EIA-871D) had a question added asking whether the quantity reported included that supplied to other buildings. If yes, the respondent was asked to provide either the estimated percentage of the reported quantity used by the CBECS sampled building or the square footage of both the specific building and the combined district loop (the service area for the central physical plant).

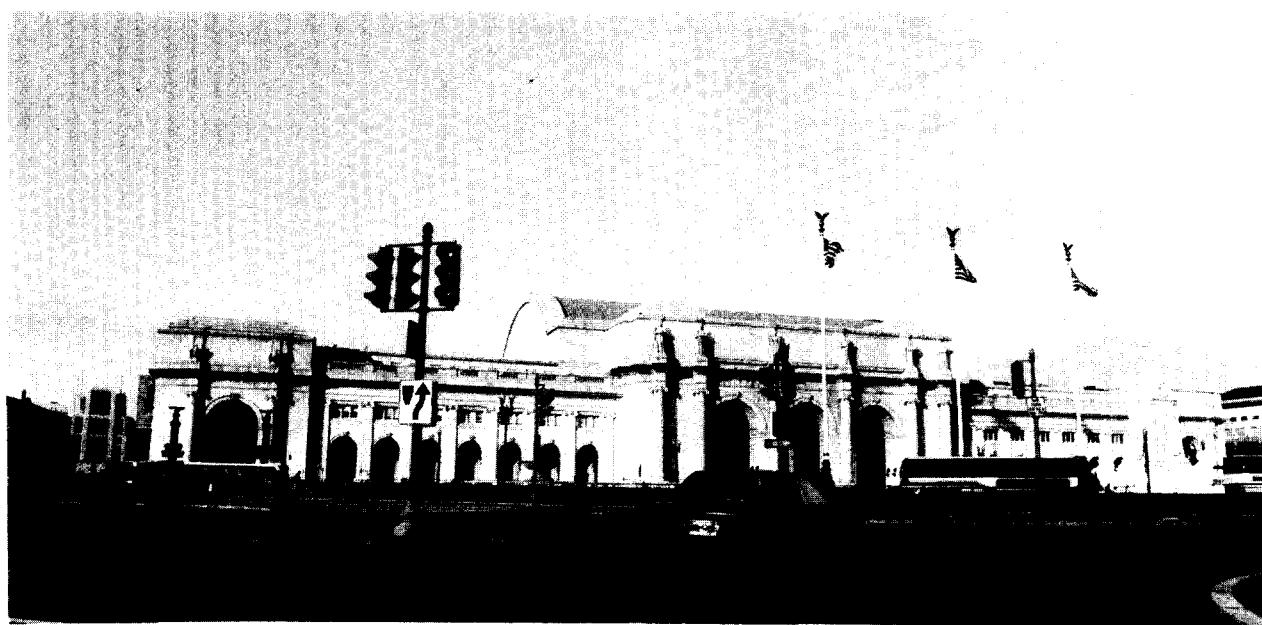
Facility Survey

The "Facility Form," Form EIA-871B, was added for the first time in the 1989 CBECS. This new form was designed: (1) to improve the estimates of district heating consumption and (2) to provide initial estimates of the primary fuels consumed to produce district steam and hot water in central plants on campuses and complexes. During the interview at the building, the respondent was asked if the building was part of a multibuilding facility or complex. A multibuilding facility or complex was defined as a group of two or more buildings on the same site owned or operated by a single organization, business, or individual. If the building was part of such a facility, the respondent was then asked if the facility had a central physical plant that produced district heating, district cooling, or electricity.

The form asked for: the principal activity of the facility; the number of buildings on the facility and their total square footage; information that would indicate whether the central plant was a "qualifying facility" under the Public Utilities Regulatory Act of 1978 (PURPA); verification that there was a central plant and whether the plant had a cogeneration system, the nameplate capacity of that system, whether the system was interconnected with an electric utility, and all system input information (fuels, consumption, expenditures) as well as all information on system output from the plant to the district system (output fuels, period, yearly plant output, number of buildings served, and total square footage served).

Facility forms were mailed when respondents to the Building Questionnaire had indicated that the building was both part of a facility and had a central plant. Forms were mailed at the same time as the rest of the Suppliers Survey forms (in January 1990). Half of the returns were received within 2 months of the original request. Mailed second requests and reminder letters resulted in a limited number of responses. The telephone prompting, begun in late August, was much more effective at examining nonresponses. During these calls, survey staff members were able to answer questions and to encourage respondents to return their survey questionnaires even if they were unable to provide all of the requested data. The survey close-out date was November 10, 1990.

A total of 394 survey forms were mailed to managers of central plants, as indicated on the Building Questionnaire. However, 24 of these responded that there was no central plant and it was ascertained from an additional 9 of the responses that they did not meet the criteria of a facility. The overall response rate for the facility form was 68 percent (Table A3). This is based on all responses, including those containing data (usable or not) and those that indicated they did not have a central plant. Nonrespondents include those who refused to answer the questionnaire (6 cases), those who indicated they would not respond because they do not maintain the necessary records to provide the requested information (3 cases), those that had not provided any information by survey closeout date (113 cases), and two "problem" cases which could not be classified. A total of 136 of the 385 eligible facilities (35 percent) responded with complete data that passed the critical item edit. Another 125 facilities provided some information, but what they provided was missing critical data needed for a response to be complete.



This train station is classified as an assembly building in the 1989 CBECS and includes various activities such as: entertainment, food sales, food service, etc.

Table A3. Facility Form Responses by Disposition and Census Region

| Form Disposition | Northeast | Midwest | South | West | Total | Percent |
|--|-----------|---------|-------|------|-------|---------|
| A. Complete, Usable Data | 21 | 32 | 42 | 17 | 112 | 28 |
| B. Complete, No Central Plant | 4 | 7 | 5 | 8 | 24 | 6 |
| C. Partially Complete | 24 | 31 | 44 | 26 | 125 | 32 |
| D. Nonresponse | 31 | 24 | 41 | 28 | 124 | 32 |
| E. Not a Facility | 3 | 3 | 0 | 3 | 9 | 2 |
| F. Total Cases (sum of A through E) | 83 | 97 | 132 | 82 | 394 | 100 |
| G. Some Facility Data Present (A+B+C) | 49 | 70 | 91 | 51 | 261 | N/A |
| H. Response Rate (percent) (G/F-E) | 61 | 74 | 69 | 65 | 68 | N/A |

NA Not Applicable

Source: Energy Information Administration, Office of Energy Markets and End Use, 1989 Commercial Buildings Energy Consumption Survey.

Table A4 lists responding facilities by their principal activity and square footage of the facility. About half of the smallest facilities were elementary and secondary schools. Hospitals tended to be in the largest categories. Colleges and universities were also among the largest facilities.

Analyses of the results and usefulness of the data from the Facility Form is in progress. An upcoming report in the consumption survey analysis series will contain the results of the analysis of these data.

Suppliers Survey Response Rates

The overall response rate for the 1989 energy suppliers survey was 86.7 percent (Table A5). Note that the following discussion excludes the response rate for the Facility Form (EIA-871B). See the separate section in this appendix above on the Facility Form for response statistics concerning that form. The response rate is defined as:

$$\frac{\text{Usable Records}}{\text{All Records Minus Out-of-Scope Records}}$$

Each record corresponds to a single energy supplier for a particular energy source to a particular building. For example, a building with one electricity supplier, two fuel oil suppliers, and no other energy suppliers would have a total of three energy supplier records, one for electricity and two for fuel oil. Records were initially created on the basis of the Building Characteristics Survey respondents' reports of the names and addresses of their energy suppliers. A record was declared out-of-scope if it turned out to correspond to a supplier that did not actually serve the building during calendar year 1989.

Table A4. Reporting Facilities by Principal Activity and Square Footage of the Facility

| Principal Activity | Square Footage Category | | | | | | | | Total | Percent |
|--|-------------------------|----------------|-----------------|-----------------|-------------------|----------------|--------------|------------|------------|---------|
| | 5,000-25,000 | 25,001-100,000 | 100,001-200,000 | 200,001-500,000 | 500,000-1 Million | Over 1 Million | Undetermined | | | |
| College/University | 0 | 1 | 2 | 5 | 5 | 36 | 3 | 52 | 20 | |
| Secondary School | 1 | 0 | 7 | 5 | 3 | 0 | 4 | 20 | 7 | |
| Elementary School | 0 | 8 | 0 | 0 | 0 | 0 | 2 | 10 | 4 | |
| Office | 0 | 0 | 3 | 6 | 5 | 16 | 3 | 33 | 13 | |
| Shopping Center/Mall | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 1 | |
| Hospital | 0 | 1 | 0 | 7 | 20 | 22 | 10 | 60 | 23 | |
| Industrial/Manufacturing | 0 | 4 | 8 | 18 | 7 | 16 | 6 | 59 | 23 | |
| Hotel/Motel | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 5 | 2 | |
| Correctional Facility | 0 | 0 | 0 | 3 | 0 | 2 | 2 | 7 | 3 | |
| Entertainment/Sports Complex and Other | 0 | 2 | 0 | 4 | 1 | 3 | 2 | 12 | 5 | |
| Total | 1 | 16 | 21 | 49 | 43 | 97 | 34 | 261 | 100 | |

Note: Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1989 Commercial Buildings Energy Consumption Survey.

Table A5. Response Rates by Energy Source

| | Electricity | Natural Gas | Fuel Oil | Steam | Hot Water | Chilled Water | Total |
|--|-------------|-------------|----------|-------|-----------|---------------|--------|
| A. Total Mailed Out | 5,627 | 3,497 | 824 | 447 | 114 | 183 | 10,692 |
| B. Out of Scope | 3 | 35 | 17 | 10 | 17 | 14 | 96 |
| C. Nonresponse | 349 | 212 | 252 | 152 | 70 | 85 | 1,120 |
| D. Complete: Usable Records | 5,101 | 3,177 | 529 | 266 | 26 | 84 | 9,183 |
| E. Complete: Unusable Records | 174 | 73 | 26 | 19 | 1 | 0 | 293 |
| F. Response Rate (Percent) (D/(A-B)) | 90.7 | 91.8 | 65.6 | 60.9 | 26.8 | 49.7 | 86.7 |

Source: Energy Information Administration, Office of Energy Markets and End Use, 1989 Commercial Buildings Energy Consumption Survey.

Response rates for electricity and natural gas were 90.7 and 91.8 percent respectively, which is similar to results obtained in previous CBECS; these suppliers accounted for 85 percent of all supplier records. The 1989 CBECS response rate for all suppliers (87 percent) was lower because of the difficulty in obtaining responses from suppliers of fuel oil (65.6 percent) and district sources (including steam, hot water, and chilled water).

A total of 424 forms could not be mailed. These 424 forms were subtracted to calculate line A of Table A5. In the case of fuel oil, which accounted for 69 percent of the cases in this category, mailing was often impossible because the supplier's name was not known. For electricity and natural gas, forms could not be mailed if the buildings had no authorization forms and could not be grouped on a worksheet. Grouping was impossible in cases where data from a second or third building without an authorization form was not available to allow the respondent to aggregate information.

Of the forms mailed, 1,120 were classified as nonresponse. This included refusals, inability to respond within the data collection period, and inability to locate the correct account for the building.

Data Collection Procedures

Advance Mailings

A copy of the 1986 CBECS report, *Commercial Buildings Consumption and Expenditures 1986*, was mailed in May 1989 to electricity and natural gas suppliers who had participated in the 1986 CBECS. The letter accompanying the report described plans and schedules for the 1989 CBECS since it was likely that these suppliers would also be included in the 1989 survey. The letter also requested the companies to provide to the survey contractor any updates or changes to the contact information for the 1989 CBECS.

Survey Mailings

As the Building Questionnaires and authorization forms with the lists of energy suppliers were received, buildings were grouped by energy supplier. The grouping together of data requests enabled one major mailing to each supplier asking for information for all the sampled buildings in their service area at one time. Some data requests were sent out after the initial mailing as energy-supplier information became available from later-responding buildings.

For the 5,877 buildings for which responses had been obtained in the Building Characteristics Survey, a total of 10,692 Energy Suppliers forms were mailed to 1,253 suppliers of energy. Of these, 425 (34 percent) were electricity and natural gas suppliers, 572 (46 percent) were fuel oil suppliers, and the remaining 256 (20 percent) were district heating and cooling suppliers.

The initial mailing to the energy suppliers was January 22, 1990. The Facility Forms were also mailed around the same time. See the Facility Survey section of this appendix for more information on the adjunct survey. Reminder letters to suppliers were sent in March 1990, with a second written request to nonrespondents in April. Telephone prompts for electricity and natural gas suppliers were carried out between May and October 1990. Survey close-out was October 5, 1990.

Letters were sent to electricity and natural gas suppliers in late June 1991, thanking them for their cooperation on the 1989 CBECS and asking for their comments on the survey data collection forms and some procedural changes for the 1992 CBECS. The suppliers' comments will be used in the redesign of the survey questionnaires and procedures for the 1992 CBECS.

Nonresponse Conversion

Extensive efforts were used to obtain usable energy supplier data. Letters and telephone prompts were made to the energy suppliers throughout the data collection period to remind the suppliers to deliver the data within the required time period. In addition, a toll-free telephone number was provided to all suppliers, both in the cover letter accompanying the survey forms and printed on the face of each survey form. Suppliers were encouraged to call this number if they had any questions. This "hotline" was staffed by trained CBECS contractor staff familiar with the CBECS Energy Suppliers Survey. Hotline staff were knowledgeable regarding the most frequent technical problems encountered by suppliers and the instructions to be given to suppliers calling with these questions. At the end of each call, the supplier was asked for a filing date for the forms.

The nonresponse effort for the suppliers of electricity, natural gas, and district sources began with a letter 5 weeks (March 8, 1990) after the initial mailing (January 29, 1990). A second followup letter was sent on April 19, 1990. Nonrespondents were then telephoned and asked for an expected forms completion date. They were called again when that date arrived and they still had not responded. The nonresponse procedure was followed both for complete nonresponse by an energy supplier and for incomplete or missing buildings within a supplier's response.

On March 20, 1990, a letter was sent to each supplier of fuel oil that had not yet returned all the survey forms. A computer-generated listing of the building addresses for which survey forms had not been returned was attached to the letter. On April 19, 1990, an additional letter was sent to fuel oil nonrespondents with new survey forms attached. In May through August 1990, a final effort was made to obtain responses from fuel oil suppliers; trained data retrieval staff telephoned nonresponding companies and attempted to obtain the information by telephone.

Nonresponse conversion efforts for the Facility Form and for nonpurchased district sources began in March 1990 with a remailing of forms to all nonrespondents. A second letter was mailed in May 1990 to Facility Form nonrespondents. A final nonresponse conversion effort was undertaken in July through October 1990 via telephone retrieval. Trained data retrieval staff attempted to obtain information for the Facility Form and District Usage forms directly by telephone.

Data Editing

As the suppliers forms were received, they were screened for accuracy and completeness. Forms were then keyed and extensive computer edits were performed. The EIA specified ranges and values to be used for the technical edits. These values were based on previous CBECS responses and on knowledge of utility rates and practices. The first edits were range and basic logic checks, followed by consistency checks among data items. Edit failures at these levels were most often due to coding or data entry error. If the causes of the error were not apparent to the technical reviewer, it was referred to supervisory staff for resolution.

Eight subject-matter specific or technical edit checks were specified by EIA and were performed on the supplier data. These technical edits resulted in 12,040 edit failures, which were reviewed by data analysts and sometimes referred to EIA personnel for resolution (Table A6). Of the 12,040 edit failures, 3,234 were resolved through a record update. The remaining 8,806 (73 percent) were overridden for various reasons.

The technical edits were similar to those used in the 1986 CBECS. However, three edits were dropped:

- "Consumption ratio indicated extreme variability"--this edit, which identified outliers within sets of bills, was not useful. Too many cases were flagged, which were found to be valid
- "Quantity of fuel oil delivered exceeded the tank size as reported by the building respondent"--this was dropped because many failures in 1986 were the result of suppliers aggregating monthly deliveries rather than reporting each delivery separately

- "Billed demand was out of range"--this information was not asked for in the 1989 CBECS.

Error correction was routine for the first two levels of editing. The technical edits had more complicated decision rules and required more supervisory involvement. The data reviewers basically had three choices when confronted with a technical edit failure:

- Update the data to eliminate the error conditions due to errors made by the coder, data entry operator, or supplier for future rounds of the edit cycle;
- Override the edit failure by assigning an override code and eliminate the failure for future rounds of the edit cycle; or
- Flag the case with a Problem Card and send it for review by a supervisor.

During the update process, data analysts assigned a reason for each update. Of the 60,875 updates to correct any type of edit failure, the majority (81 percent) were due to a clerical error by the supplier, data keyer, data coder, or data editor. Following the technical edits, there were 2,789 updates (5 percent) as a result of data retrieval telephone contacts with suppliers, and 632 updates (1 percent) were made due to the data analysts' decision.

Table A6. Frequency of Technical Edit Failures by Failure Type

| Edit # | Edit Description | Total Failures |
|----------------------------------|---|----------------|
| 1 | Billing period appeared too long or too short | 917 |
| 2.1 | Annual consumption does not match the building characteristics | 829 |
| 3.1 | No expenditures, but consumption is reported | 385 |
| 3.1A | No consumption, but expenditures are reported | 28 |
| 3.1B | Expenditures reported were out of range for low consumption | 3,996 |
| 3.2 | The price per period was out of range, based on known market prices | 4,048 |
| 4 | The metered demand was out of range | 1,504 |
| 7 | The building indicated metered demand, but it is not reported by the supplier | 333 |
| Total Edit Failures | | 12,040 |

Source: Energy Information Administration, Office of Energy Markets and End Use, 1989 Commercial Buildings Energy Consumption Survey.

Data Adjustments

Adjustments for unit nonresponse were performed in conjunction with weighting of the sample, as described in the "Unit Nonresponse Adjustments" section of Appendix B, "Nonsampling and Sampling Errors." Cases missing all or part of calendar year 1989 consumption or expenditures were considered as particular kinds of item nonresponse. Adjustments for these cases were made as described under "Annual Consumption and Expenditures" in Appendix B. For cases where the Energy Suppliers Survey data covered more than the one sampled building or covered less than the entire building, the survey contractor implemented three special adjustment procedures to enable EIA to compute building-specific annualized consumption and expenditures. These special procedures were disaggregation, aggregation, and worksheet processing.

Disaggregation

Disaggregation was generally necessary when either the supplier or the building respondent reported that the energy bill for a source included more than the sampled building. In a limited number of cases, the preliminary data reviewer designated a case for disaggregation, even if the supplier or building respondent had not. A disaggregation "factor" was calculated based on the square footage of the buildings involved. A total of 2,572 energy source records were selected for disaggregation.

Aggregation

Aggregation is the opposite of disaggregation and was used when a supplier could report consumption information for only a portion of the building, usually for a subset of customers. A total of 95 cases required aggregation. An aggregation factor was calculated based on the proportion of customers reported.

Worksheet Processing

Worksheets were used to request electricity and natural gas suppliers to report consumption when an authorization form had not been obtained. The worksheet allowed the supplier to report consumption and expenditures aggregated across two or more buildings. This aggregation preserved the confidentiality of the data for individual buildings. The identical aggregated consumption and expenditures data were keyed for each of the buildings involved and each was coded as a linked record with the others on the same worksheet.

Data Quality Verification

At the conclusion of the batch editing process, several additional data quality verifications were performed. These included the following steps:

- A manual review of the completeness of the discrete fuel sources was performed. Energy-source records that looked sporadic were reviewed.
- Energy-source record counts were compared with the number of energy sources indicated for the building by the building respondent.
- A listing of prices of standardized quantities was run for all bill records, in price order. This list was reviewed to detect price errors that had been mistakenly overridden.
- A program was created to identify overridden flags that had been written to the file in error. These cases were reviewed and the flag was removed.

Any errors identified were corrected by the survey contractor prior to the delivery to EIA of the final data file.

Weather Data

A file of heating and cooling degree-days for each of the billing periods reported by each building supplier was created in the following manner:

- A National Oceanic and Atmospheric Administration (NOAA) division code was assigned to each building in the CBECS sample. Working with NOAA division maps and building address information, one of 356 division codes was assigned to each building.

- A file of NOAA data covering the 30-month period from January 1988 to June 1990 (the most recent information available at the time) was used to compute the average daily temperature for each day in the 30-month period for each weather division.
- Daily heating and cooling degree-day averages were computed for each of ten base temperatures (degrees Fahrenheit): 50, 55, 57, 60, 65, 68, 70, 73, 75, 80. Only base temperature 65 degrees Fahrenheit is covered in this report.
- Degree-day totals were constructed for each billing period, or gap between billing periods, for each energy supplier for each building. In addition, degree-day totals were constructed for each of the 12 calendar months of 1989 for each sampled building, whether or not the building had any energy supplied in 1989.
- As part of the annualization and imputation procedures described in Appendix B, "Nonsampling and Sampling Errors," billing period dates were imputed. The cleaned dates were used for the final degree-day computations.

Data Preparation for Report

Data tapes from the Energy Suppliers Survey portion of the 1989 CBECS were received from the survey contractor in May and July 1991. EIA data analysts reviewed and processed the data to prepare them for the final data tape. Crosstabulations were run to check for internal consistency of the data, and the 1989 CBECS data were compared with data from previous CBECS. Commercial buildings' consumption and expenditure data are complex and interrelated. The EIA review was extensive and paid special attention to the issues of peak electricity demand, transportation gas, and incomplete data for buildings. Questions concerning data accuracy or outlier values were referred to the survey contractor for verification. Respondents were recontacted to verify responses when possible. EIA staff reviewed the data questionnaires at the survey contractor's site, and EIA staff judgment was the final authority on some of the data items.

The sections above on data adjustments and weather data provide details on the work undertaken to prepare the data for this report. In addition, if retrieval of missing data for one or more items failed, or if retrieval was not performed because the item was not a key item, data values were supplied by imputation. For a description of the imputation process, see Appendix B, "Nonsampling and Sampling Errors."

In some cases, investigation of anomalies revealed errors in the building characteristics data base. These errors included: one building was deleted from the database; the principal building activity was reclassified from education to assembly for one building; the main and secondary heating fuel for one building was swapped between natural gas and fuel oil; and natural gas was changed from a primary to secondary heating fuel for one building. These findings were documented by EIA, but no changes were made to the building characteristics dataset. This dataset was considered finalized as of the publication of the Building Characteristics Report.

One frequent discrepancy was between the building respondent's report of which fuels were used in the building and the determination ultimately made through followup contacts with energy suppliers. Rather than the building characteristics records being revised, the building response was retained and the Suppliers Survey determination was coded separately. The Suppliers Survey response was the basis for statistics published in this report. Appendix B, "Nonsampling and Sampling Errors," discusses in more detail the discrepancy between building respondent and energy supplier reports of fuels used.

Annualization was the estimation of calendar year 1989 consumption or expenditures from data that span a longer, shorter, or offset period. Proration of the reported data was the basis for the annualization procedures. For cases where consumption or expenditures data were completely missing, the annual amounts were imputed by regression. See Appendix B for details on the annualization and imputation process.

Once the annualized consumption and expenditures were computed or imputed for each building, statistical tables of aggregated data were produced and analyzed. The report text was based on these tables, which are presented both in the text and in the Detailed Tables section of this report.

Confidentiality of Information

The EIA does not receive or take possession of the names or addresses of individual respondents or any other individually identifiable energy data that could be specifically linked with a building respondent. All names and addresses are maintained by the survey contractor for survey verification purposes only. In addition, geographic identifiers and NOAA Weather Division identifiers were not included on any data files delivered to the EIA. Building characteristics which could uniquely identify a particular responding building, such as number of floors, building square footage, and number of workers in the building, were masked on any data provided to the EIA. All building-level records that are placed on public use data files are masked for further confidentiality protection.

Public Use Data Preparation

Following the publication of the statistical reports for both the Building Characteristics Survey and the Energy Suppliers Survey of the CBECS, further work is performed on the basic survey data at the microlevel to prepare the final data tape for release to the public. Measures such as the stripping of all geographic identifiers, except Census region and Census division, are taken to mask the data to ensure that the identity of individual respondents is kept confidential. All of these procedures culminate in the release of a final data tape to the public through the National Technical Information Service (NTIS). (See Appendix G for information on how to order these tapes.) This tape contains both the building characteristics and energy suppliers data. The final data are available both on magnetic computer tapes for use with a main frame computer and on floppy diskettes to use with personal computers.

Special Data Collection for the Bureau of Census

For both the 1986 and 1989 CBECS, the EIA collected supplemental information for the Bureau of the Census, U.S. Department of Commerce on expenditures for construction improvements and for maintenance and repairs. In the 1989 CBECS, this information was in Section S (Census Supplement) of the Building Questionnaire and all respondents were asked these questions. Any respondent who did not have access to the construction improvement and maintenance and repair data was asked the name, address, and telephone number of the person who would have it. These individuals were later contacted if the building was selected for the subsequent followup study. Before the followup study was conducted, item response on the key item concerning construction improvements was 92.2 percent, or 5,421 of the 5,877 buildings had completed data for this item.

In the fall of 1989, a three-part followup study for the Census Supplement was conducted with 307 owner and tenant representatives. This followup was done to reduce both total and partial nonresponse to the supplement, as well as to verify independently the data that were obtained during the original interview. The building owners and tenant representatives were first sent a letter explaining the purpose of the survey, along with worksheets and definitions. The respondents were told to use the worksheets to calculate and record the amount of expenditures and to retain the worksheets pending a telephone call from the data collection contractor. Then, several weeks later, specially trained telephone interviewers called to obtain the data. The overall response rate for the followup study was 82.4 percent.

In the first phase of the follow up study, 60 cases were selected for Group 1, "Nonresponse Conversion." Forty of those buildings were 100,000 square feet or larger. These cases were selected from buildings for which no data had been obtained on the Census Supplement at the time of the building characteristics interview. The principal reason for having no supplement data for these 60 buildings was because of refusals. A total of 40 responses were obtained from this followup effort.

In the second phase of the follow up study, data retrieval for item nonresponse was conducted. A subsample of 90 buildings selected from those for which the respondents provided a "don't know" response to one or both of the Census-sponsored questions, and, instead, provided the name, address, and telephone number of the person or persons who would have the information. Referrals such as these were often to management companies not located in the same city as the sampled buildings. Followup for the 90 buildings provided additional information, covering 76 (84.4 percent) of the 90 sampled buildings.

In the third and final phase of the followup study, a sample of 157 buildings was selected to verify independently the data obtained in the original interview. Packages of materials explaining the verification study and requesting the respondent to provide data about the two types of expenditures were mailed to the original respondents to the Census-sponsored questions. The respondents were then telephoned to obtain the data. Of the 157 original respondents, 137 (87.3 percent) resubmitted the data.

The results of the followup study are being evaluated by the Bureau of the Census and will be used in the design of future surveys. The data from the construction improvements and maintenance and repairs questions will be published by the Bureau of the Census in a supplement to the Current Construction Reports, C-30 Series, Value of New Construction Put in Place.¹⁴

Special Data Collection for the Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) sponsored Section R, "Asbestos in Buildings," on the 1989 CBECS Building Questionnaire. The five questions in this section were designed to collect information on the presence and possible abatement of asbestos in commercial buildings.

The questions contained in Section R were treated as an extension of those in the rest of the questionnaire. Thus, if a case was found to be ineligible for interview for purposes of CBECS, it was ineligible for the entire questionnaire, including the EPA questions. Similarly, if a case was found to represent more than one building for purposes of CBECS, more than one building characteristics interview was conducted including the EPA questions. Interviewers were trained for Section R using the same techniques used for other parts of the questionnaire (see prior section on "Interviewer Training and Supervision"). Question-by-question specifications for Section R were included as a separate section in the CBECS Interviewer's Manual.

Field edits performed by supervisors included checks pertaining specifically to Section R. Once received at the Central Office, other edits developed by EPA were performed. These included range and consistency checks. However, because of budget limitations, data retrieval was performed only when the entire section had been omitted or when a "key" item in the other sections of the questionnaire was required. Even without individual item data retrieval, the overall item response rate was high: 91.5 percent.

The final response rate for the entire asbestos section, based on the 5,877 completed CBECS questionnaires, was 99 percent. The results from Section R are presented in *Commercial Buildings Characteristics, 1989* (DOE/EIA-0246(89)) in Tables 111 through 117 in the "Detailed Tables" section.

¹⁴1986 results were published in Expenditures for Nonresidential Improvements and Upkeep: 1986, *Current Construction Reports Special Studies*, Bureau of the Census, March 1989.

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Appendix B

Nonsampling and Sampling Errors

The 1989 CBECS distinguished parking garages as a separate building activity category. Even though most parking garages are not totally enclosed by walls, the CBECS defines these structures as buildings, by specific exception to the general definition.

Appendix B

Nonsampling and Sampling Errors

Introduction

All the statistics published in this report are estimates of population values, such as the total floorspace in U. S. commercial buildings. These estimates are based on reports from representatives of a randomly chosen subset of the entire population of commercial buildings. As a result, the estimates always differ from the true population values.

The differences between the estimated values and the actual population values are of two types, nonsampling errors and sampling errors. Differences that are expected to occur in all possible samples, or in the average of all estimates from all possible samples, are known as systematic errors or biases. Sampling errors, on the other hand, are random differences between the survey estimate and the population value that occur because of the particular sample that was selected by chance. The average sampling error, averaged over all possible samples, would be zero. Although the sampling error is nonzero and unknown for the particular sample chosen, the sample design permits sampling errors to be estimated. The section, "Estimation of Sampling Errors," describes how the sampling error is estimated and presented for statistics given in this report.

The four sections that follow this introduction describe some of the sources of nonsampling error and how the survey is designed and conducted to minimize such errors. Unlike the sampling error, the nonsampling error's magnitude cannot be estimated from the sample data. For this reason, avoiding biases at the outset is a primary objective of all stages of survey design and field procedures.

One possible source of bias is nonresponse, either for an entire sampled building (unit nonresponse) or for a particular question from a responding building (item nonresponse). Most unit nonresponse cases were caused by a representative who refused to cooperate or was unavailable. Item nonresponse for building characteristics resulted when the building representative did not know, or, less frequently, refused to give the answer to a particular question. The section "Nonresponse" presents in detail the procedures used to handle these two types of nonresponse.

The consumption and expenditures featured in this report were based on monthly billing records submitted by the buildings' energy suppliers. The section, "Annual Consumption and Expenditures" describes the procedures used to obtain annual estimates from these bills, as well as the procedures used to handle partial or completely missing data. The peak electricity demand estimates in this report were also based on the monthly billing data, as described in the section, "Annual Peak Electricity Demand."

The fourth section dealing with nonsampling error is titled, "Additional Data Notes," and discusses special problems encountered in reconciling building and supplier reports on energy sources used, demand-side management, transportation gas, fuel switching, and district heating and cooling.

Nonresponse

Unit Nonresponse

The response rate for the 1989 Building Survey portion of CBECS, as reported in Appendix A, was 92.5 percent. That is, of the 6,352 buildings eligible for interview, 7.5 percent did not respond at all to the Building Characteristics Survey. This rate was similar to that for the 1986 CBECS and represents a low unit nonresponse rate for a survey of this length and complexity.

Weight adjustment was the method used to reduce unit nonresponse bias in the survey statistics. The CBECS sample was designed so that survey responses could be used to estimate characteristics of the entire stock of nonresidential buildings in the United States. The method of estimation was to calculate basic sampling weights (base weights) that related the sampled buildings to the entire stock of nonresidential buildings. In statistical terms, a base weight is the reciprocal of the probability of selecting a building into the sample. A base weight can be understood as the number of actual buildings represented by a sampled building: a sampled building that has a base weight of 1,000 represents itself and 999 similar (but unsampled) buildings in the total stock of buildings.

To reduce the bias from unit nonresponse in the survey statistics, the base weights of respondent buildings were adjusted upward, so that the respondent buildings would represent not only unsampled buildings but also nonrespondent buildings. The base weights of respondent buildings were multiplied by the adjustment factor "A," defined as the sum of the base weights over all buildings selected for the sample divided by the corresponding sum over all respondent buildings. Respondent weights remained nonzero after weight adjustment. Nonrespondent weights were set to zero, because they were accounted for by the upward adjustment of respondent weights.

Unit nonrespondents tended to fall into certain categories. For example, nonresponse tended to be higher in the Northeast than in the Midwest. To reduce nonresponse bias as much as possible, adjustment factors were computed independently within 119 subgroups according to characteristics known from the sampling stage for both responding and nonresponding buildings. These characteristics included the general building activity, the rough size of the building, Census region, and metropolitan versus nonmetropolitan area.

Item Nonresponse--Building Characteristics

Item nonresponse is the type of nonresponse that occurs when an item (or several items) is missing in an otherwise completed questionnaire. Nonresponse in the Building Survey was imputed to allow publication of *Commercial Buildings Characteristics 1989*, the companion volume to this report.[6] The Energy Suppliers Survey consisted of four distinct data collections (electricity, natural gas, fuel oil, and district heating/cooling surveys) to obtain 1989 consumption information for buildings in the Building Survey. Partial and complete nonresponse in the Suppliers Survey are discussed in this section under "Annual Consumption and Expenditures."

The companion volume contains item nonresponse rates for many of the building characteristics used to present estimates in this report. Nonresponses to items in the Building Questionnaire were treated by a technique known as "hot-deck" imputation. In hot-decking, when a certain response is missing for a given building, another building, called a "donor," is randomly chosen to furnish its reported value for that missing item. That value is then assigned to the building with item nonresponse (the nonrespondent or "receiver").

To serve as a donor, a building had to be similar to the nonrespondent in characteristics correlated with the missing item. This procedure was used to reduce the bias caused by different nonresponse rates for a particular item among different types of buildings. What characteristics were used to define "similar" depended on the nature of the item to be imputed. The most frequently used characteristics were: principal building

activity, floorspace category, year constructed category, and Census region. Other characteristics (such as type of heating fuel and presence of furnace or boilers) were used for specific items. To hot-deck values for a particular item, all buildings were first grouped according to the values of the matching characteristics specified for that item. Within each group defined by the matching variables, donor buildings were assigned randomly to receiver buildings.

As in the 1986 survey, the 1989 CBECS used a vector hot-deck procedure. With this procedure, the building that donated a particular item to a receiver also donated certain related items if any of these were missing. Thus, a vector of values, rather than a single value, is copied from the donor to the receiver. This procedure helps to keep the hot-decked values internally consistent, avoiding the generation of implausible combinations of building characteristics.

Annual Consumption and Expenditures

This report presents estimates of energy consumption and expenditures in commercial buildings during calendar year 1989. These estimates were computed from the annual consumption and expenditures determined for each building in the CBECS sample. However, these annual values were not obtained directly for the sampled buildings. Rather, energy suppliers provided billing data, which were used to calculate calendar year consumption and expenditures for each building, according to the procedures described in this section. Also described in this section are the imputation procedures used in cases where the energy supplier survey data were unavailable or inadequate.

To assure that calendar year 1989 consumption would be completely accounted for, the data requested from suppliers were bills covering the period from December 1988 through January 1990. These bills formed the basis for the annual energy consumption and expenditures estimates published in this report.

Billing Data: Ideal and Reality

The basic consumption and expenditures data were reported for each building by billing period. Ideally, the data for each continuous-delivery energy source (electricity, natural gas, and district heating and cooling) used in each sampled building should have been in the form of complete records for consecutive billing periods either totally or partially contained in calendar year 1989, covering exactly the energy consumed within the sampled building. The data for the discrete-delivery energy source (fuel oil) should have been in the form of complete data records for all deliveries during 1989. For both continuous- and discrete-delivery energy sources, the delivered energy source should have been used entirely within the sampled building.

In practice, though, the billing data often covered more or less than the sampled building, or did not match the target time frame, calendar year 1989. There were several common types of discrepancy between the bill coverage and the ideal of a single building and fixed time frame.

- Bill coverage included days in 1988 and 1990 as well as calendar year 1989. This was the typical situation for a complete billing record. Very rarely would one billing period begin on January 1 and another end on December 31, 1989.
- Bill coverage spanned at least a 1-year period, but did not include all of 1989. In most such cases, the time frame covered by the bills extended from the middle of 1989 into the middle of 1990. Many energy suppliers maintain accessible billing records only for the most recent 13 months. Thus, at the time of reporting, the data available did not cover the beginning of 1989.
- Bill coverage spanned less than a 1-year period.

- Bill coverage was for several sampled buildings combined. This occurred when no authorization form was obtained to authorize the supplier to provide data for individual buildings. In such cases, the supplier reported only annual totals for a group of sampled buildings summed together, using the electricity or natural gas worksheet.
- Bill coverage included nonsampled buildings or equipment outside the sampled buildings, as well as the one sampled building.
- Bill coverage excluded some of the building's occupants or tenants. This undercoverage occurred when the energy supplier had several customers in a sampled building and was unable to identify all of them on the basis of the information provided by the Building Survey respondent. In a few cases, energy suppliers were unwilling to release information on all customers in a building, even in aggregate form, without having a separate authorization from each.
- The problem of determining bill coverage was compounded by incomplete dates. In the most common case, the billing period date included a month and year, but not the day of the month.

To deal with the discrepancies between the ideal billing data and what could actually be obtained, the following seven processing steps were taken:

1. Classify each set of bills, from a particular energy supplier for a particular building, as to coverage in terms of both building and time frame;
2. Complete the billing dates for all bills;
3. Annualize bills with full-year time frame coverage;
4. Annualize bills with part-year time frame coverage;
5. Adjust annualized bills, other than worksheet cases, for building over and undercoverage;
6. Impute annual consumption and expenditures for buildings with completely missing data;
7. Allocate worksheet totals among the buildings included on worksheets.

Each of these processing steps is explained below.

Step 1. Classifying Coverage of Building and Time Frame

This classification was performed by the CBECS contractor as part of the data collection recordkeeping. To track responses to the mailed Energy Suppliers Survey, determination had to be made whether a response received represented complete data for a building. In many cases, followup letters converted initial responses from partial to complete, or more nearly complete. In other cases, the incomplete response was all that could be obtained.

Determining Time Frame

An important aspect of the time-frame classification was determining why data were missing for part of calendar year 1989. The main question was whether consumption had actually taken place during the entire year or was actually zero during the unreported time.

If consumption occurred through the entire year, data might be missing for several reasons. One is that the supplier's active records might not go back far enough. Another is that data may simply have been lost from the supplier's record, even though in general these records did go back to the beginning of 1989.

A more complicated situation occurred when a new customer occupied a building in the middle of the target year. The data provided for this customer, for which the authorization form was signed, would be complete, but the data for the previous occupant, who consumed energy in the first part of the year, would be missing. In any case where part of the year's consumption data were missing, annual consumption would be understated if the reported 1989 data were treated as complete, rather than being inflated to account for the missing period.

The opposite situation could occur if a customer first occupied the building in the middle of the year, with no previous customer occupying the building. In this case, with no consumption during the first part of the year, annual consumption would be overstated if the reported data were annualized as if consumption occurred year round.

A special set of questions on the Energy Suppliers Survey forms was designed to determine if any change in customers had occurred during the target year, and if so how these customers were covered in the reported data. However, most suppliers did not answer these questions. As a general rule, data were treated as complete if they covered a full year, whether calendar 1989 or not. Part-year data were treated as incomplete, unless the supplier specifically indicated otherwise.

Particularly complicated were some electricity and natural gas cases where individual records were provided for each customer in a building with several customers. In most such cases, bills for all the customers covered the same time frame. Sometimes, though, different customers' records covered different time frames. In these cases, it was assumed that the data were complete for each customer, but the customers began or ended service at different times during the year. Aggregate consumption and expenditures were therefore computed for each time period by summing whichever customers had consumption during that period. If consumption was present for a particular customer in a particular period but expenditures were missing (or vice versa) aggregate expenditures (or consumption) were left as missing.

Determining Building Coverage

Building coverage was determined from information obtained from both the Building Survey respondent and the energy suppliers. If the Building Survey respondent indicated that a particular supplier's bill covered several buildings, the total square footage of buildings on that bill was requested. A disaggregation factor was then computed as the ratio of the sampled building's square footage to this total square footage. In some cases, the supplier indicated that a bill covered additional, nonsampled buildings, though the Building Survey respondent indicated otherwise. In these cases, the disaggregation ratio was computed using floorspace taken from listing information, or from the supplier's estimate. Disaggregation factors were always computed using the same source of information for both the total and the sampled building's floorspace: either the Building Survey respondent, the listing information, or the supplier. Some suppliers, particularly for district heating and cooling, did not provide floorspace figures, but did give an estimate of what percentage of the reported consumption took place in the sampled building; these percentages were used directly as disaggregation factors.

When the information required to compute a disaggregation factor was unavailable from any source, a flag indicating that disaggregation was needed, but not possible, was placed on the building records. In these cases, annual consumption and expenditures were imputed as if the data for the building were completely missing.

When the billing data omitted some customers in a building, an aggregation factor was computed. This factor was usually the ratio of the number of customers in the building to the number reported. Where more detailed information was available, the aggregation factor was the ratio of the total building floorspace to the floorspace occupied by the reported customers.

Step 2. Complete Billing Dates

Virtually all missing billing dates were one of two types. The first type of dates that were incomplete had the month and year entered, but the day was missing for the beginning and ending dates of all billing periods on a record. These cases were imputed by assigning "16" to each beginning date and "15" to each ending date.

The second type of incomplete dates were missing the day of the month for some, but not all, billing periods. For each case of this second type, the billing periods affected were either bounded (surrounded by billing periods with known beginning and ending dates), or unbounded (either at the beginning or end of the set of billing periods). Any set of consecutive bounded billing periods with missing dates was assigned billing dates that would make all billing periods in the set have as close to the same number of days as possible. Unbounded billing periods were assigned beginning and/or ending dates as needed so that the number of days in each unbounded period was the same as the median number of days in billing periods of known length.

Step 3. Annualizing Full-Year Data

One of the main reasons that the CBECS requested energy supplier data from December 1988 through January 1990 was to assure that 1989 consumption would be completely accounted for in the case of a complete response. However, unless a billing period happened to end on December 31, 1988, or December 31, 1989, consumption as reported by the energy suppliers ran over from the target period of calendar 1989, forward into 1990 and backward into 1988. In general, then, procedures were required to trim away these excess data. For this trimming, different procedures were used for continuous- and discrete-delivery energy sources.

For continuous-delivery energy sources (electricity, natural gas, and district sources), consumption and expenditures for a billing period extending into 1990 were adjusted by splitting the overlapping period into two subperiods, one running from the beginning date through December 31, the other from January 1 through the billing or meter reading date. Consumption and expenditures were prorated according to the number of days in each subperiod, and the consumption and expenditures for the subperiod that fell in 1989 were included in the total expenditures and consumption for 1989. An analogous procedure was used for a billing period extending into 1988. The assumption that the use of continuous-delivery energy sources took place at a constant rate throughout the billing period may be incorrect for any particular building. However, the procedure should yield approximately unbiased overall estimates.

Billing periods extending outside 1989 did not affect the discrete-delivery energy source (fuel oil) because, for this energy source, all deliveries during 1989 were accumulated. For fuel oil, the ending dates on the bills were used to determine which bills were for deliveries during 1989. No attempt was made to prorate bills, since there was no necessary connection between billing dates and consumption, as was the case for continuous-delivery energy sources.

For cases where the billing time frame covered a full year but was shifted so that either the beginning or the end of 1989 was not included, a similar procedure was used. In these cases, the data were annualized to a 1-year period within the reported time frame, overlapping as much as possible with 1989. The amount of shifting required to obtain 1-year periods is shown in Table B1 for electricity, natural gas, and district heat. A limited amount of shifting (involving 11 sampled buildings) was also performed for fuel oil.

Step 4. Annualizing Part-Year Data

The annualization procedures for cases that had partial billing data, but less than a full year, were also different for continuous- and discrete-delivery energy sources. For continuous-delivery energy sources, the number of reported days of consumption was at least as large as the number of reported days of expenditures for almost all sets of bills. Thus, the major problem was to find methods of annualizing the incomplete

consumption data. Expenditures were then annualized using the partial expenditures data and the annualized consumption data. The distributions of sampled buildings by days of reported consumption and expenditures data for continuous-delivery energy sources are given in Tables B2, B3, and B4.

Table B1. Days of Data from Outside Calendar Year 1989 Used to Obtain Annual Estimates

| Shift of Reporting Period from Calendar Year 1989 | Number of Buildings | | | | | |
|--|---------------------|----------------|------------------|-----------------------|----------------|------------------|
| | Sample | | | Population (thousand) | | |
| | Electricity | Natural Gas | District Heat | Electricity | Natural Gas | District Heat |
| All Buildings with Reported Data | 5,050 | 3,115 | 280 | 3,900 | 2,230 | 50 |
| Over 30 Days into 1988 | 48 | 33 | 19 | 35 | 33 | 4 |
| 30 or Fewer Days into 1988 | 155 | 88 | 6 | 113 | 54 | 1 |
| No Days Shifted | 4,111 | 2,818 | 251 | 3,191 | 2,001 | 45 |
| 30 or Fewer Days into 1990 | 408 | 94 | 1 | 353 | 83 | 0 |
| 31 to 90 Days into 1990 | 212 | 63 | 0 | 173 | 43 | 0 |
| 91 to 180 Days into 1990 | 38 | 11 | 0 | 19 | 11 | 0 |
| Over 180 Days into 1990 | 78 | 8 | 3 | 17 | 5 | 0 |

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table B2. Days of Reported Consumption and Expenditures Data for Electricity

| Days of Reported Electricity Data | Consumption | | | Expenditures | | |
|--------------------------------------|---------------------------------|--|---|---------------------------------|--|---|
| | Sample Number of Cases | Population Number of Buildings (thousand) | Estimated Consumption (trillion Btu) | Sample Number of Cases | Population Number of Buildings (thousand) | Estimated Expenditures (million dollars) |
| All Buildings | 5,657 | 4,294 | 2,773 | 5,657 | 4,294 | 55,943 |
| Days of Electricity Data | | | | | | |
| 30 or Fewer Days | 613 | 394 | 366 | 618 | 405 | 7,472 |
| 31 to 330 Days | 142 | 121 | 73 | 182 | 136 | 1,861 |
| 331 to 364 Days | 111 | 100 | 45 | 114 | 104 | 1,205 |
| 365 Days | 4,485 | 3,473 | 2,106 | 4,437 | 3,443 | 41,590 |
| Worksheets | 306 | 306 | 182 | 306 | 206 | 3,814 |

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table B3. Days of Reported Consumption and Expenditures Data for Natural Gas

| Days of Reported Natural Gas Data | Consumption | | | Expenditures | | |
|--------------------------------------|---------------------------------|--|---|---------------------------------|--|---|
| | Sample Number of Cases | Population Number of Buildings (thousand) | Estimated Consumption (trillion Btu) | Sample Number of Cases | Population Number of Buildings (thousand) | Estimated Expenditures (million dollars) |
| All Buildings | 3,456 | 2,420 | 2,073 | 3,456 | 2,420 | 9,204 |
| Days of Natural Gas Data | | | | | | |
| 30 or Fewer Days | 352 | 192 | 219 | 358 | 194 | 1,093 |
| 31 to 330 Days | 86 | 53 | 38 | 101 | 69 | 207 |
| 331 to 364 Days | 55 | 45 | 27 | 66 | 53 | 168 |
| 365 Days | 2,813 | 2,032 | 1,689 100 | 2,781 | 2,004 | 7,275 |
| Worksheets | 150 | 99 | | 150 | 99 | 461 |

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Table B4. Days of Reported Consumption and Expenditures Data for District Heat

| Days of Reported District Heat Data | Consumption | | | Expenditures | | |
|--|---------------------------------|--|---|---------------------------------|--|---|
| | Sample Number of Cases | Population Number of Buildings (thousand) | Estimated Consumption (trillion Btu) | Sample Number of Cases | Population Number of Buildings (thousand) | Estimated Expenditures (million dollars) |
| All Buildings | 506 | 98 | 585 | 506 | 98 | 3,857 |
| Days of District Heat Data | | | | | | |
| 30 or Fewer Days | 259 | 60 | 284 | 247 | 56 | 2,058 |
| 31 to 330 Days | 9 | 1 | 40 | 8 | 1 | 145 |
| 331 to 364 Days | 5 | 1 | 1 | 5 | 1 | 7 |
| 365 Days | 233 | 36 | 260 | 246 | 41 | 1,647 |

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

The part-year annualization method for the consumption of continuous-delivery energy sources depended on the number of days of reported consumption. If at least 331 days were reported, then consumption for the missing portion of the year was imputed by computing the average consumption per day for the adjacent billing period(s), then multiplying by the number of days of missing data. In certain cases, at least 331 days of consumption were reported, but 365 days of expenditures were reported. In these cases, the missing consumption was computed using the average price for billing periods in which both consumption and expenditures were reported. Summing all reported and imputed consumption then yielded the total annual consumption.

If the number of days of reported consumption was between 31 and 330, the missing consumption was imputed using a hot-decked proration factor, where all cases with 331 days or more of reported consumption served as a pool of potential "donors." For each case with 31 to 330 reported days of consumption, a donor was randomly selected from the subset of buildings in the same Census region, with the same principal building activity, and in the same end use category for space heating, air conditioning, and water heating as the building needing imputation (called the "receiver"). Then, the donor's consumption was calculated first for the same

part-year period for which the receiver had data, D_r , and second for the entire year D_t . Then, a proration factor was computed as the donor's ratio of annualized consumption to the computed part-year consumption. Multiplying the receiver's reporting period total by this proration factor gave the annualized consumption for the receiver building. That is:

$$\hat{R}_t = \frac{D_t}{D_r} \times R_r, \quad (1)$$

where

\hat{R}_t = the estimated total annual consumption for the receiver building,

R_r = the (part-year) reported consumption total for the receiver building,

D_t = the total annualized consumption for the donor building, and

D_r = the consumption of the donor building during the part-year period for which the receiver building had reported data.

Expenditure imputations were performed after completion of all imputations for partially missing consumption since (1) consumption data were usually more complete than expenditures data; and (2) given a value for consumption, the expenditures could be estimated without a great deal of difficulty.

As was true for consumption, the imputation procedure for missing continuous-delivery expenditures was determined by the number of days of reported data. If 30 or fewer days of expenditures were reported, then the expenditures were treated as completely missing. Otherwise, expenditures were imputed based on average prices within the set of bills for a given building. Using bills where both consumption and expenditures were reported, the consumption and the expenditures were summed. The average price was then calculated as the sum of the expenditures divided by the sum of the consumption. This average price was multiplied by the reported (or imputed) consumption to obtain the estimated expenditures.

For fuel oil, a discrete-delivery energy source, the billing dates are not linked to the time of consumption. Thus, the annualized data represent the total deliveries of fuel oil during the year. Furthermore, unlike continuous-delivery bills, discrete-delivery bills tend to be irregularly spaced. Gaps between bills could represent either missing data or periods during which no deliveries were required. The completeness of a set of bills was determined by relying on reports of suppliers. A set of bills was treated as complete if the supplier stated that the bills were complete for the year, and treated as missing otherwise, even if a partial set of bills was available. Table B5 shows the numbers of sampled buildings by the completeness of reported fuel oil data.

Table B5. Completeness of Reported Consumption and Expenditures Data for Fuel Oil

| Completeness of Data | Consumption | | | Expenditures | | |
|----------------------|------------------------|---|--------------------------------------|------------------------|---|--|
| | Sample Number of Cases | Population Number of Buildings (thousand) | Estimated Consumption (trillion Btu) | Sample Number of Cases | Population Number of Buildings (thousand) | Estimated Expenditures (million dollars) |
| All Buildings | 1009 | 581 | 357 | 1009 | 581 | 1822 |
| Complete | 607 | 343 | 160 | 606 | 341 | 822 |
| Partial | 1 | 2 | 0 | 1 | 2 | 2 |
| Missing | 401 | 236 | 196 | 402 | 238 | 998 |

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Buildings rarely had more than one supplier for a continuous-delivery energy source, such as electricity, but multiple suppliers for fuel oil occurred frequently. If data for one or more of several suppliers were missing, even though responding suppliers had reported all their 1989 deliveries, these buildings were also treated as if no data were available.

Imputations for both deliveries and expenditures made use of the observed price(s). An average price P_x was computed using the data from billing periods in which both consumption and expenditures were reported. If expenditures were missing, the expenditures were imputed as P_x times the quantity delivered on date x. For missing deliveries, the reported expenditures were divided by P_x to impute the amount delivered.

Step 5. Adjusting for Building Over and Undercoverage (Other Than Worksheets)

The annualization procedures for full- and part-year data adjusted for inconsistent time-frame coverage. After the nonmissing consumption and expenditures data were annualized, the annual values were adjusted for building coverage. Where data were requested from the supplier for a single sampled building, but were provided only for a group of buildings including the sampled one, or were provided only for a portion of the building, the coverage adjustment was a simple multiplication of the annualized consumption and expenditures by the disaggregation or aggregation factor. As described above under Step 1, this factor was computed by the survey contractor directly on the basis of information received on the Building or Suppliers Survey.

Step 6. Imputing for Completely Missing Consumption and Expenditures

In a significant fraction of cases, the energy supplier did not provide the consumption or expenditures data for some or all billing periods or deliveries in 1989. Reasons for missing data included energy supplier refusal; archived, lost, or destroyed billing records; and authorization form refusal on the part of the building respondent. In other cases, the energy supplier provided data, but either the building data were combined with those of nonsampled buildings and could not be disaggregated, or the consumption and/or expenditures were incomplete enough to be treated as missing. Finally, if a building had partial billing data, but no donor building was found during the hot-deck procedure, the building's consumption was treated as missing. This occurred in 21 buildings using electricity, 23 buildings using natural gas, 3 buildings using district steam, 1 building using district hot water, and 6 buildings using district chilled water.

The general approach taken to the problem of imputing annual consumption or expenditures was to annualize the complete or partial sets of bills first, then to use these annualized bills in regression equations to develop imputed values for the data that were totally missing. The regression imputation approach was chosen because data from the Building Survey were already available for all of the buildings lacking energy supplier data. The first step was the estimation of missing consumption based on characteristics of buildings. After the consumption had been imputed, missing expenditures were estimated based on the reported or imputed consumption.

Completely Missing Consumption

Each of the energy sources presented in this report was imputed separately, although the overall methodology was similar for all. The consumption imputation method is, therefore, described in general terms, referring to individual energy sources only where necessary. The regression equations were developed primarily to serve as adequate predictors of building consumption based on structural characteristics. Simplicity and ease of estimation were also important considerations.

The data used to specify regression equations and estimate the regression parameters used for consumption imputation had to meet several criteria. Only cases with essentially complete consumption data were used. For continuous-delivery energy sources, "essentially complete data" included buildings with 331 to 365 days

of reported consumption; for discrete-delivery energy sources, only buildings with completely reported deliveries were included. Any cases that were reported on forms with data from nonsampled buildings (or that lacked data for some customers within the sampled building) were eliminated if the disaggregation (or aggregation) factor (from Step 1) indicated that the sampled building accounted for less than half (or more than double) the total floorspace of all the buildings reported on the form. District heating cases were kept if the sampled building accounted for more than double or less than a tenth of the floorspace. Finally, any buildings with imputed values for building characteristics that were used as predictors in the regression equations were also eliminated.

The development of regression equations began by examining the distributions of the dependent variable, consumption. The distributions were found to be highly skewed. For example, annual electricity consumption ranged from several kWh to several hundred million kWh. The skewness of these distributions suggested that a transformation of the dependent variable would be useful. The logarithmic (log) transformation, square root transformation, and several other power transformations for electricity and natural gas consumption were evaluated using Box-Cox transformations in conjunction with some preliminary consumption regression equations.^[5] The results indicated that the log transformation of consumption was most appropriate.

Just as the consumption variable was highly skewed, so too were some of the potential regressor variables. Square footage, for instance, varied from less than one hundred to more than one million square feet. Transformations of independent variables were evaluated by simple regressions of the log of consumption on various transformations of each potential quantitative variable. Plots of residuals versus predicted values from these simple regressions were also examined. As a result of these analyses, several key potential regressor variables, including the number of employees, square footage, and heated square footage, were also transformed to the log scale.

The principal activity within the building is an important determinant of consumption patterns. Therefore, for electricity, separate equations were developed for each of 13 principal building activities. For natural gas, which had a smaller sample size, 10 equations were developed. For fuel oil, district heat, and district chilled water, sample sizes were not large enough to permit regression equations to be fit by principal building activity.

The equations developed for the log of consumption were fit using ordinary least squares. Examination of residuals helped to isolate some reporting errors, but otherwise showed approximately normally distributed, homoscedastic residuals. However, the goal was to impute consumption, not the log of consumption. As an estimate of consumption, the back-transformed log prediction is a biased estimate.

Accordingly, the consumption values were calculated using parameter values estimated in two stages: the initial regression of log consumption on structural characteristics, and a bias correction.^[2] The bias correction coefficient was estimated by (1) summing the total actual consumption of cases used to estimate the regression parameters, (2) summing the total of the back-transformed predicted values (from the log regression) for these same cases, and (3) dividing the sum of the actual values (1) by the sum of the back-transformed values (2).

Completely Missing Expenditures

As for consumption, imputation for expenditures for each of the energy sources presented in this report was performed separately, although with a similar overall methodology. Again, the imputations are described in general terms, referring to individual energy sources only where necessary.

Energy supplier rate schedules are usually structured so that the price per unit of energy is lower as consumption increases. The rate schedule is usually a step function with the definition of steps and rates varying by energy supplier and by rate class. For the CBECS, rate schedules were not collected for the sampled buildings. Even the identity of the supplier was not disclosed to the Energy Information Administration. Therefore, a statistical procedure was needed to relate the expenditures to the consumption for imputation purposes.

As with the consumption imputations, the data used to specify the form and estimate the parameters of the expenditure imputation equations had to meet two criteria. First, only cases with essentially complete consumption and expenditures were used. For continuous-delivery energy sources, "essentially complete data" included buildings with 331 to 365 days of reported data for both consumption and expenditures; for discrete-delivery energy sources, only buildings with completely reported deliveries and expenditures were included. Any cases with data that were reported on forms with nonsampled buildings were eliminated if the disaggregation (or aggregation) factor (from Step 1) indicated that the sampled building accounted for less than half (or more than double) of the total floorspace of all the buildings reported on the form. Finally, any buildings with imputed values for building characteristics, such as square footage or number of employees, that were used as predictors in the regression equations were also eliminated.

As a start, expenditures were plotted against consumption. Since both distributions were highly skewed, the log of expenditures was also plotted against the log of consumption. The latter set of plots disclosed a basically linear relationship between the log of expenditures and the log of consumption. The only noticeable departure from linearity was found at the low values of electricity and natural gas consumption, where the log of expenditures seemed to be unrelated to the log of the consumption. This cutoff apparently was due to base charges for these two energy sources, which dominated the total expenditures for low values of consumption. The breakpoint occurred at approximately 1,000 kWh for electricity and at approximately 10,000 cubic feet for natural gas. Therefore, buildings with annual consumption below these values were eliminated from the data used to fit the regression equations.

The approximately linear relationship observed between the log of expenditures and the log of consumption suggested an equation of the form:

$$\log(\text{expenditures}) = a + b \times \log(\text{consumption}). \quad (2)$$

This is for consumption above the cutoff. Transformed back from the log scale, this equation becomes:

$$\text{expenditures} = a \times \text{consumption}^b. \quad (3)$$

This equation expresses a plausible general relationship. If b equals one, then the parameter, a , can be interpreted as the price per unit consumed. If b is less than one, then the equation describes a situation in which the price per unit consumed declines with increasing consumption.

The above equation was estimated separately for metropolitan and nonmetropolitan areas within each Census division for electricity and natural gas. However, the CBECS sample size was insufficient to support this level of estimation for fuel oil, district heat, and district chilled water. For these three energy sources, the two parameters were estimated at the national level.

As was the case for consumption, the equations for the log of expenditures were fit using ordinary least squares. Transformation bias correction coefficients were also computed using the same procedure as for consumption.

If the reported or imputed value of electricity consumption for a building with missing expenditures was less than 1,000 kWh, then the expenditures were imputed as though the consumption were 1,000 kWh (the breakpoint identified in the plots of the log of expenditures versus the log of consumption). The same procedure was followed for natural gas, using a cutoff of 10,000 cubic feet for consumption. No cutoff was used for fuel oil, district heat, or district chilled water consumption.

Step 7. Allocating Worksheet Totals

Worksheets combined consumption and expenditures for several sampled buildings and were used only for electricity and natural gas data. For each of these energy sources, the number of buildings with supplier data reported on worksheets represented about 5 percent of all sampled buildings supplied with the energy source.

The worksheet problem was not simply a matter of allocating an annual number among a set of buildings. In general, different reporting periods were given for each building on the worksheet, and the period lengths were rarely exactly 365 days long. In addition, the bills for a sampled building on a worksheet could include consumption in other, nonsampled, buildings just as was the case for sampled buildings not reported on worksheets.

A preliminary estimate of annual consumption and expenditures was made for each building on the worksheet using the regressions developed to impute completely missing data. A total for the set of cases on the worksheet was then estimated as:

$$\hat{W} = \sum_{i=1}^n \frac{\text{days}_i}{365} \times \frac{\hat{x}_i}{\text{adj}_i}, \quad (4)$$

where

- \hat{W} = the regression-estimated worksheet total,
- n = the number of buildings included on the worksheet,
- days_i = the number of days of data reported for the i^{th} building,
- \hat{x}_i = the annual value estimated via regression for the i^{th} building,
- adj_i = the aggregation/disaggregation adjustment for the i^{th} building (as discussed in Step 1).

The ratio \hat{x}_i/adj_i estimated the annual total that would have been reported for a building requiring aggregation or disaggregation by the factor adj_i . The ratio $\text{days}_i/365$ estimated the fraction (usually greater than one) of this annual total that would have appeared on the worksheet if days_i of data were included for the building. The sum \hat{W} was thus the regression-based estimate of what the worksheet total would have been.

The quantity (consumption or expenditures) for the i^{th} building, x_i , was then calculated as:

$$x_i = \frac{W}{\hat{W}} \times \hat{x}_i, \quad (5)$$

where W was the supplier-reported worksheet total for the worksheet that included the i^{th} building. The ratio W/\hat{W} scaled the regression-imputed annual values, \hat{x}_i , to be consistent with the reported worksheet totals.

Annual Peak Electricity Demand

Peak electricity demand data were requested for the same billing periods for which electricity consumption and expenditures were reported. (See Appendix F for copies of the electricity supplier forms.) Ideally, the metered demand represented the maximum consumption rate (in kW) during the billing period. However, two special data problems affect the availability of peak electricity demand data.

First, although virtually all electricity consumption is metered, peak electricity demand is metered where it is economical to do so. In general, peak demand meters are only installed for larger consumers of electricity. Second, in multicustomer buildings, each customer with a demand meter has its own peak demand. Since these peaks would rarely be coincident, the building peak cannot be taken as the sum of individual peaks. However, the overall building peak must be greater than or equal to the maximum customer peak.

Following Step 2 of "Annual Consumption and Expenditures," the peak electricity demand data was processed in three additional steps:

1. Using the billing data, each building was classified as either demand-metered or not demand-metered;
2. The annual peak demand, the season of the peak, and the annual load factor were determined for each building;
3. Peak demand and season of peak were imputed for demand-metered buildings missing these data.

These steps are described below.

Step 1. Classification of Buildings

For the 1989 Building Survey, a building was considered to be demand-metered if any electricity account in the building had metered peak demand. Extending this definition to the Energy Suppliers Survey, a building was classified as demand-metered if the billing data for any account within the building showed metered peak demand. This extension of the Building Survey definition allowed multicustomer buildings to be classified on the basis of reported billing data, rather than imputed on the basis of consumption as in the 1986 CBECS.

As shown in the text table below, there was a considerable discrepancy between what the building respondent reported and the actual billing situation. Problems obtaining information on billing features from building respondents are not unique to the CBECS. In a small-scale study, it was also found that a large proportion of store managers were unaware of billing features.[8] In particular, among store managers whose electricity bills were typically 40 percent demand charges, none knew what a demand charge was, or even that they were billed for peak demand. The results in this text table give national credence to the findings of Komor et al:

| Building Survey Response | Percent of Buildings with Demand-Metering ^a |
|--------------------------------------|--|
| Demand Metered in Building | 71.0 |
| Demand Not Metered in Building | 47.5 |
| Did Not Know If Metered | 56.4 |

^aPer energy supplier's response.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Step 2. Determination of Peak Demand and Related Items

For single-account buildings that were determined to be demand-metered in Step 1, the annual peak demand was taken as the maximum of the billing period peaks. For the few buildings that had part-year electricity billing data, the annual peak was taken as the maximum of the peaks in the reported billing periods. This approach results in a slight understatement of the annual peak, because the actual peak may have occurred during one of the unreported periods. However, since the number of buildings involved was relatively small, the difference between the part-year and full-year maxima would be small in most cases.

In multicustomer buildings, the overall building peak demand was not available. However, the overall peak had to be at least as high as the highest peak reported for any single customer. In buildings where one customer's peak was substantially larger than that of any other customer, that customer's peak would have been close to the overall peak. Therefore, in processing bills from multicustomer buildings, the peak demand for any single customer was designated as a "partial peak" (associated with part of the building electricity consumption), although the overall building peak was still treated as missing.

Before assigning the peak to a season, the month of the peak was found. Since the exact time of the billing period peak was unknown, the peak was taken to have occurred in whichever month contained the most days in the billing period during which the peak occurred. Peaks occurring November through April were then classified as winter peaks, while those occurring May through October were classified as summer peaks.

The annual load factor was then calculated, using previously calculated annual electricity consumption, as follows:

$$\text{annual load factor} = \frac{\text{annual consumption}}{365 \times 24 \times \text{peak annual demand}} \quad (6)$$

As an edit, the annual load factor was calculated using the partial peak, and the partial peak was set to missing if the load factor was less than .10 or greater than 1.

Step 3. Imputation for Missing Peak Demand

Although any electricity consumer has a peak demand, three types of buildings were missing peak demand:

1. buildings determined to be not demand-metered;
2. buildings with completely missing supplier data;
3. multicustomer buildings, and other buildings with partial peaks.

No attempt was made to impute for the first type of missing demand, mainly because buildings without demand-metering tended to be smaller than the demand-metered buildings, so that imputation would involve extrapolation beyond the range of the reported data. Accordingly, tables dealing with peak electricity demand have been limited to buildings with (reported or imputed) demand-metering.

Once the decision was made to exclude buildings that had not been demand-metered, imputation became a two-step process. First, it was necessary to impute whether the building with missing data was demand-metered. If the building was imputed to be a demand-metered building, then the peak and season of the peak were imputed. Table B6 shows the amount of each type of imputation that was necessary.

Table B6. Item Response for Peak Electricity Demand Data

| Response Category | Demand Metering | | Peak Demand | | Season of Peak | |
|--------------------------|------------------------|---|------------------------|---|------------------------|---|
| | Sample Number of Cases | Population Number of Buildings (thousand) | Sample Number of Cases | Population Number of Buildings (thousand) | Sample Number of Cases | Population Number of Buildings (thousand) |
| Eligible Buildings | 5,657 | 4,294 | 3,657 | 2,217 | 3,657 | 2,217 |
| Reported | 4,748 | 3,698 | 2,368 | 1,622 | 2,524 | 1,679 |
| Imputed | 909 | 596 | 1,289 | 594 | 1,133 | 537 |

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Imputation of the demand-metering attribute made use of the relationship observed within suppliers between the presence of demand-metering and annual electricity consumption. Using buildings with reported data, the probability of being a demand-metered building was estimated as a logistic function of the annual consumption. The parameters estimated from the reported data regression were used to estimate probabilities for each unclassified building, and a uniform random number was generated. If the random number was less than or equal to the estimated probability, then the building was imputed to be demand-metered. For buildings imputed to be demand-metered, the season of peak demand was imputed by hot-decking, the same method used to impute missing items from the Building Survey.

Finally, annual load factors were imputed for each building imputed to be demand-metered. Values were imputed using parameters estimated from a linear regression of the logistic transformation of the annual load factor on various building characteristics (such as weekly operating hours, end uses of electricity, and percent of floorspace heated). Separate imputation equations were estimated for each of nine principal building activities. The imputed annual peak demand was then calculated by solving the load factor equation for the annual peak.

Load factors were imputed, and peak demand values calculated, for multiple-account buildings which had partial peaks (from Step 2). If the partial peak was less than the imputed peak, then the imputed peak was treated as the buildings' annual peak demand; otherwise, the partial peak was used.

Load factors and peak intensities were computed for each building reported or imputed to have metered demand. Also of interest are the analogous ratios over a utility service region, or other large area. The ratio of a region's consumption to the annual peak for the region as a whole would represent the average utilization of the region's generating capacity. The ratio of the region's annual peak to the total floorspace in the region would represent the average capacity requirement per square foot. However, the regional peak cannot be determined from the individual annual (or even monthly) peaks alone, since these peaks are not coincident. That is, the individual peaks occur at different times, so that the sum of the individual peaks can be considerably greater than the overall regional peak.

Additional Data Notes

Energy Sources Used--Building and Supplier Survey Estimates

As explained in Appendix A, "How the Survey Was Conducted," the CBECS was conducted in two stages. During the first stage, the building representative was asked which energy sources were used in the building during 1989. In the second stage, the energy suppliers, identified by the building representative during the first stage, were asked to provide consumption and expenditures data. In some cases, contacts with the energy suppliers revealed inaccuracies in the Building Survey report as to which energy sources had been used in the building. All statistics in this report on energy sources used are based on the final determination made during the Energy Suppliers Survey.

When a supplier reported that a particular building was not a customer during 1989, calls were made to the building respondent to determine the reason for the discrepancy. In some cases, a different supplier was identified for the same energy source. In others, it turned out that the energy source had not actually been used; in some of these cases, a different energy source was identified instead. For example, natural gas may have been reported originally, but the callback determined that natural gas was consumed only in a central plant outside the sampled building, while the building itself used district steam, which had not been reported originally. In this case, natural gas would be coded as "not used in the building," and district steam would be added as "used in the building." The net discrepancies between the Building Survey and Suppliers Survey estimates for the use of each energy source were small for both the building counts and the floorspace totals (Tables B7 and B8).

The Energy Suppliers Survey was able to correct the energy sources used, only in cases where a supplier had been misreported as supplying a particular building with an energy source. If the Building Survey respondent happened to omit an energy supplier, but reported all the other supplier data correctly, the omitted supplier would not have been discovered. The number of such cases was probably quite small.

In some cases, a supplier reported that a particular building had been a customer for a given energy source, but not during calendar year 1989. For continuous-delivery energy sources (electricity, natural gas, and district heating and cooling), the building was classified as not using the energy source. For the discrete-delivery energy source (fuel oil), though, the building was classed as using the energy source, but with zero consumption and expenditures for 1989. Thus, for example, those buildings whose respondents reported that fuel oil was used during 1989, but which received no fuel oil deliveries in that year, were included in the count of buildings and floorspace using fuel oil, though they did not contribute to the fuel oil delivery total.

The revised information on what energy sources were used had an effect on the energy end-use data also. The Building Survey data on what energy sources were used for what end uses were collected in concert with the data on what energy sources were used. (See Appendix F for copies of the survey forms.) Edit checks on the Building Survey data assured consistency between energy sources reported for end uses and energy sources reported at all. However, when the information on energy sources used "at all" was revised during the Energy Suppliers Survey, no new information was obtained on energy sources used for particular end uses. As a result, some energy sources were dropped from a building's list of energy sources used, even though these energy sources had end uses reported. Conversely, no associated end uses were coded for energy sources that were added for a building.

**Table B7. Energy Sources Used as Reported on Building Questionnaire and Energy Supplier Survey, Number of Buildings
(Thousand)**

| Reported Use | Energy Sources | | | | | |
|---|----------------|-------------|----------|----------------|--------------------|------------------------|
| | Electricity | Natural Gas | Fuel Oil | District Steam | District Hot Water | District Chilled Water |
| Total Reported on Building Questionnaire | 4,297 | 2,439 | 586 | 87 | 26 | 25 |
| Unchanged Based on Energy Supplier Survey | 4,294 | 2,420 | 580 | 81 | 24 | 24 |
| Deleted Based on Energy Supplier Survey . . . | 3 | 19 | 6 | 6 | 2 | 1 |
| Added Based on Energy Supplier Survey | NC | NC | * | NC | NC | * |
| Total Based on Energy Supplier Survey (Final Resolution) | 4,294 | 2,420 | 581 | 81 | 24 | 24 |
| Not Used Based on Both Building and Energy Supplier Survey | 231 | 2,089 | 3,941 | 4,441 | 4,502 | 4,502 |

* Value rounds to zero in the units displayed.

NC No cases in responding sample.

Note: See the "Glossary" for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

**Table B8. Energy Sources Used as Reported on Building Questionnaire and Energy Supplier Survey, Floorspace
(Million Square Feet)**

| Reported Use | Energy Sources | | | | | |
|---|----------------|-------------|----------|----------------|--------------------|------------------------|
| | Electricity | Natural Gas | Fuel Oil | District Steam | District Hot Water | District Chilled Water |
| Total Reported on Building Questionnaire | 61,587 | 41,593 | 12,684 | 5,550 | 1,810 | 2,101 |
| Unchanged Based on Energy Supplier Survey | 61,563 | 41,143 | 12,552 | 5,326 | 1,675 | 1,906 |
| Deleted Based on Energy Supplier Survey . . . | 24 | 450 | 132 | 224 | 135 | 194 |
| Added Based on Energy Supplier Survey | NC | NC | 48 | NC | NC | 20 |
| Total Based on Energy Supplier Survey (Final Resolution) | 61,563 | 41,143 | 12,600 | 5,326 | 1,675 | 1,927 |
| Not Used Based on Both Building and Energy Supplier Survey | 1,597 | 21,591 | 50,452 | 57,633 | 61,374 | 61,063 |

NC No cases in responding survey.

Note: See the "Glossary" for explanation of abbreviations and definitions of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

For any energy source whose use was changed from "yes" to "no" for a particular building, the use of that energy source for any given end use was also changed to "no." However, the end use was still treated as having been performed in the building. That is, it was assumed that the building respondent correctly reported, which end uses were performed, even if the energy source used for the end use had been incorrectly reported. This approach left some buildings identified as having a particular end use, but with no energy source indicated for that use.

Gas Transported for the Account of Others

The 1989 CBECS was the first CBECS to attempt explicitly to collect data on natural gas transported for the account of others, where large natural gas users purchase their natural gas via direct purchases from the source, rather than from the local utility. The local utility then delivers the gas to the building via the local pipelines. Gas purchased directly is also referred to as direct purchase gas, spot market gas, or transportation gas--the way this gas was referred to on the 1989 CBECS survey forms. However, the more proper nomenclature is "gas transported for the account of others." For ease of reference, in this section we will refer to such gas as "transported gas." The survey form, EIA-871C-1 (Appendix F) requested: (1) consumption (excluding transported gas), (2) the volume of transported gas, and (3) total expenditures for 1 and 2 as defined above.

Since local distribution companies know the total volume of natural gas delivered, the total consumption data seem complete. (If natural gas consumption was completely missing, then the volume was imputed as described in Step 6 of "Annual Consumption and Expenditures"). The allocation of consumption between transported gas and local utility-owned gas was then imputed by hot-decking the proportion of gas that was transported gas. This method allowed imputed buildings to have both transported and local utility gas, as might happen if (1) building demand exceeded the direct purchase contract amount or (2) the building switched to or from a direct purchase contract during the year.

This report contains estimates of the number of buildings, floorspace, total natural gas consumption, and transported gas consumption (Table 7). Table 7 also includes the percentage of natural gas volume which was transported gas. Overall, 12 percent of natural gas consumed in commercial buildings was transported gas. Sixty percent of the transported gas was consumed in the Midwest, a Census region where such gas accounted for 18 percent of all natural gas consumption. Thirty-seven percent of the gas buildings under industrial accounts was transported gas, while only 7 percent of the commercial account gas was transported gas. Over 20 percent of natural gas provided to education and health care buildings was transported gas. These findings are roughly comparable to those in the *Commercial Gas Market Survey: 1989*.[1]

Since data were requested from each supplier of natural gas named by the building respondent, it was expected that the main problem would be one of locating double-counting in cases where both the local utility and direct purchase supplier were named. Instead, the main problem involved expenditures. In many cases, the suppliers could not report the total expenditures since they did not know the purchase price of the transported gas; the only costs known by the local utility were the charges to deliver the transported gas to the building. If the supplier did not know the total expenditures for both the local utility-owned gas and the transported gas, the instructions were to leave the expenditures as unknown. However, many suppliers provided expenditures which included only transportation charges for the transported gas. The problem of identifying these cases was confounded with the problem of identifying unit-of-measure misreporting--transportation charges per thousand cubic feet (mcf) were about the same as the price for natural gas per hundred cubic feet (ccf).

Estimating expenditures for transported gas was more complicated than estimating consumption, since it was not clear which expenditures had been reported. To provide a rough adjustment, the average price was calculated for each building with reported transported gas. This price was then compared with the 1989 average wellhead price of \$0.169 per (ccf). If the average price for a building was above the average wellhead

price, the reported expenditures were assumed to be complete. If the average price was below the average wellhead price, the expenditures were assumed to reflect just transportation charges. In the latter case, an amount equal to .169 times the transported gas volume (ccf) was added to the total expenditures. Although individual buildings may have had their expenditures misstated (especially if the average price was originally in the vicinity of \$0.169 per (ccf)), this adjustment should bring aggregate natural gas expenditures, as well as total energy expenditures, closer to the correct amount. The proportion of transported gas (12 percent) is small enough that any remaining bias would be small, relative to the sampling errors of the estimates.

For the 1992 CBECS, the natural gas suppliers form will be redesigned to allow respondents to report separately, expenditures for gas purchased from the utility and transportation charges for transported gas. Average prices by Census division (as published annually in EIA's *Natural Gas Annual*) will also be used to provide more sophisticated adjustments for partially reported expenditures.

Fuel-Switching Capability Calculations

Estimation of Consumption

The 1989 CBECS obtained information on the ability to switch from one main heating fuel to a different fuel within a short period of time, in order to estimate the capability for fuel switching in the commercial sector. The following discussion focuses on buildings that heat with fuel oil¹⁵ (see the discussion on fuel switching in the main text for a more general discussion of fuel-switching capability).

For buildings with reported consumption, the billing data were examined to determine the percentage of consumption that occurred in each of the following seasons: March through May, June through August, September through November, and December through February. A seasonal percentage was determined for each Census region using the weighted consumption totals for buildings reporting their consumption. Two sets of percentages were calculated: (1) for all buildings that use fuel oil, and (2) for buildings which use fuel oil for their primary heating fuel. These percentages vary by region (Tables B9 and B10).

It was assumed that the final, aggregated fuel oil consumption for each building, reported or imputed, could be divided among the four seasons using these percentages. The estimated consumption of fuel oil in the United States for each season is presented below (Table B11). The 166 thousand barrels per day represent a total yearly consumption of almost 61 million barrels of fuel oil in the commercial buildings in the United States. However, it should be noted that over 33 million barrels of this estimate, or more than 55 percent, are estimated from buildings for which the total fuel oil consumption required imputation.

¹⁵Preliminary estimates were presented in the *Commercial Buildings Characteristics 1989* (Energy Information Administration, June 1991).

**Table B9. Seasonal Proportion of Fuel Oil Consumption for Buildings Using Fuel Oil, 1989
(Percent)**

| Season | Census Region | | | | |
|---------------------------|---------------|-----------|---------|--------|--------|
| | All Buildings | Northeast | Midwest | South | West |
| Annual | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| March - May | 23.67 | 25.87 | 17.98 | 20.48 | 22.07 |
| June - August | 7.80 | 7.97 | 4.85 | 10.63 | 7.52 |
| September - November | 16.02 | 18.72 | 10.88 | 10.53 | 10.54 |
| December - February | 52.52 | 47.44 | 66.29 | 58.36 | 59.87 |

Note: Relative Standard Errors were not computed for these proportions.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Surveys.

**Table B10. Seasonal Proportion of Fuel Oil Consumption for Buildings Using Fuel Oil for Main Heating, 1989
(Percent)**

| Season | Census Region | | | | |
|----------------------------|---------------|-----------|---------|--------|--------|
| | All Buildings | Northeast | Midwest | South | West |
| Annual | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| March - May | 25.82 | 26.88 | 24.66 | 21.05 | 17.69 |
| June - August | 7.77 | 8.21 | 0.69 | 11.90 | 5.57 |
| September - November | 16.54 | 17.27 | 10.90 | 18.07 | 9.02 |
| December - February | 49.87 | 47.64 | 63.75 | 48.99 | 67.72 |

Note: Relative Standard Errors were not computed for these proportions.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Surveys.

Table B11. Consumption of Fuel Oil in All Buildings Using Fuel Oil, 1989

| Census Region | Average Consumption (thousand barrels per day) | | | | |
|---------------------------|---|-------------|-------------|-------------|--------|
| | Mar. - May | Jun. - Aug. | Sep. - Nov. | Dec. - Feb. | Annual |
| Total United States | 157.5 | 51.9 | 106.6 | 349.4 | 166.3 |
| Census Region | | | | | |
| Northeast | 114.1 | 35.2 | 82.6 | 209.3 | 110.3 |
| Midwest | 20.4 | 5.5 | 12.4 | 75.4 | 28.4 |
| South | 19.1 | 9.9 | 9.8 | 54.4 | 23.3 |
| West | 3.8 | 1.3 | 1.8 | 10.4 | 4.3 |

Notes: •These figures include only those buildings that receive fuel oil deliveries. •Not included are buildings that heat with district steam produced by a central plant, even if that plant uses fuel oil.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Surveys.

Because the only questions concerning fuel switching included in the questionnaire involved possible alternatives to the building's main heating fuel, it is not possible to separate the consumption of all buildings using fuel oil into switchable and nonswitchable components. However, these statistics are presented here for comparison with the amount of consumption that occurs in buildings heating primarily with fuel oil and also the portion of this amount that is switchable to another fuel (Table B12).

Table B12 presents national and Northeast Census region figures of average consumption per day in buildings that heat primarily with fuel oil. (The Northeast Census Region consumption estimates are presented here along with the national estimates since most of the fuel oil consumption occurred in this region). For the most part, the statistics for total consumption in Census regions other than the Northeast were publishable. However, the estimates for switchable and nonswitchable consumption in these Census regions were not publishable due to RSE's that were greater than 50 percent.

The consumption by buildings using fuel oil for main heat is a large proportion of total fuel oil consumption. Therefore, it is not surprising that a large portion of fuel oil consumption occurs during the winter (December through February). Over three-fourths of fuel oil consumption by buildings heating primarily with fuel oil cannot be readily replaced with an alternative heating fuel. For consumption that can be replaced, the amount switchable to natural gas is almost equal to the combined amounts switchable to all other fuels.

District Heating and Cooling

The 1989 CBECS continued to improve the collection of information pertaining to district heating and cooling systems through the incorporation of loop information and the Facility Form. (See Appendix A, "How the Survey Was Conducted," for details on these two improvements)

Some buildings specifically reported that they were not billed for district heating and cooling. In these cases, their expenditures were considered to be zero. For many other buildings with nonutility district heat, expenditures data were not provided. Treating expenditures as zero for these buildings would have the effect

Table B12. Estimates of Consumption of Fuel Oil in Buildings Heating Primarily with Fuel Oil, 1989

| | Average Consumption (thousand barrels per day) | | | | |
|--------------------------------|---|-------------|-------------|-------------|--------|
| | Mar. - May | Jun. - Aug. | Sep. - Nov. | Dec. - Feb. | Annual |
| Total United States | | | | | |
| Total Consumption | 138.5 | 41.7 | 88.8 | 267.5 | 134.1 |
| Not Switchable | 107.5 | 32.5 | 68.9 | 206.0 | 103.7 |
| Switchable | 31.1 | 9.2 | 19.9 | 61.5 | 30.4 |
| To Natural Gas Only | 20.9 | 6.0 | 13.2 | 40.7 | 20.2 |
| To Electricity Only | 4.1 | 1.5 | 2.8 | 8.6 | 4.3 |
| To Propane Only | 3.0 | 0.8 | 1.9 | 6.4 | 3.0 |
| No Single Fuel/Other | 3.1 | 1.0 | 2.0 | 5.8 | 3.0 |
| Northeast Census Region | | | | | |
| Total Consumption | 109.1 | 33.3 | 70.1 | 193.4 | 101.5 |
| Not Switchable | 86.9 | 26.6 | 55.9 | 154.1 | 80.9 |
| Switchable | 22.2 | 6.8 | 14.2 | 39.3 | 20.6 |
| To Natural Gas Only | 15.8 | 4.8 | 10.1 | 27.9 | 14.7 |
| To Electricity Only | Q | Q | Q | Q | Q |
| To Propane Only | Q | Q | Q | Q | Q |
| No Single Fuel/Other | Q | Q | Q | Q | Q |

Q - Data withheld because the Relative Standard Error (RSE) was greater than 50 percent, or data were reported for fewer than 20 buildings.

Notes: • The numbers from the alternate fuel subcategories may not add up to the total switchable consumption due to rounding. However, the RSE of the floorspace estimates used to derive these figures was in some cases too high to justify inclusion of the estimate. Those cases are marked with a "Q". • These figures include only those buildings that heat primarily with fuel oil. Not included are buildings that use fuel oil for some purpose other than heating, and buildings that heat with district steam produced by a central plant, even if that plant uses fuel oil. All fuel oil consumption by the included buildings is presented, even if some fuel oil is consumed for purposes other than heating.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Surveys.

of assuming that the energy was cost-free. In these cases, all missing district heat expenditures were imputed by the same procedures, without regard to the type of district heat reported. As a result, the expenditures imputed for district heat represent an equivalent cost as if all the district heat had been purchased, rather than a sum of direct costs to the buildings.

District cooling data were also collected in the 1989 CBECS. In the same manner as district heating expenditures, all missing district chilled water expenditures were imputed, thus treating all district cooling as purchased. No correction was made for primary energy association with district heat.

The quantities reported for district heating are increasing with each CBECS iteration. However, this increase may be more a result of better identification than actual increases. Most of the increase is recorded in older(pre-1980) buildings rather than in new construction (Table B13). We would expect estimates from

future CBECS to remain in the range of the 1989 estimate. In the 1989 survey, the amount estimated for buildings constructed between 1980 and 1989 was unpublishable due to an RSE exceeding 50 percent. The upper limit of the 95 percent confidence level was approximately 80 trillion Btu.

The improved identification of district heating situations not only affects district heating estimates. Estimates of natural gas, fuel oil, and fuels commonly used as central plant inputs are also affected. Estimates of these fuels may also be decreased, since these amounts were formerly associated with commercial buildings and are now correctly identified as inputs to central physical plant buildings. The 1989 CBECS Facility Survey was intended to capture the consumption of energy in these central plants, as well as to identify cogeneration. Central plants are more likely to include cogeneration systems than ordinary commercial buildings.

Table B13. Estimates of District Heat Floorspace, Consumption, and Intensity for Buildings Constructed 1979 or Before, by Survey Year

| Survey Year | Floorspace (million sq.ft.) | Consumption (trillion Btu) | Intensity (MBtu/sq.ft.) |
|-------------|--------------------------------|-------------------------------|----------------------------|
| 1979 | 3,593 | 192 | 53 |
| 1983 | 3,883 | 253 | 65 |
| 1986 | 4,367 | 390 | 89 |
| 1989 | 5,722 | 548 | 96 |

Note: The 1979 and 1983 CBECS asked for purchased steam; the 1986 CBECS asked for purchased and nonpurchased steam and hot water; the 1989 CBECS asked for district steam or district hot water piped into the building.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1979, 1983, 1986 and 1989 Commercial Buildings Energy Consumption Surveys.

Estimation of Sampling Errors

Sampling error, as described in the introduction to this appendix, is the random difference between the survey estimate and the true population value. This difference arises because a random subset, rather than the whole population, is observed. The typical magnitude of the sampling error is measured by the standard error of the estimate. The standard error is the root-mean-square difference between the estimate based on a particular sample and the value that would be obtained by averaging estimates over all possible samples.

If the estimates are unbiased, meaning there is no systematic error, this average over all possible samples is the true population value. In this case, the standard error is simply the root-mean-square difference between the survey estimate and the true population value. If systematic error is present, however, this bias is not included in the error measured by the standard error. Thus, the standard error tends to underestimate the total estimation error if there are nonnegligible biases.

In principle, random errors can be contributed to the estimate by sources other than the sampling process. Such additional sources of random error include random errors by respondents and by data entry staff, and random unit nonresponse. To recognize these additional sources of variation, the definition of the sampling process can be expanded to include not just the selection of buildings but all steps required to obtain a set of responses. Under this expanded definition, all random errors can be regarded as sampling errors. The procedures designed to estimate the sampling error must, therefore, incorporate all random components of the estimation process.

Jackknife Replication

Throughout this report, standard errors are given as percents of their estimated values, that is, as RSE's. Computations of standard errors are more conveniently described, however, in terms of the estimation variance, which is the square of the standard error.

For some types of surveys, a convenient algebraic formula for computing variances can be obtained. However, the CBECS used a list-supplemented, multistage area sample design (see Appendix A, "How the Survey Was Conducted") of such complexity that it is virtually impossible to construct an exact algebraic expression for estimating variances. In particular, convenient formulas based on an assumption of simple random sampling, typical of most standard statistical packages, are entirely inappropriate for the CBECS estimates. Such formulas tend to give severely understated standard errors, making the estimates appear much more accurate than is the case.

The method used to estimate sampling variances for this survey was a jackknife replication method.[9 and 10] The idea behind replication methods is to form several pseudoreplicates of the sample by selecting subsets of the full sample. The subsets are selected in such a way that the observed variance of estimates based on the different pseudoreplicates estimates the sampling variance in the overall estimate.

The replication method used begins by pairing first-stage sampling units, such that the two units in each pair represent two independent draws from the same pool of first-stage units, and draws for different pairs are also independent. This pairing of first-stage sampling units must be done in accordance with the way the sampling was actually conducted. For the 1989 CBECS, 40 pairs of first-stage sampling units were created in this way.

The k^{th} jackknife pseudoreplicate sample set is obtained by deleting all observations from one of the two members in the k^{th} pair and multiplying the weights on all cases in the other pair member by 2. Observations in all other pairs are unaffected. The k^{th} pseudoestimate is then obtained from this pseudoreplicate sample by following all the steps used to construct the full-sample estimate.

The variances are estimated from the pseudoestimates in the following way. Let X' be a survey estimate (based on the full sample) of characteristic X for a certain category of buildings. For example, X may be the total square footage of buildings using natural gas in the Midwest. Let X_k' be the pseudoestimate of X based on the k^{th} pseudoreplicate sample. The estimated variance of the full-sample estimate X' is then given by:

$$S_{X'}^2 = \sum_{k=1}^{40} (X_k' - X')^2 . \quad (7)$$

The standard error of X' is given by:

$$S_{X'} = \sqrt{S_{X'}^2} . \quad (8)$$

The relative standard error (percent) of X' is obtained from this standard error as:

$$\text{RSE}_{X'} = \left(\frac{S_{X'}}{X'} \right) \times 100 . \quad (9)$$

Effects of Missing Data on Error Estimation

Earlier in this appendix the procedures used to adjust for unit and item nonresponse were described. Because the missing cases and the responding cases used to adjust for them arise randomly (within adjustment groups) nonresponse contributes to the estimation variance, even when appropriate adjustment procedures are used to remove the nonresponse bias. Half-sample replication estimates of variance account for this component of variance only if adjustments are made separately for each replicate.

To capture the effect of random nonresponse on the variance of estimates, a separate unit nonresponse adjustment factor, as described in the section on "Unit Nonresponse Adjustment," was computed for each pseudoreplicate. Thus, each replicate estimate was computed using a slightly different set of adjusted weights.

As in previous CBECS's, RSE's of consumption, expenditures, and peak-demand related items were computed excluding cases that were imputed by regression. RSE's of consumption and expenditures for the sum of major fuels were computed excluding cases where more than half of the quantity had been imputed by regression. The practice of eliminating imputed values was supported by a nonresponse simulation study, which found the resulting RSE estimates to be reasonable approximations to the true RSE's.[2] However, basing estimated RSE's on reported cases is an ad hoc procedure. This practice may be misleading, especially for fuel oil and district heat, where a substantial portion of the estimated totals were imputed (see Tables B4 and B5).

A variance estimation procedure, which explicitly accounted for imputation effects, was tested for a limited number of building characteristics, including floorspace.[3 and 6]

Generalized Variances

For every estimate in this report, the RSE was computed by the methods described above. This was the RSE used for any statistical tests or confidence intervals given in the text, or to determine if the estimate was too inaccurate to publish (RSE greater than 50 percent).

Space limitations prevent publishing the complete set of RSE's with this document. Instead, a generalized variance technique is provided, by which the reader can compute an approximate RSE for each of the estimates in the main summary tables. For an estimate in the i^{th} row and j^{th} column of a particular table, the approximate RSE is given by the simple formula:

$$\text{RSE}_{ij} = R_i C_j, \quad (10)$$

where R_i is the RSE row factor given in the last column of row i , and C_j is the RSE column factor given at the top of column j . (See "Detailed Tables" for a discussion of how to use the RSE Row and Column factors in this report.)

Derivation of Row and Column Factors

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

$$\log(\text{RSE}_{ij}) = m + a_i + b_j. \quad (11)$$

The least-squares estimates for this model are given by:

$$m = \overline{\log(RSE)} \quad (12)$$

$$a_i = \overline{\log(RSE_{i,j})} - \overline{\log(RSE)} \quad (13)$$

$$b_j = \overline{\log(RSE_{i,j})} - \overline{\log(RSE)} , \quad (14)$$

where $\overline{\log(RSE)}$ is the mean of $\log(RSE_{i,j})$ over all rows i and columns j, $\overline{\log(RSE_i)}$ is the mean over all columns j for a particular row i, and $\overline{\log(RSE_j)}$ is the mean over all rows i for a particular column j. The row and column RSE factors are then computed as:

$$R_i = \log^{-1}(m + a_i) = \log^{-1}(\overline{\log(RSE_i)}) \quad (15)$$

$$C_j = \log^{-1}(b_j) = \log^{-1}(\overline{\log(RSE_j)} - \overline{\log(RSE)}) . \quad (16)$$

The RSE row factor, R_i , is thus the geometric mean of the RSE's in row i, and the RSE column factor, C_j , is an adjustment factor with geometric mean equal to 1.0.

For a few table cells, there were no sample cases, hence, no estimate and no RSE. As a result, some of the arrays of direct estimates $RSE_{i,j}$ had a few missing values. In such cases, the formulas given above for row and column factors still apply, but only after appropriate estimates have been substituted for the missing values.[4] In cases where a statistic was not publishable, because of a high RSE or small cell sample size, the value of $RSE_{i,j}$ was set to missing, so that the computed row and column factors are based only on published cases. A description of the automated system used to produce both the RSE's and the row and column factors appearing in this report can be found in Gargiullo and Goldberg 1989[7].

CBECS Comparisons Over Time

The CBECS has been conducted four times (1979, 1983, 1986, and 1989.) Over the 10-year span there have been changes in the data collection instruments and updates in the survey frame. While representing improvements to the CBECS survey procedures, these departures from the initial survey practices complicate comparisons across the surveys. This is especially evident between the 1979/1983 CBECS and the 1986 CBECS when the population of buildings covered changed. There have been four major changes in the coverage of the CBECS:

1. The 1986 and subsequent CBECS samples were drawn from a frame of all commercial buildings in the United States specially designed for CBECS use. (For details on this design, see the Sample Design section of Appendix A, "How the Survey was Conducted.") Previously, for the 1979 and 1983 surveys, a sample frame originally designed for another purpose was used.
2. Buildings of 1,000 square feet and under were deleted from the report tables in the 1986 CBECS and are no longer considered "in scope" for subsequent CBECS's.
3. Buildings whose use was 50 percent or more residential were deleted from the report tables in the 1986 CBECS and are no longer considered "in scope" for subsequent CBECS's.

4. Geographic coverage for the CBECS was increased by including Alaska and Hawaii in the 1986 and subsequent surveys.

For the first two CBECS's (1979 and 1983), a sampling design was adapted from one which had previously been developed for a private office machine company and utilized 1970 population distributions updated to 1980. For the 1986 and subsequent CBECS's, EIA has constructed its own multistage area probability sampling design specific to the needs of energy end-use surveys. A consequence of the redesign was better coverage of the commercial buildings' population, which would tend to increase floorspace estimates. Table B14 compares the CBECS coverage completeness by survey year.

These coverage changes are confounded with the fact that changes in floorspace data are also the result of "real world" processes, such as building demolitions, conversions of buildings from commercial to noncommercial use (and vice versa), and floorspace additions to existing buildings.

Comparisons of electricity, natural gas, and fuel oil consumption and expenditures per square foot for 1979, 1983, 1986 and 1989 are provided in Table B15.

In response to our users' requests, EIA is assessing the effect of coverage changes between the 1979/1983 CBECS's and subsequent surveys. Preliminary analysis suggests that the comparisons across survey years of consumption indices such as those in Table B15 are reliable. However, comparisons of the amount of floorspace in commercial buildings between the 1979/1983 surveys and more recent ones are more problematic. An analysis is being conducted of the changes in floorspace based on a common definition of the commercial buildings population. The results of this analysis will be published in a separate analytic report.

Table B14. CBECS Coverage Completeness by Survey Year

| Buildings Population | Survey Year | | |
|---|-------------|------------|---------------|
| | 1979 | 1983 | 1986 and 1989 |
| Agricultural | Excluded | Excluded | Excluded |
| Manufacturing | Excluded | Excluded | Excluded |
| 100% Residential | Excluded | Excluded | Excluded |
| 50 to 99% Residential | Included | Included | Excluded |
| 1000 sq.ft. or smaller | Included | Included | Excluded |
| 1980-83 construction under 50,000 sq.ft. | | Incomplete | Included |
| Smaller Buildings over 1000 sq.ft. | Incomplete | Incomplete | Included |
| Alaska and Hawaii | Excluded | Excluded | Included |

Source: Energy Information Administration, Office of Energy Markets and End Use, 1979, 1983, 1986, and 1989 Commercial Buildings Energy Consumption Surveys.

Table B15. Consumption and Expenditure Indices by Survey Year

| Consumption and Expenditure Indices | Survey Year | | | |
|--|-------------|-------|-------|-------|
| | 1979 | 1983 | 1986 | 1989 |
| Electricity | | | | |
| Floorspace Fraction | 0.99 | 0.98 | 0.97 | 0.97 |
| Conditional Energy Intensity (MBtu/sq.ft.) | 43. | 44 | 44 | 45 |
| Expenditures per Square Foot (dollars) | 0.54 | 0.81 | 0.84 | 0.91 |
| Aggregate Price (dollars per MMBtu) | 12.58 | 18.56 | 19.74 | 20.17 |
| Natural Gas | | | | |
| Floorspace Fraction | 0.70 | 0.69 | 0.64 | 0.65 |
| Conditional Energy Intensity (MBtu/sq.ft.) | 70 | 62 | 46 | 50 |
| Expenditures per Square Foot (dollars) | 0.19 | 0.34 | 0.22 | 0.22 |
| Aggregate Price (dollars per MMBtu) | 2.69 | 5.52 | 4.85 | 4.44 |
| Fuel Oil | | | | |
| Floorspace Fraction | 0.26 | 0.19 | 0.19 | 0.20 |
| Conditional Energy Intensity (MBtu/sq.ft.) | 61 | 35 | 40 | 28 |
| Expenditures per Square Foot (dollars) | 0.25 | 0.23 | 0.19 | 0.14 |
| Aggregate Price (dollars per MMBtu) | 4.10 | 6.69 | 4.66 | 5.10 |

Notes: • Floorspace Fraction is the amount of floorspace for buildings using the energy source divided by floorspace in buildings using any major energy source. • Conditional Energy Intensity, Expenditures per Square Foot, and Aggregate Price are based only on buildings that actually use the particular energy source.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1979, 1983, 1986, and 1989 Commercial Buildings Energy Consumption Surveys.

Analytical Supporting Data

This section provides supplemental data that are not published in the Detailed Tables Section, but were used in analyzing the 1989 CBECS.

Regression Methodology

The purpose of the multiple regression analysis described in "Factors Related to Specific Energy Source Consumption" was to examine whether the relationships suggested by the aggregate intensity comparisons held at the individual building level. Six explanatory variables for energy intensity were used:

- The concentration of workers per square foot
- Weekly operating hours
- Building age (calculated as 1990 minus the year constructed)
- Heating degree-days

- Cooling degree-days, and
- The principal building activity.

Nine principal building activity categories were used: assembly, education, food sales and service, health care, lodging, mercantile and service, office, warehouse, and a ninth category consisting of the remaining buildings. Technically, an analysis of covariance was performed, with one categorical variable (principal activity) and five numeric covariates.

Not all buildings in the sample were used in the regression analysis. For the sum of major energy sources, the regressions eliminated buildings where 50 percent or more of the consumption had been imputed. For specific energy sources, the regressions eliminated buildings where the consumption had been imputed by regression or by hot-decking. (See "Annual Consumption and Expenditures" for details on consumption imputations.) The regressions also eliminated cases where the categorical versions of the explanatory variables had been imputed (number of workers, square footage, weekly operating hours, or year constructed). Cases with zero reported for consumption amount, number of workers, or weekly operating hours were also eliminated. After deleting cases with imputed data or reported zeroes, there remained 4,219 cases for the major fuel intensity analysis, 4,093 for electricity, 2,646 for natural gas, 385 for fuel oil, and 220 for district heat.

For intensity, and all explanatory variables except the principal building activity, logarithms were used. The logarithmic transformation is commonly used with skewed data and produces a model in which the effects of the explanatory variables are multiplicative. The section "Annual Consumption and Expenditures," which describes the consumption imputation regressions, contains further discussion of the rationale for log transformations.

Results for the regression analyses are presented in Table B16. The R^2 is a statistic which measures how well the regression performed relative to the overall variance of the intensities. About one-third of the variation in major fuel intensities, electricity intensities, and fuel oil intensities was accounted for by the regressor variables. The R^2 values for the natural gas and district heat intensities were lower, but still statistically significant.

Table B16. Results of Energy Intensity Regressions

| Explanatory Variables | Energy Source | | | | |
|-----------------------------|---------------|-------------|-------------|----------|---------------|
| | Major Fuels | Electricity | Natural Gas | Fuel Oil | District Heat |
| R^2 | .32 | .36 | .15 | .31 | .12 |
| Workers per Floorspace | x | x | x | x | x |
| Operating Hours | x | x | - | - | - |
| Age of Building | - | x | - | x | - |
| Heating Degree-days | x | - | x | x | - |
| Cooling Degree-days | - | x | - | - | - |
| Principal Building Activity | x | x | x | x | x |

Notes: • x = Significant relationship at the 95-percent confidence level. • - = Relationship not significant.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, Public Use Data.

Supplemental Tables

Table B17 provides historical data that were used in analyzing the change in energy consumption over time. Because the sample coverage differed between 1979 and 1989, the statistics in Table B17 for survey years 1979, 1983, and 1986 have been adjusted to reflect the same composition as the 1989 CBECS sample: (1) For the 1979 and 1983 CBECS, buildings of 1,000 square feet or less were removed from the data set. Agricultural, residential, and industrial buildings were removed also. (2) For the 1979, 1983, and 1986 CBECS, LPG removed from the "all major fuels" category. (See the previous section, "CBECS Comparisons Over Time," for further discussion.)

Table B17. Selected Building Characteristics and Energy Consumption by Survey Year

| Building Characteristics and Consumption | Survey Year | | | |
|---|-------------|------------------|------------------|------------------|
| | 1989 | Adjusted 1986 | Adjusted 1983 | Adjusted 1979 |
| Total Floorspace (million sq.ft.) | 63,183 | 58,199 | 49,471 | 43,546 |
| Floorspace in Buildings Using (million sq.ft.) | | | | |
| Electricity | 61,563 | 56,508 | 48,327 | 43,153 |
| Natural Gas | 41,143 | 37,263 | 33,935 | 30,477 |
| Fuel Oil | 12,600 | 11,005 | 9,409 | 11,397 |
| District Heat | 6,578 | 4,625 | 4,454 | 3,722 |
| Square Foot-Hours ¹ (trillion sq.ft.) | 251 | 206 | 194 | 165 |
| Number of Workers (thousand) | 70,663 | 73,425 | 73,873 | 58,946 |
| Net Energy Consumption (trillion Btu) | | | | |
| All Major Fuels | 5,788 | 4,977 | 4,823 | 4,965 |
| Electricity | 2,733 | 2,390 | 2,129 | 1,908 |
| Natural Gas | 2,073 | 1,723 | 2,091 | 2,174 |
| Fuel Oil | 357 | 442 | 314 | 681 |
| District Heat | 585 | 422 | 289 | 201 |

¹See Table B18 for discussion of Square Foot-Hours.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, CBECS Public Use Data.

Because the economic activity in commercial buildings does not have a direct measure, such as value of shipments or added value which are commonly understood measures in the industrial sector, two surrogate measures were used in order to create an index of consumption per economic activity: the floorspace of a building and its annual operating hours. For each building, the square footage is multiplied by the annual operating hours; and for each building characteristic, this factor is weighted and summed over all relevant buildings. Table B18 provides the square foot-hours by various building categories. This measure is used in the calculation of energy consumption per operating hour.

Table B18. Square Foot-Hours by Building Characteristics

| Building Category | Sum of Square Foot-Hours (billion) |
|--------------------------|------------------------------------|
| All Buildings | 250,868 |
| Year Constructed | |
| 1945 or before | 49,615 |
| 1946-1959 | 38,027 |
| 1960-1969 | 51,028 |
| 1970-1979 | 55,770 |
| 1980-1989 | 55,364 |
| Building Activity | |
| Assembly | 22,214 |
| Education | 27,225 |
| Food Sales | 4,420 |
| Food Service | 6,105 |
| Health Care | 15,282 |
| Laboratory | 3,709 |
| Lodging | 29,858 |
| Mercantile and Service | 46,831 |
| Office | 41,649 |
| Parking Garage | 5,866 |
| Public Order and Safety | 4,097 |
| Warehouse | 31,587 |
| Other | 3,103 |
| Vacant | 8,922 |

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey, CBECS Public Use Data.

References

1. American Gas Association. *Commercial Gas Market: 1989*. (Arlington, VA, 1990.)
2. Burns, E. M. "Imputing for Missing Survey Data: Energy Consumption in Commercial Buildings." *Proceedings of the Business and Economic Statistics Section of the American Statistical Association*. (1987.)
3. Burns, E. M. "Multiple Imputation in the 1989 Commercial Buildings Energy Consumption Survey: Building Characteristics." CBECS Technical Note 86. (Washington, DC, 1991.)
4. Cochran, W. G., and Cox, G. M. *Experimental Design*. 2nd ed. (New York, NY: John Wiley & Sons, Inc., 1957.)
5. Draper, N.R., and Smith, H. *Applied Regression Analysis*. 2nd ed. (New York, NY: John Wiley & Sons, Inc., 1981.)
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7. Gargiullo, P.M., and Goldberg, M.L. "A Modified Table Producing Language (TPL) System for Producing Tables of Survey Statistics with Variances. *"Proceedings of the Bureau of the Census Fifth Annual Research Conference.* (1989.)
8. Komor, P., Kempton, W., and Haberl, J. "Energy Use, Energy Information, and Behavior in Small Commercial Buildings. " PU/CEES Report 240, Center for Energy and Environmental Studies. (Princeton, NJ: Princeton University, 1989.)
9. National Center for Health Statistics. "Replication: An Approach to the Analysis of Data from Complex Surveys." *Vital and Health Statistics.* Public Health Service Publication No. 79-1269, Series 2/No. 14. (Washington, DC, 1966.)
10. National Center for Health Statistics. "Pseudoreplication: Further Evaluation and Application of the Balanced Half-Sample Technique." *Vital and Health Statistics.* Public Health Service Publication No. 73-1270, Series 2/No. 31. (Washington, DC, 1969.)

Appendix

CRECC Coverage Related to EIA Supply Surveys

This university chapel is an assembly building. The activity designation refers to the individual building, not to the larger facility or complex to which the building may belong.



Appendix C

CBECS Coverage Related to EIA Supply Surveys

The primary purpose of the Commercial Buildings Energy Consumption Survey (CBECS) is to collect accurate estimates of energy consumption totals disaggregated by building characteristics. The Energy Information Administration (EIA) also collects data on total energy supply (sales). For this information on sales totals, a different reporting system is used for each fuel and the boundaries between the different sectors (eg., residential, commercial, industrial) are drawn differently for each fuel. A detailed examination of these differences and the differences between the supply and consumption surveys has recently been conducted by the EIA.^[3] EIA's sales data on the different fuels are compiled in individual fuel reports and summarized at the national as well as State level in EIA's *State Energy Data Report* (SEDR).^[2] When comparing the CBECS totals with the national commercial totals from the SEDR, only electricity, natural gas, and fuel oil can be compared directly. CBECS does not collect data on coal consumption, and SEDR does not collect district heating information.

Differences between CBECS totals and sales totals can result from: (a) consumption that is included in the CBECS but not in the sales totals; and conversely, (b) consumption that is included in commercial sales totals but outside of commercial buildings and, therefore, excluded from CBECS totals.

The principal reason that a component of consumption may be in the CBECS totals but not in the sales totals or vice versa, results from differences in how *buildings* are classified for CBECS, versus how *accounts* serving those buildings are classified in the sales reporting systems. Each energy supplier has its own system of classifying accounts. When reporting sales totals to EIA by end-use sector, the supplier uses EIA guidelines as well as the supplier's own account classification to determine whether a particular account belongs to the residential, commercial, industrial, or transportation sector.

For the commercial sector, there are several general differences between the CBECS coverage and the set of accounts classified as commercial in the sales totals that are provided by the supply-side surveys:

1. CBECS covers consumption in buildings only. Accounts classified as commercial sales are not necessarily associated with only buildings, but may also be associated with unenclosed equipment or outdoor lighting.
2. CBECS covers all consumption in buildings whose principal activity is commercial and none in other buildings. Consumption for commercial activity in noncommercial buildings is not included, but consumption for noncommercial activity in commercial buildings is included. Accounts within a building may be classified as commercial or noncommercial sales.
3. The activities included as commercial differ between the CBECS and the supply-side reporting systems. On the supply side, as noted, the definitions also differ among fuels.

Consumption Totals Included in CBECS but Excluded From SEDR Commercial Sales

To help understand the relationship between CBECS consumption totals and EIA's commercial sales totals, the 1989 CBECS Energy Suppliers Survey collected information on the supplier's classification of each of the accounts for the CBECS sample. Analysis of the account classification information indicates the amount of consumption in commercial buildings that is likely to be excluded from commercial sales totals. In most cases, the relationship between the supplier's classification and the EIA end-use sales sector is straightforward.

Accounts classified by the supplier as residential or industrial are ordinarily included in EIA's sales totals for those sectors, not in commercial sales. Accounts classified by the supplier as commercial, school, government, or institutional are ordinarily included in EIA's commercial sales total. Accounts with hybrid or combination classifications, however, are probably included partly in commercial and partly in noncommercial totals.

For electricity, 15 percent of the CBECS consumption estimate was in accounts classified as residential or industrial. Another 10 percent was in accounts with a mixed classification by the supplier. The remaining 75 percent of CBECS electricity consumption was in accounts that would ordinarily be included in EIA's commercial sector sales totals. For natural gas and fuel oil, 82 and 74 percent of CBECS consumption, respectively, should be included in EIA's commercial sector sales totals (Table C1).

Table C1. Commercial Buildings Energy Consumption by Account Classification and Energy Source

| Supplier Account Classification | Corresponding EIA Sales Sector | Commercial Buildings Energy Consumption by Fuel | | | | | |
|---------------------------------|--------------------------------|---|---------|--------------|---------|--------------|---------|
| | | Electricity | | Fuel Oil | | Natural Gas | |
| | | Trillion Btu | Percent | Trillion Btu | Percent | Trillion Btu | Percent |
| All Buildings, All Accounts | | 2,773 | 100.0 | 357 | 100.0 | 2,073 | 100.0 |
| Commercial | | 2,003 | 72.2 | 208 | 58.3 | 1,639 | 79.1 |
| School | Commercial | 36 | 1.3 | 22 | 6.2 | 44 | 2.1 |
| Government (nonschool) | | 37 | 1.3 | 27 | 7.6 | 21 | 1.0 |
| Institutional | | 1 | 0.03 | 6 | 1.7 | NC | NC |
| Commercial/Industrial | Mixed | 251 | 9.1 | 34 | 9.5 | 52 | 2.5 |
| Commercial/Residential | Commercial/ | 13 | 0.5 | 2 | 0.6 | 8 | 0.4 |
| Combination | Noncommercial | 4 | 0.1 | 21 | 5.9 | 52 | 2.5 |
| Other | | 11 | 0.4 | 12 | 3.4 | 8 | 0.4 |
| Residential | Residential | 16 | 0.6 | 6 | 1.7 | 42 | 2.0 |
| Industrial | Industrial | 399 | 14.4 | 20 | 5.6 | 209 | 10.1 |

NC No cases.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey.

Consumption Totals Included in SEDR Commercial Sales but Excluded From CBECS

Differences between CBECS and the sales totals work in both directions. Consumption totals can be included in commercial sales, but outside of commercial buildings, and, therefore, excluded from CBECS. However, by definition of its purpose and coverage, the CBECS has no way of measuring this excluded consumption component directly.

A large portion of the component of commercial sales that is excluded from CBECS is energy consumption by central physical plants providing district heating or cooling to commercial complexes. In most cases, a central heating plant would be in a building identified in CBECS as noncommercial, and, therefore, excluding the energy consumption in that plant from the CBECS total. However, because the plant is part of a commercial facility, the fuel supplied to the plant would probably be included in SEDR's commercial sales totals. The Facility Survey, added to the 1989 CBECS, was designed to quantify this component of energy consumption. Complete results from that Survey are not yet available, but will be published in a separate report.

The data currently available from the Facility Survey do indicate the rough magnitude of energy consumed by central physical plants on commercial facilities. Of the estimated 585 trillion Btu of district heat delivered to commercial buildings in 1989, approximately 476 trillion Btu was supplied by a central physical plant located on the same commercial complex. Assuming a system efficiency of 50 percent, this quantity implies about 952 trillion Btu of fossil fuel consumption by central plants on commercial facilities.

Net Comparison of CBECS and SEDR

Over the 10 years that the CBECS has been conducted, the CBECS buildings consumption totals for electricity, natural gas, and fuel oil have been roughly one quadrillion Btu less than the corresponding SEDR sales totals (Figure C1). The discrepancy has been relatively small for electricity, 7 percent or less. The discrepancies for natural gas and fuel oil have changed in opposite directions, perhaps indicating switching between these two fuels for nonbuilding consumption.

A large proportion of the fuel oil discrepancy is residual fuel oil, which averaged over 30 percent of commercial sales of fuel oil and kerosene according to SEDR. In 1989 (the only year for which a reliable decomposition is available) residual fuel oil was only about 7 percent of the CBECS buildings total fuel oil consumption. As indicated above, a large fraction of the discrepancy for fuel oil and natural gas, might be attributed to primary fuel consumption by central plants on commercial complexes.

In the last two cycles of the CBECS, 1986 and 1989, the gap between the SEDR and CBECS totals for natural gas has widened to over 25 percent. The SEDR-CBECS difference for natural gas can be attributed to several sources:

- Sales to commercial accounts not associated with buildings, including agricultural uses
- Sales to commercial accounts associated with central heating plants for multibuilding facilities
- Direct purchase of natural gas, also known as transportation gas, resulting in an understatement of commercial buildings consumption by the 1986 CBECS. Transportation gas has become increasingly more prevalent in recent years.

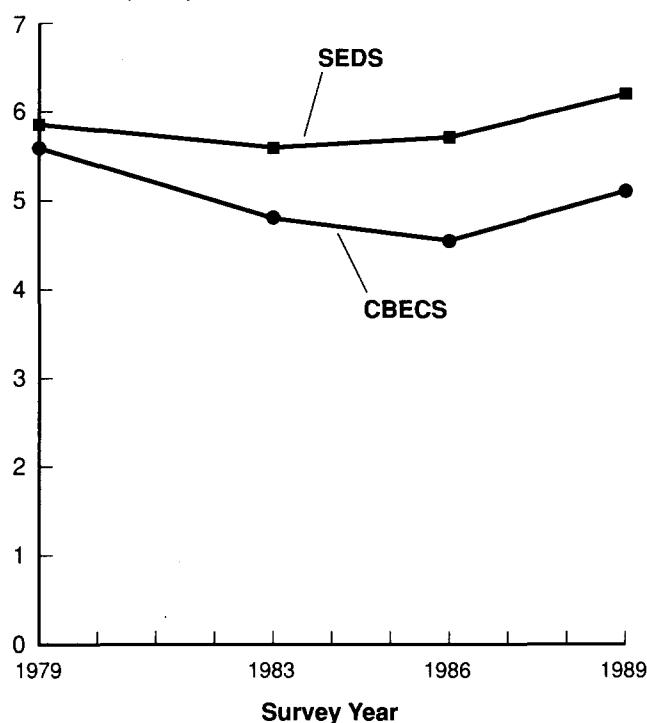
The first two discrepancy sources relate to the classification differences discussed above. These represent differences in the populations intended to be represented by CBECS and by SEDS. The third discrepancy source, natural gas direct purchases, corresponds to a partial failure of CBECS to include all that is intended to include.

During the period 1983 to 1986, when transportation gas was becoming more common, SEDR commercial sales of natural gas showed a decline of 0.1 quadrillion Btu, while the CBECS commercial total showed a decline of 0.5 quadrillion Btu. If this change in the coverage difference between SEDR and CBECS reflects an increase in transportation gas unaccounted for by CBECS, as much as 0.4 quadrillion Btu of the 1986 SEDR-CBECS difference may be attributable to transportation gas.

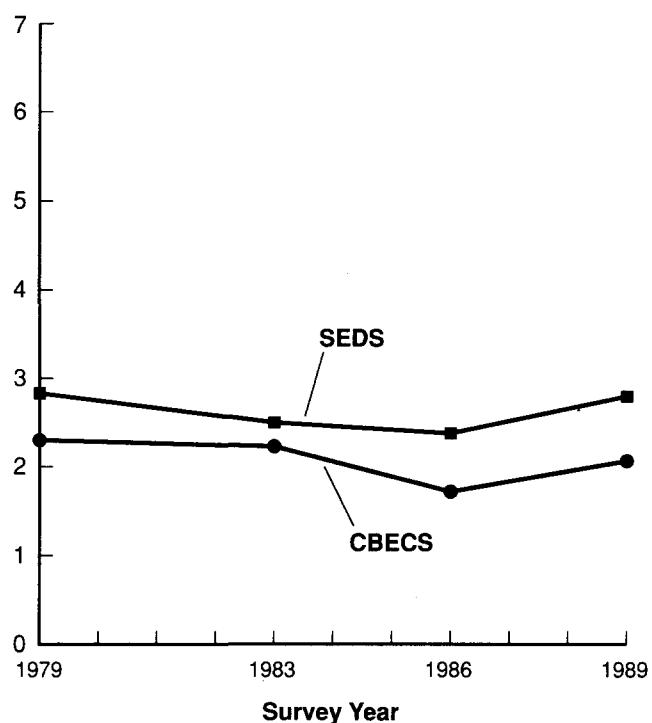
The 1989 CBECS attempted to address the issue of direct purchase of natural gas by explicitly asking natural gas suppliers to report volumes transported to customers, even if that supplier was not the seller. (See Appendix F for a copy of the Natural Gas Form.) Nonetheless, because of the diversity of accounting procedures, it is still possible that substantial quantities of direct-purchase gas supplied to commercial buildings was unaccounted for by the 1989 CBECS. Of the 2.1 quadrillion Btu of natural gas estimated by the 1989 CBECS, 12 percent was transportation gas. By contrast, the American Gas Association estimates 19 percent of commercial sales as transportation gas in 1989.[1] The transportation gas data collection is discussed in more detail in Appendix B, "Nonsampling and Sampling Errors."

**Figure C1. State Energy Data System (SEDS) Versus Commercial Buildings Energy Consumption Survey (CBECS)
(Quadrillion Btu)**

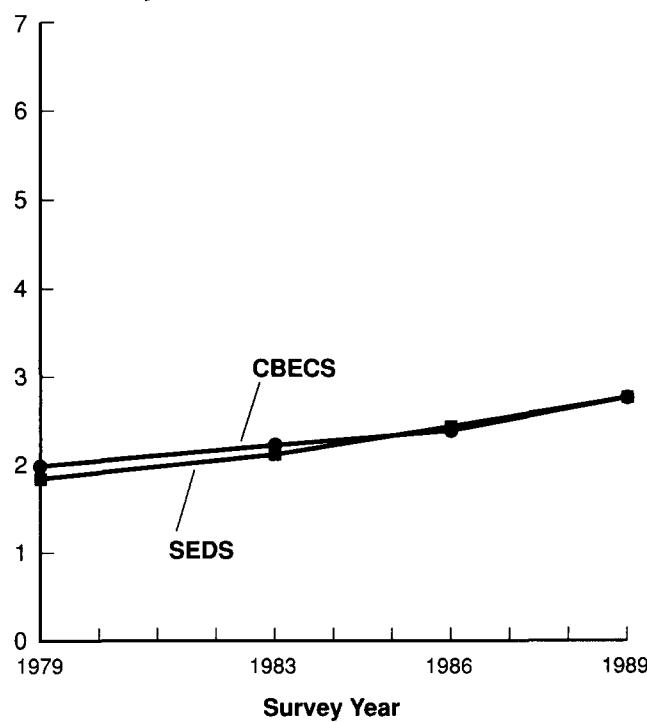
a. Electric, Gas, and Fuel Oil



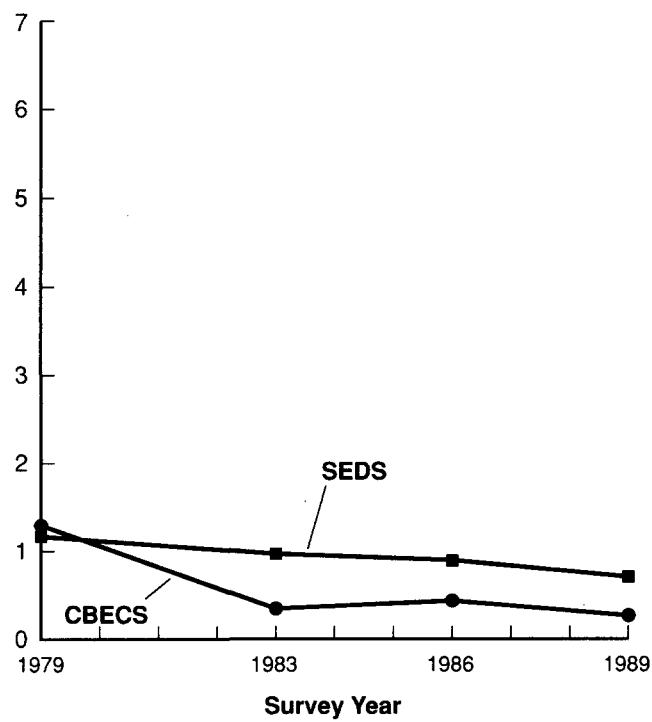
b. Natural Gas



c. Electricity



d. Fuel Oil



■ SEDS ● CBECS

Sources: Energy Information Administration, Office of Energy Markets and End Use, 1979, 1983, 1986, and 1989 Commercial Buildings Energy Consumption Surveys and the *State Energy Data Report: Consumption Estimates 1960-1989*, Table II, page 25.

Another factor that may contribute to the widening gap between the CBECS and sales totals for natural gas is the improved identification of district heating by the CBECS. In earlier surveys, when less attention was paid to distinguishing boilers serving individual buildings from central boilers serving several buildings, natural gas used in a noncommercial (by CBECS definition) central plant could often have been included (incorrectly) in CBECS commercial building consumption estimates. With the improved procedures currently in place, the steam and hot water supplied to commercial buildings would be included in the CBECS total, but the natural gas used in the noncommercial central plant would not. Thus, the increase in the CBECS district heating estimate from 1979 to 1989 may be directly related to the increasing CBECS-SEDS gap in natural gas.

EIA is continuing to explore the relationship among estimates from different sources and to improve data collection procedures to increase consistency among sources. Further analysis of the 1989 CBECS data on transportation gas and data from the Facility Survey should shed more light on the problems discussed above. In addition, revisions to the survey forms for the 1992 CBECS may reduce some of these problems.

References

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3. Energy Information Administration. Office of Energy Markets and End Use. *Energy Consumption by End-Use Sector: A Comparison of Measures by Consumption and Supply Surveys*. DOE/EIA-0533. (Washington, DC, April 1990.)

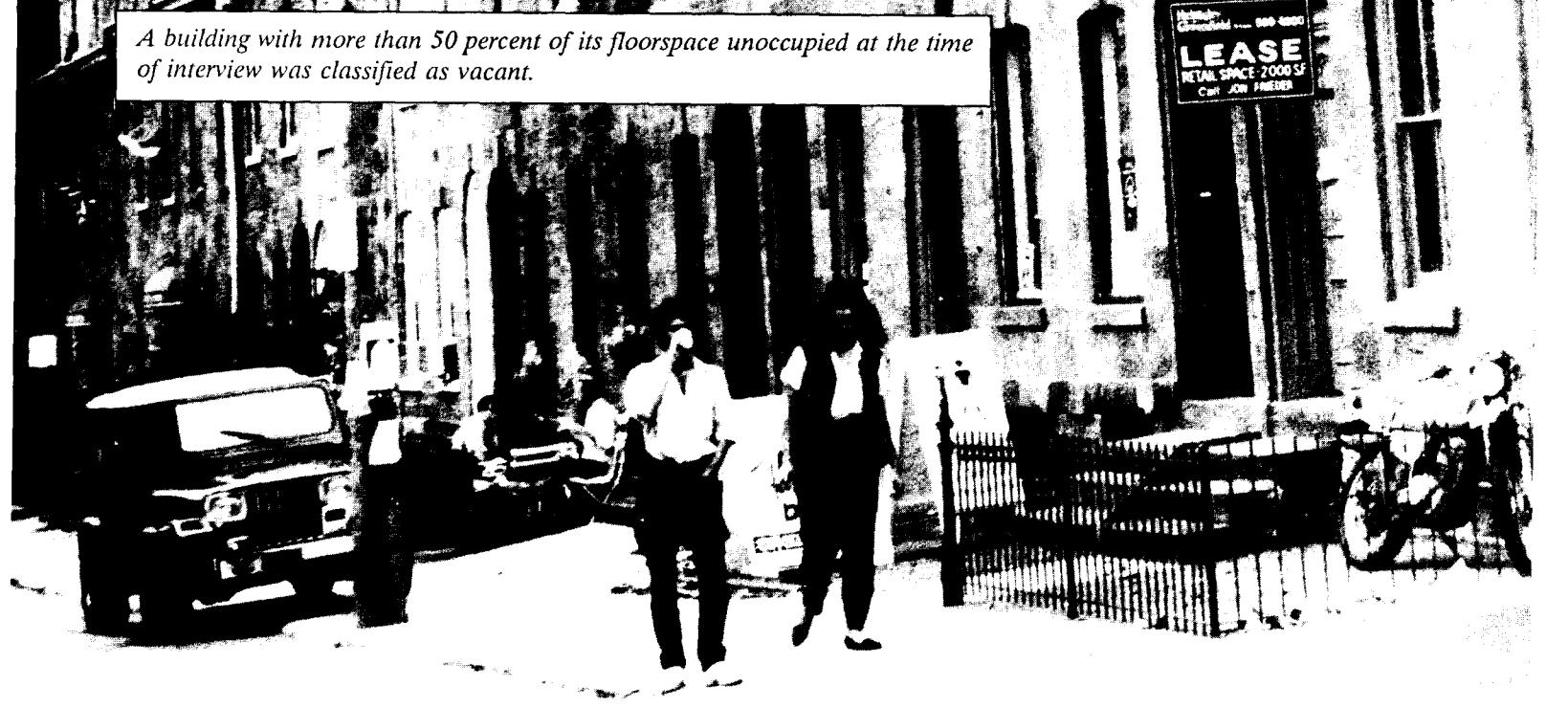


Appendix

Types of Buildings

A building with more than 50 percent of its floorspace unoccupied at the time of interview was classified as vacant.

RENT
LEASE
NET SPACE - 2000 SF
CITY: JON FRIED



Appendix D

Types of Buildings

Buildings were classified according to principal activity, which was the primary business, commerce, or function carried on within each building. Buildings used for more than one of the activities described below were assigned to the activity occupying the most floorspace at the time of the interview. Thus, a building assigned to a particular principal activity category may have housed other activities in a portion of its space or at some time during the year.

Each of the principal activity categories is listed alphabetically and described below. Lists of specific types of buildings included in each category are presented for clarification, but are not intended to be exhaustive.

1. **Agricultural:** See Other.
2. **Assembly:** signifies buildings used for the gathering of people for social, recreational, or religious activities whether in private or nonprivate meeting halls. Included in this category are the following types of buildings:

Entertainment Building:

- Archive/art gallery/exhibit hall/library/museum
- Coliseum/arena (enclosed)
- Concert hall
- Observatory/planetarium
- Nightclub
- Radio/TV station or studio
- Theater/movie house/cinema

Recreational Facility:

- Amusement arcade
- Bowling alley
- Gymnasium/YMCA or YWCA/indoor racket sports, recreation center/athletic facility
- Indoor pool
- Poolroom
- Skating rink (ice skating or roller skating)

Religious Assembly:

- Chapel
- Church
- Mosque
- Synagogue

Social/Public/Civic Assembly:

- Assembly hall
- Auditorium
- Convention hall
- Funeral home
- Lecture hall
- Lodge hall
- Meeting hall
- Student union
- Town hall

Other Enclosed Assembly Building:

Armory
Passenger terminal
Stadium

3. **Education:** refers to buildings that house academic or technical classroom instruction. This category includes the following:

Schools:
Preschool
Elementary
Junior high
Senior high
College or university classrooms/Laboratories
Vocational school

Other activities that occur on school campuses are reported separately:

Administration (see Office)
Auditorium (see Assembly)
Dormitory (see Lodging)
Gymnasium (see Assembly)
Infirmary (see Health Care)
Library (see Assembly)
Museum (see Assembly)
School for the Mentally Retarded (see Health Care)
Stadium (see Assembly)
Student Union (see Assembly)

4. **Food Sales:** involves retail or wholesale of food.

Convenience store or market
Farmer's market, Fruit/Vegetable market
Meat/Seafood store
Retail bakery
Specialty food store
Supermarket/Grocery store

5. **Food Service:** Activities involve preparation and sale of food and beverages for consumption.

Prepared-Meal Services:
Cafeteria

Carryout-Service:
Caterer
Fast-food establishment
Pizza parlor
Sandwich shop

Full-Service Restaurant:
Bar
Bar and grill

Coffee shop
Diner
Full-menu-service establishment

6. Health Care: covers diagnostic and treatment facilities for both inpatient and outpatient care.

Inpatient facilities treat the mentally or physically ill. Buildings for overnight care are in this grouping. This type of building includes the following:

Medical Care Hospital:
Chronic disease
Ear, eye, nose, and throat
General medical and surgical
Maternity
Medical infirmary (connected with an institution)
Orthopedic
Tuberculosis/other respiratory disease

Mental Facility:
Mental retardation/schools for the mentally retarded
Psychiatric

Rehabilitation Facility:
Alcoholism
Substance abuse/narcotics/drug addiction
Physical therapy

Veterinary Facility:
Hospital for animals
Kennel

(Excluded from this group are skilled nursing or other residential care facilities (nursing homes). These buildings are classified as "Lodging" buildings.)

Outpatient care may be medical, dental, or psychiatric. A building housing outpatient veterinary practices also falls into this category. Buildings of this type include:

Dental Clinic

Medical Clinic:
Abortion/birth control
Ear, eye, nose, and throat
Emergency walk-in
General

Mental health/psychiatric clinic

Veterinary clinic

(Inpatient and outpatient buildings are combined in the detailed tables of this report.)

7. Industrial/Manufacturing: See Other.

8. **Laboratory:** activities utilize equipment for experimental testing or for analysis. Included are:

Mechanical/Electrical laboratory
Medical/Dental laboratory
Agricultural laboratory

(Laboratory buildings are included in the "Other" category in the detailed tables of this report.)

9. **Lodging:** refers to buildings that offer multiple accommodations for short-term or long-term residents (including nursing homes). The following types are included:

Short-term residence:
Convention hotel
Hotel
Inn
Motel
Shelter home
Tourist home

Long-term residence:
Boarding house
Convent/monastery
Dormitory/sorority/fraternity
Orphanage

Skilled nursing homes are included in the "Lodging" category in the detailed tables of this report.

10. **Mercantile and Service:** refers to buildings containing sales and displays of goods or services (excluding food). The category includes the following:

Automotive Sales and Service:
Automobile dealers
Gasoline stations
Motor vehicle repair/service

Retail Sales:
Building materials, garden supply, hardware store
Department stores, apparel stores
Drugstores
Furniture, home-furnishings and home-equipment stores
Multiretail establishments

Services (Except Food):
Laundry/dry cleaner/car wash
Multiservice establishment
Personal services
Post office

Shopping mall
Strip shopping center
Wholesale goods (except food)

11. **Nonrefrigerated Warehouse or Storage:** See **Warehouse and Storage**.
12. **Office:** refers to buildings used for general office space, professional offices, and administrative offices. The category includes the following:

Data Processing:

Computer center
Data entry/Keypunch

Financial Office Building:

Bank
Brokerage firm
Insurance
Real estate
Securities

Professional Office Building:

Administration of an institution
Consulting
Corporate
Engineering
Law
Management
Medical
Mixed professional

13. **Other:** covers buildings that do not fit into any of the previously named categories. This category includes the following:

Crematorium
Hangar
Public restrooms/Shower
Telephone exchange

(Also included in the "Other" category are buildings that are 50 percent or more commercial, but whose principal activity is agricultural, industrial/manufacturing, or residential.

Laboratory buildings are also included in the "Other" category in the Detailed Tables section of this report.)

14. **Parking Garage:** refers to buildings used to park cars. Buildings in this category need not be totally enclosed by walls. (In previous surveys, Parking Garages have been classified under Other.)
15. **Public Order and Safety:** describes buildings used in the preservation of law and order or safety. The following are included:

Courthouse
Fire station
Jail/Prison
Penitentiary
Police station
Reformatory
Sheriff's Office

16. **Refrigerated Warehouse or Storage:** See **Warehouse and Storage**.
17. **Residential:** See **Other**.
18. **Skilled Nursing/Other Residential Care** facilities refers to buildings offering 24-hour nursing/medical care. This category includes the following:

Homes for the aged
Nursing homes

Skilled nursing homes are included in the "Lodging" category in the detailed tables of this report.

19. **Warehouse and Storage:** describes buildings used to store goods, manufactured products, merchandise, or raw materials. This category includes the following:

Refrigerated Storage
Nonrefrigerated Warehouse

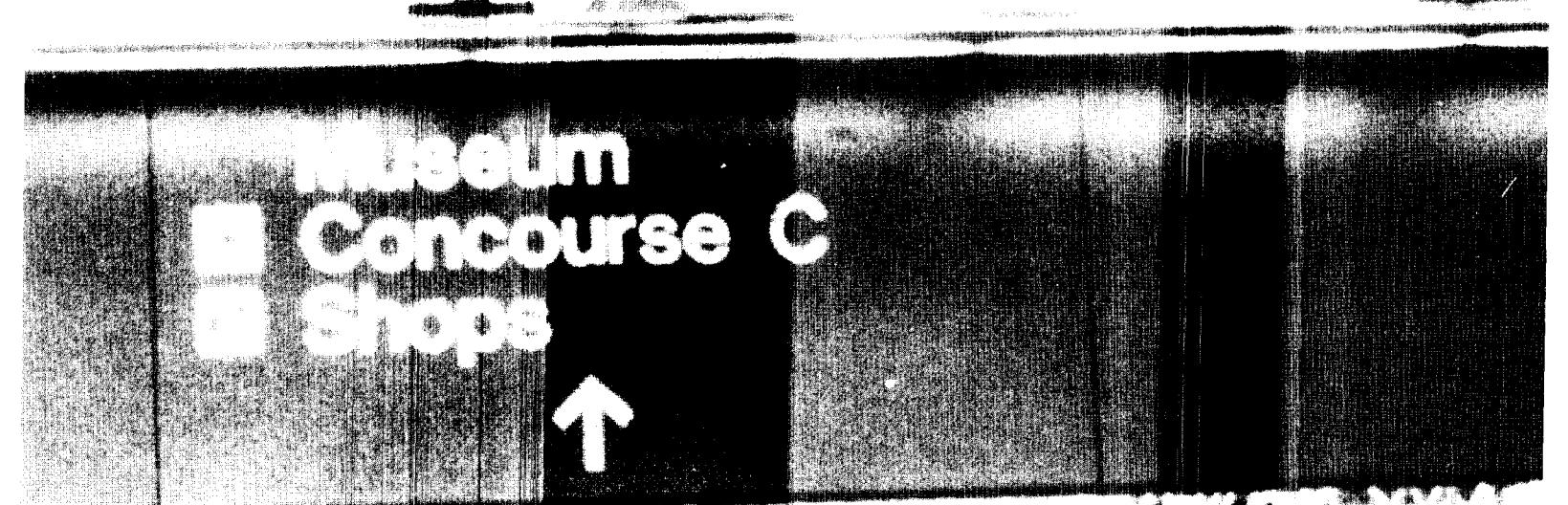
(Refrigerated storage is specifically designed to store perishable goods or merchandise under refrigeration. Includes "cold storage" facilities, which store products at temperatures between 0 °F. and 50 °F and "freezer facilities" which store products at between 0 °F and -20 °F.

Refrigerated and nonrefrigerated warehouses are combined in the detailed tables of this report.)

20. **Vacant:** designates buildings in which more floorspace was vacant than was used for any single activity (as defined above) at the time of interview. A vacant building, thus, may have some occupied floorspace.

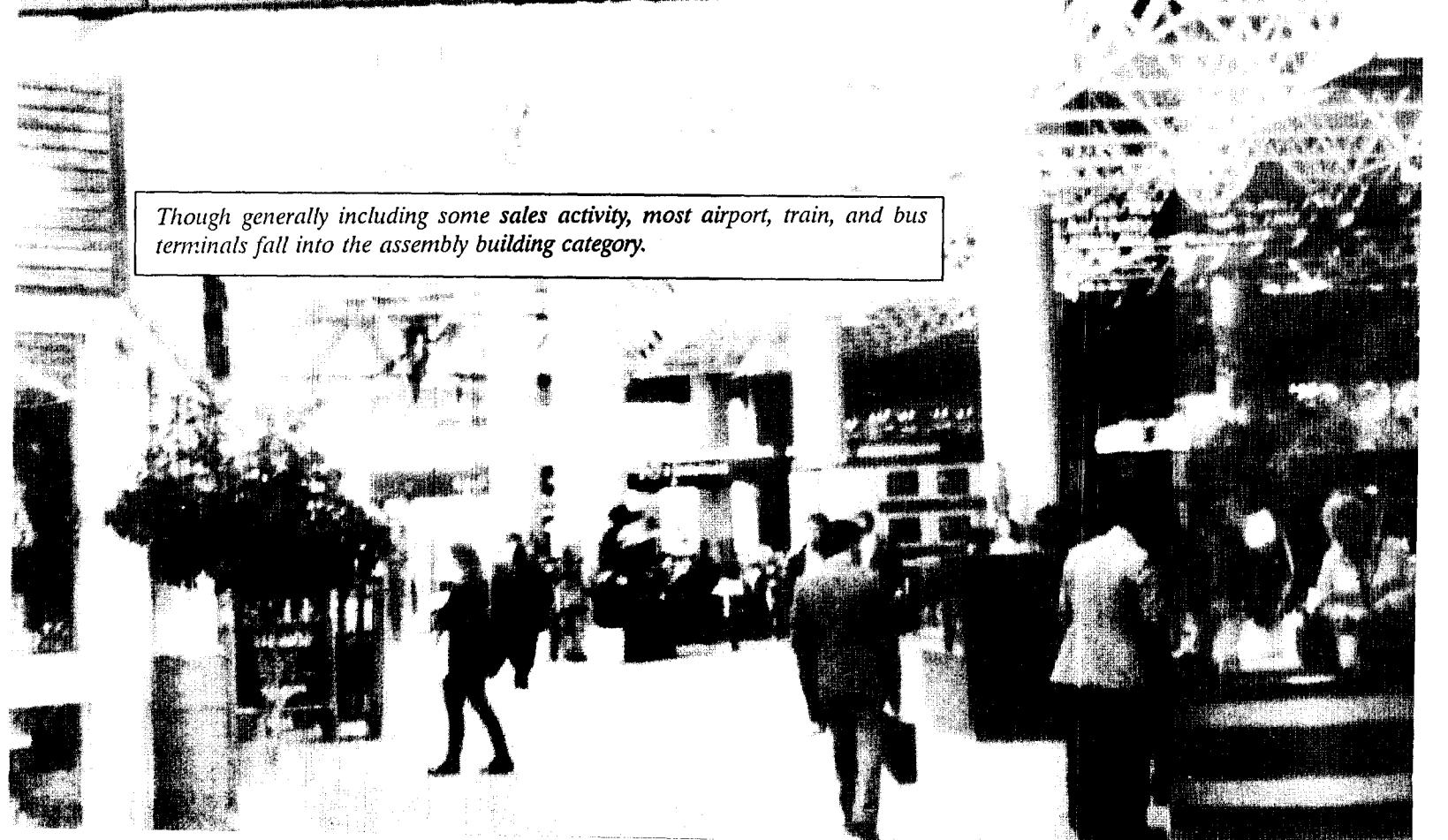


Assembly Regions and Divisions Maps

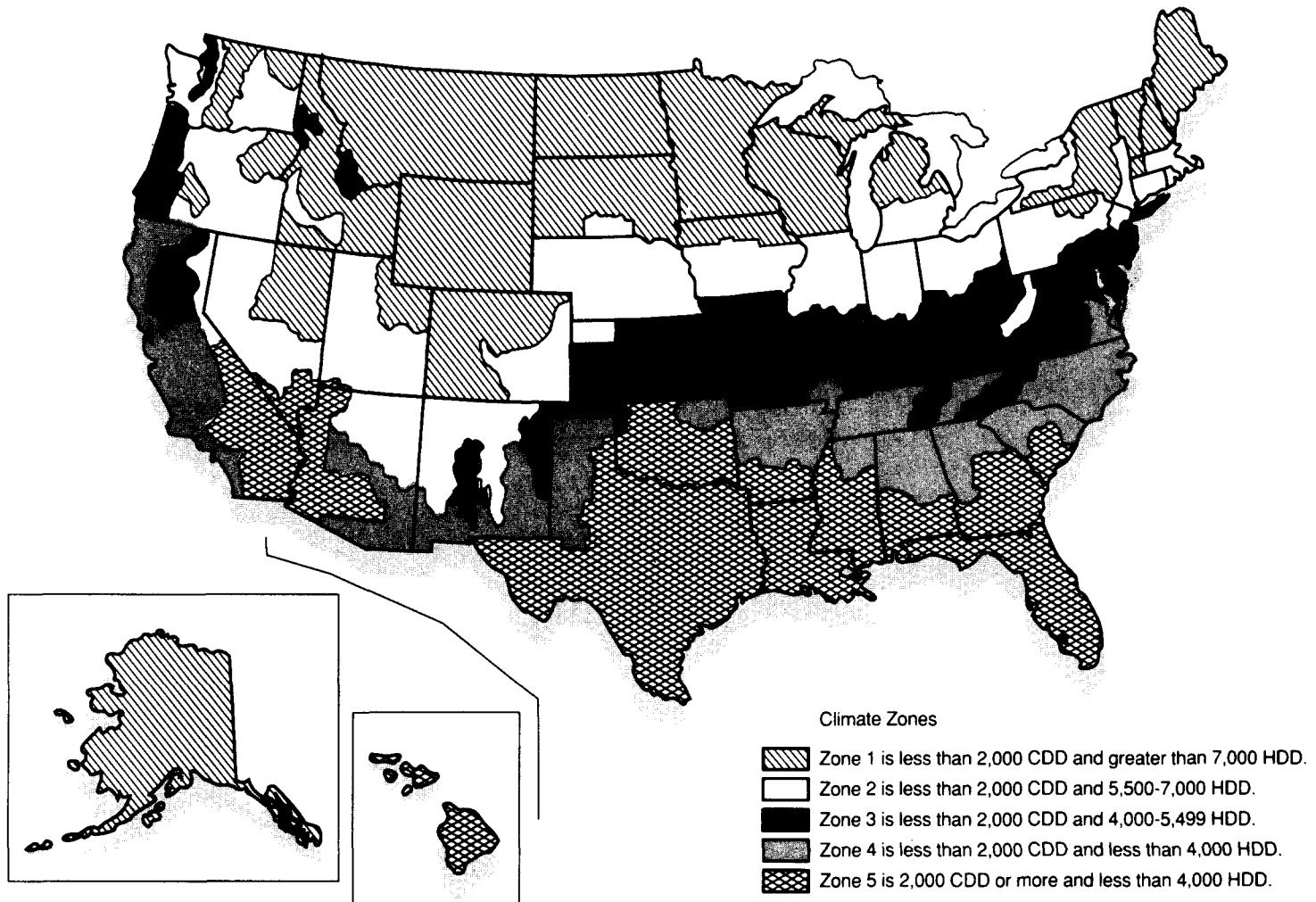


Terminal Concourse C

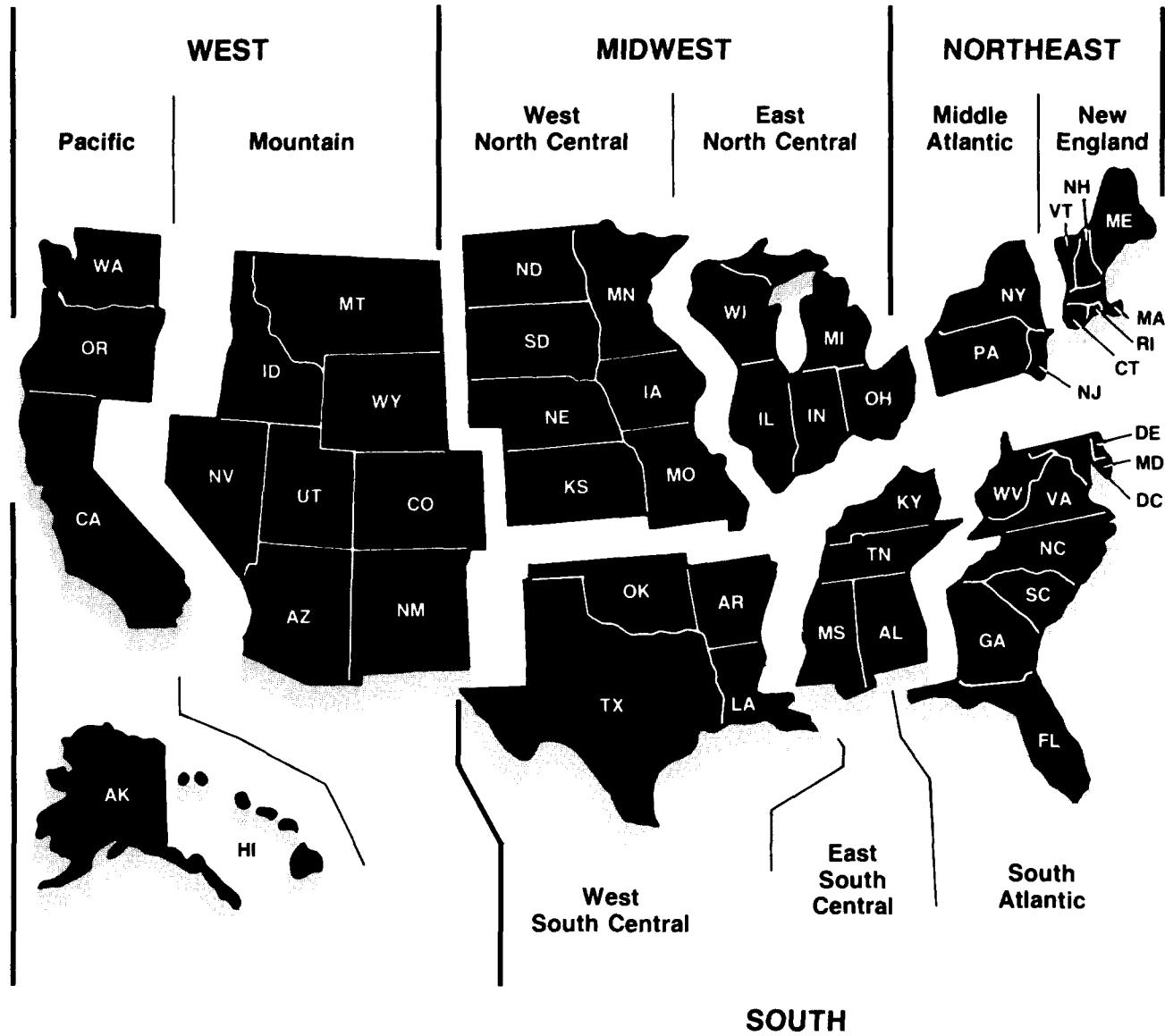
Though generally including some sales activity, most airport, train, and bus terminals fall into the assembly building category.



U.S. Climate Zone Map



U.S. Census Regions and Divisions

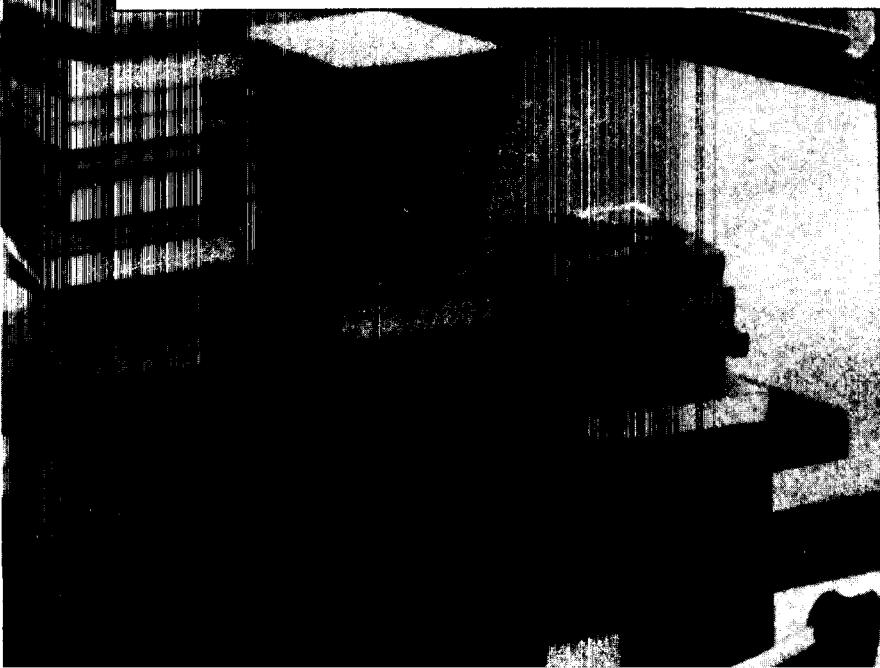


Appendix F

Survey Forms



This bookstore occupies the basement of an owner-occupied building, and has a separate electric meter.



Appendix F

Survey Forms

This appendix contains the following data collection forms used in the 1989 Commercial Buildings Energy Consumption Survey:

- Form EIA-871A--Building Questionnaire (actual form was white)
- Form EIA-871A--Authorization Form (Waiver). This is included as the last two pages of the Building Questionnaire.
- Form EIA-871G--Construction Improvement and Maintenance and Repairs Supplement (collected for the U.S. Bureau of the Census). This is included as Section S of the Building Questionnaire.
- Form EIA-871H--Asbestos in Buildings (collected for the U.S. Environmental Protection Agency). This is included as Section R of the Building Questionnaire.
- Form EIA-871B--Facility Form (actual form was gold)
- Form EIA-871C-1--Building Natural Gas Usage Form (actual form was pink)
- Form EIA-871C-2--Worksheet for Natural Gas Usage (actual form was pink)
- Form EIA-871D--District Heating and Cooling Usage Form (actual form was blue)
- Form EIA-871E-1--Building Electricity Usage Form (actual form was yellow)
- Form EIA-871E-2--Worksheet for Electricity Usage (actual form was yellow)
- Form EIA-871F--Building Fuel Oil Usage Form (actual form was green)

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)



Form Approval
OMB No: 1905-0145
Expires: May 31, 1992

U.S. DEPARTMENT OF ENERGY

COMMERCIAL BUILDINGS ENERGY CONSUMPTION SURVEY FOR 1989 BUILDING QUESTIONNAIRE

| | | |
|-----------------------------------|-------------|-----------|
| ID: _____ | | |
| BUILDING NAME: _____ | | |
| ADDRESS: _____ STREET | | |
| CITY _____ | STATE _____ | ZIP _____ |
| COMMENTS: _____ _____ _____ | | |

INITIAL CONTACT TO DETERMINE RESPONDENT

I'm _____ from Westat, Inc., a social science research firm. We are conducting a study for the U.S. Department of Energy about energy consumption in nonresidential buildings. May I speak with the building manager or a person knowledgeable about the types of energy coming into the building? May I have that person's name, title and address at which he or she might be located?

NAME: _____

TITLE: _____

LOCATION: _____ PHONE (_____) _____

INTRODUCTION TO INTERVIEW

Hello, I'm _____ from Westat, Inc., a social science research firm. We are conducting a study for the U.S. Department of Energy about energy consumption in nonresidential buildings (HAND LETTER). Although your response is voluntary, we hope you will participate in this important study of energy use.

IF ASKED ABOUT CONFIDENTIALITY, READ:

Any information we collect that would permit identification of respondents or their buildings will be confidential and used only for statistical purposes. Data that can be identified with individual respondents will not be disclosed or released to anyone, including the Department of Energy, for any other purpose, except as required by law.

INTERVIEWER NAME: _____ ID NO. _____

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

TIME BEGAN: _____

A. BUILDING IDENTIFICATION QUESTIONS

BOX 1

IF BUILDING IS A SHOPPING CENTER/MALL, CHECK BOX AND SKIP TO A-7 ON PAGE 4.

First, I need to make sure we have correctly described the building we want you to answer questions about. The original records indicate the building as (ADDRESS OR DESCRIPTION FROM LABEL OR LISTING).

- A-1. INTERVIEWER OBSERVATION: DOES THE ADDRESS OR DESCRIPTION FROM LABEL OR LISTING REPRESENT AN ENTIRELY FREESTANDING STRUCTURE OR IS THERE ANOTHER STRUCTURE ATTACHED TO OR ABUTTING IT?

STRUCTURE IS FREESTANDING 1 (A-2)
STRUCTURE ATTACHED TO OTHER 2 (A-5)

SAMPLED STRUCTURE IS FREE STANDING

- A-2. Is the entire structure owned by the same person or organization?

YES 1 (A-3)
NO 2 (A-4)

- A-3. Is this structure subdivided into separate parts by walls extending from ground to roof without pass-through?

YES 1 (A-4)
NO 2 → GO TO BOX 3
AND CHECK A.

- A-4. What are the addresses of the (separate/separately owned) parts of this structure? IF PARTS OF STRUCTURE DO NOT HAVE ADDRESSES, OBTAIN DISTINGUISHING DESCRIPTIONS.

- (1) _____
(2) _____
(3) _____
(4) _____



GO TO BOX 3
AND CHECK B.

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

SAMPLED STRUCTURE IS ATTACHED TO ANOTHER

- A-5. What are the addresses of the different parts of this structure attached to (COMPLETE ADDRESS OR DESCRIPTION FROM LABEL OR LISTING)?

- A-6. Are there walls extending from ground to roof without pass-through between (ADDRESS OR DESCRIPTION FROM LABEL OR LISTING) and (ADDRESS OR DESCRIPTION OF ATTACHED PART)?

| | <u>YES</u> | <u>NO</u> |
|-----------|------------|-----------|
| (1) _____ | 1 | 2 |
| (2) _____ | 1 | 2 |
| (3) _____ | 1 | 2 |
| (4) _____ | 1 | 2 |

BOX 2

SEE A-6. ARE ALL ANSWERS "YES"?

- ALL "YES" 1 GO TO BOX 3
AND CHECK A.
- NOT ALL "YES" 2 GO TO BOX 3
AND CHECK C.

BOX 3

LISTING IS:

- A. CORRECT. STRUCTURE ON LABEL OR LISTING IS ONE BUILDING. CONDUCT ONE INTERVIEW. GO TO A-7.
- B. INCORRECT. STRUCTURE ON LABEL OR LISTING IS MORE THAN ONE BUILDING. BE SURE TO CROSS OFF ANY ADDRESSES YOU ADDED WHICH ARE ALREADY LISTED. CONDUCT A SEPARATE INTERVIEW FOR EACH BUILDING (EACH PART SEPARATELY OWNED OR SEPARATED BY WALLS) RECORDED AT A-4. GO TO A-7.
- C. INCORRECT. STRUCTURE ON LABEL OR LISTING IS PART OF A LARGER BUILDING. CONDUCT ONE INTERVIEW, INVOLVING ALL PARTS OF THE BUILDING THAT ARE NOT SEPARATED FROM THE LISTED STRUCTURE BY WALLS WITHOUT PASS-THROUGH. GO TO A-7.

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

- A-7. The questions I will be asking refer to the building at (COMPLETE BUILDING ADDRESS). Does this building, as we have described it, have any other addresses associated with it?

RECORD VERIFIED STREET ADDRESS: _____

RECORD ADDITIONAL STREET ADDRESS(ES):

- A-8. What is the name of this building?

VERIFIED NAME: _____ (BOX 4)

OR

BUILDING HAS NO NAME (A-9)

BOX 4

VERIFIED BUILDING NAME IS: (CHECK ONE)

- NAME OF BUILDING OR ONLY ESTABLISHMENT IN BUILDING
- NAME OF MAJOR ESTABLISHMENT IN BUILDING
- NAME OF ESTABLISHMENT BUT NOT MAJOR

- A-9. What is the building's ZIP Code?

ZIP Code _____

BOX 5

IF AREA SAMPLE: CHECK TO SEE IF THE BUILDING'S ZIP MATCHES ZIP ON THE LABEL (CHECK ONE BOX)

- BUILDING ZIP MATCHES LABEL: CONTINUE WITH INTERVIEW.
- BUILDING ZIP DOES NOT MATCH LABEL: VERIFY THAT YOU ARE AT THE CORRECT ADDRESS AND WITHIN THE SEGMENT BOUNDARIES. IF YOU ARE, CONTINUE WITH INTERVIEW. IF NOT, DISCONTINUE AND CALL SUPERVISOR.

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

B. PRINCIPAL BUILDING ACTIVITIES

- B-1. What is the gross or total square feet of all the space, both finished and unfinished, enclosed within the exterior walls of this building including: basements, indoor parking facilities, hallways, lobbies, stairways and elevator shafts?

TOTAL SQUARE FEET

IF 1,000 OR LESS, GO TO B-8; ON PAGE 8,
OTHERWISE, RECORD ON FOLD-OUT
AND GO TO B-3.

DON'T KNOW 9-8 (B-2)

- B-2. Here is a card that has categories of total square feet. HAND CARD 1. Which category in your estimation best describes the total square feet in this building including all the areas just mentioned? CIRCLE CODE BELOW AND ENTER B-2 RANGE ON FOLD-OUT PAGE.

HAND
CARD
1

| | | |
|--|----|-------|
| 1,000 SQUARE FEET OR LESS | 01 | (B-8) |
| 1,001 TO 5,000 SQUARE FEET | 02 | |
| 5,001 TO 10,000 SQUARE FEET | 03 | |
| 10,001 TO 25,000 SQUARE FEET | 04 | |
| 25,001 TO 50,000 SQUARE FEET | 05 | |
| 50,001 TO 100,000 SQUARE FEET | 06 | |
| 100,001 TO 200,000 SQUARE FEET | 07 | |
| 200,001 TO 500,000 SQUARE FEET | 08 | |
| 500,001 TO 1 MILLION SQUARE FEET | 09 | |
| OVER 1 MILLION SQUARE FEET | 10 | |
| DON'T KNOW | 98 | |

Commercial Buildings Energy Consumption Survey for 1989

Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

- B-3. INTERVIEWER:
CODE BEST DESCRIPTION BASED ON YOUR OBSERVATION.

The purpose of the next few questions is to find out about the kinds of activities that occur within this building. By activity we mean what the building is used for. For example, space in a building may be used for (YOUR OBSERVATION).

- B-4. Here is a card that shows how building activities are categorized for this study. HAND CARD 2. Considering all of the (B-1/B-2 SQUARE FEET) square feet in this building, would you estimate that 75 percent or more of this space (is used for/is) (YOUR OBSERVATION)?



| <u>ACTIVITY</u> | <u>CIRCLE ONE</u> | <u>YES</u> | <u>NO</u> |
|--|-------------------|---------------|-----------|
| a. VACANT | 01 | 1 (B-7a) | 2 (B-5) |
| b. OFFICE/PROFESSIONAL | 02 | 1 (C-1) | 2 (B-5) |
| c. SHOPPING CENTER/MALL/RETAIL/SERVICE | 03 | 1 (C-1) | 2 (B-5) |
| d. PUBLIC ASSEMBLY | 04 | 1 (C-1) | 2 (B-5) |
| e. FOOD SALES | 05 | 1 (C-1) | 2 (B-5) |
| f. PUBLIC ORDER AND SAFETY | 06 | 1 (C-1) | 2 (B-5) |
| g. OUTPATIENT HEALTH SERVICES/CLINIC | 07 | 1 (C-1) | 2 (B-5) |
| h. INDUSTRIAL PROCESSING AND MANUFACTURING | 08 | 1 (GO TO B-8) | 2 (B-5) |
| i. AGRICULTURAL PURPOSES | 09 | 1 (GO TO B-8) | 2 (B-5) |
| j. LABORATORY | 10 | 1 (C-1) | 2 (B-5) |
| k. REFRIGERATED WAREHOUSE OR STORAGE | 11 | 1 (C-1) | 2 (B-5) |
| l. NONREFRIGERATED WAREHOUSE OR STORAGE | 12 | 1 (C-1) | 2 (B-5) |
| m. EDUCATION | 13 | 1 (B-7m) | 2 (B-5) |
| n. FOOD SERVICES | 14 | 1 (B-7n) | 2 (B-5) |
| o. HOSPITAL/INPATIENT HEALTH SERVICES | 15 | 1 (B-7o) | 2 (B-5) |
| p. SKILLED NURSING/OTHER RESIDENTIAL CARE (NURSING HOME) | 16 | 1 (B-7p) | 2 (B-5) |
| q. HOTEL/MOTEL/DORM, ETC. | 17 | 1 (B-7q) | 2 (B-5) |
| r. RESIDENTIAL (LIVING QUARTERS WITH KITCHEN FACILITIES) | 18 | 1 (GO TO B-8) | 2 (B-5) |
| s. INDOOR ENCLOSED PARKING GARAGE | 19 | 1 (C-1) | 2 (B-5) |
| t. OTHER (SPECIFY): | 20 | 1 (C-1) | 2 (B-5) |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

- B-5. Please tell me which activities occupy space in this building.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|-------|---|---|-------|---|--|-------|---|--|-------|---|--|-------|---|--|-------|---|--|-------|---|--|-------|---|------------------------------|-------|---|-------------------------------|-------|---|--|-------|---|--|-------|---|--|-------|---|---|-------|---|---|-------|---|---|-------|---|---|-------|---|---|-------|---|-------------------------------|-------|---|--|-------|---|--|
| CIRCLE ALL ACTIVITIES MENTIONED | B-6. Of the (B-1/B-2 SQUARE FEET) square feet in this building, approximately what percentage of space does this activity occupy? | ASK ALL APPROPRIATE B-7 QUESTIONS BEFORE C-1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">a. 01</td> <td style="width: 10%;">%</td> <td style="width: 10%; text-align: right;">→</td> </tr> <tr><td>b. 02</td><td>%</td><td></td></tr> <tr><td>c. 03</td><td>%</td><td></td></tr> <tr><td>d. 04</td><td>%</td><td></td></tr> <tr><td>e. 05</td><td>%</td><td></td></tr> <tr><td>f. 06</td><td>%</td><td></td></tr> <tr><td>g. 07</td><td>%</td><td></td></tr> <tr> <td>h. 08</td><td>%</td><td style="text-align: right;">IF 50% OR MORE, GO TO B-8</td> </tr> <tr> <td>i. 09</td><td>%</td><td style="text-align: right;">IF 50% OR MORE, GO TO B-8.</td> </tr> <tr> <td>j. 10</td><td>%</td><td></td> </tr> <tr> <td>k. 11</td><td>%</td><td></td> </tr> <tr> <td>l. 12</td><td>%</td><td></td> </tr> <tr> <td>m. 13</td><td>%</td><td style="text-align: right;">→</td> </tr> <tr> <td>n. 14</td><td>%</td><td style="text-align: right;">→</td> </tr> <tr> <td>o. 15</td><td>%</td><td style="text-align: right;">→</td> </tr> <tr> <td>p. 16</td><td>%</td><td style="text-align: right;">→</td> </tr> <tr> <td>q. 17</td><td>%</td><td style="text-align: right;">→</td> </tr> <tr> <td>r. 18</td><td>%</td><td style="text-align: right;">IF 50% OR MORE, GO TO B-8.</td> </tr> <tr> <td>s. 19</td><td>%</td><td></td> </tr> <tr> <td>t. 20</td><td>%</td><td></td> </tr> </table> | | | a. 01 | % | → | b. 02 | % | | c. 03 | % | | d. 04 | % | | e. 05 | % | | f. 06 | % | | g. 07 | % | | h. 08 | % | IF 50% OR MORE, GO TO B-8 | i. 09 | % | IF 50% OR MORE, GO TO B-8. | j. 10 | % | | k. 11 | % | | l. 12 | % | | m. 13 | % | → | n. 14 | % | → | o. 15 | % | → | p. 16 | % | → | q. 17 | % | → | r. 18 | % | IF 50% OR MORE, GO TO B-8. | s. 19 | % | | t. 20 | % | |
| a. 01 | % | → | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b. 02 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| c. 03 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| d. 04 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| e. 05 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| f. 06 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| g. 07 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| h. 08 | % | IF 50% OR MORE, GO TO B-8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| i. 09 | % | IF 50% OR MORE, GO TO B-8. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| j. 10 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| k. 11 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| l. 12 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| m. 13 | % | → | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| n. 14 | % | → | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| o. 15 | % | → | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| p. 16 | % | → | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| q. 17 | % | → | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| r. 18 | % | IF 50% OR MORE, GO TO B-8. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| s. 19 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| t. 20 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL SHOULD EQUAL 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

BEGIN AT B-8 ONLY IF:

- 50% OR MORE OF THE FLOOR SPACE IN THE BUILDING IS AGRICULTURAL, INDUSTRIAL, OR RESIDENTIAL
OR
- BUILDING HAS 1,000 SQUARE FEET OR LESS

B-8. Is the building part of a multibuilding facility or complex? By a multibuilding facility or complex, we mean a group of two or more buildings on the same site owned or operated by a single organization, business or individual.

YES 1 (BOX 6)
NO 2 (B-14)

BOX 6

B-9 THROUGH B-13 SHOULD ONLY BE ASKED OF THE FIRST SAMPLED BUILDING AT THE FACILITY. IF THE ANSWERS TO THESE QUESTIONS (OR J-2 THROUGH J-6) ARE RECORDED IN ANOTHER QUESTIONNAIRE, ENTER THE ID NUMBER FOR THAT BUILDING AND GO TO B-14.

ID OF Q'NAIRE WITH FACILITY INFORMATION

B-9. What is the full name of the facility?

FACILITY

B-10. Does this facility have a central physical plant that produces district heating, district cooling, or electricity?

YES 1
NO 2 (B-14)

B-11. Is the central physical plant for this facility located in the building we have been talking about?

YES 1 (B-13)
NO 2
DON'T KNOW 8 (B-13)

B-12. What is the full name and address of the building containing the central physical plant?

BUILDING NAME

BUILDING STREET ADDRESS

CITY, STATE, ZIP

B-13. What is the name and phone number of a contact person for this central physical plant?

CONTACT NAME

CONTACT PHONE NUMBER

TERMINATE:

B-14. This completes the interview. Thank you very much for your time and help. TIME END: _____

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

C. ENERGY SOURCES AND END USES

- C-1. Here is a list of various types of fuels or energy sources. Which of these fuels or energy sources were used in this building during the past 12 months? HAND CARD 3.

| | | |
|-------------------|--|--|
| HAND CARD 3 | ELECTRICITY | DISTRICT HOT WATER PIPED INTO THE BUILDING FROM A CENTRAL PLANT OR UTILITY |
| | NATURAL GAS | DISTRICT CHILLED WATER PIPED INTO THE BUILDING FROM A CENTRAL PLANT OR UTILITY |
| | FUEL OIL, DIESEL OR KEROSENE | WOOD |
| | BOTTLED GAS, LPG OR PROPANE | COAL |
| | DISTRICT STEAM PIPED INTO THE BUILDING FROM A CENTRAL PLANT OR UTILITY | ACTIVE SOLAR WITH COLLECTOR PANELS |

FOR EACH ENERGY SOURCE USED, PLACE A CHECK (/) IN COLUMN C-1
ON THE FOLD-OUT PAGE

- C-2. In addition to (NAMES OF ENERGY SOURCES), were there any other energy sources used in this building during the past 12 months?

YES 1 RECORD ON FOLD-OUT PAGE
NO 2 (C-3)

- C-3. Which of the energy sources you just mentioned were used in the past 12 months:

RECORD ON
FOLD-OUT PAGE

- a. As the main fuel for heating this building?
b. As the secondary or backup fuel for heating this building?
c. For cooling this building?
d. For heating water, other than for heating this building?
e. For commercial or institutional cooking?
f. For manufacturing or any other type of industrial activity?
g. For electricity generation

(CHECK ONLY ONE)

(CHECK ALL THAT APPLY)

- C-4. SCAN ACROSS THE ROWS ON THE FOLD-OUT PAGE. DOES EACH REPORTED ENERGY SOURCE, OTHER THAN ELECTRICITY, HAVE AT LEAST ONE END-USE REPORTED?

YES
 NO: How was (ENERGY SOURCE) used in the building during the past 12 months?

- C-5. SCAN EACH COLUMN ON THE FOLD-OUT PAGE. HAS AT LEAST ONE BOX BEEN CHECKED IN EACH COLUMN?

YES
 NO: What energy source was used for (END-USE) during the past 12 months?

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

D. HEATING AND COOLING SYSTEMS

BOX 7

IF "NOT PERFORMED" IS CHECKED IN COLUMN C-3a ON THE FOLD-OUT PAGE, GO TO BOX 8 ON PAGE 12.

- D-1. During the heating season in the past 12 months, what percentage of the (B-1/B-2 SQUARE FEET) square feet in the building was heated to at least 50° Fahrenheit? Be sure to include basements and enclosed garages if they are heated to at least 50 degrees.

PERCENTAGE

| | | |
|--|-----|---------|
| [RECONFIRM C-3a] BUILDING NOT HEATED | 000 | (BOX 8) |
| DON'T KNOW | 998 | |

- D-2. Do most of the people who work in the building, other than maintenance personnel, have any control over the amount of heat in the building?

| | |
|------------------|---------|
| YES | 1 |
| NO | 2 (D-4) |
| DON'T KNOW | 8 (D-4) |

- D-3. Can most of the people who work in the building set the temperature in their areas by using a thermostat?

| | |
|------------------|---|
| YES | 1 |
| NO | 2 |
| DON'T KNOW | 8 |

- D-4. Is there usually a reduction in the heat produced by the system during the hours the building is not in full use?

(That is, in the evening, on weekends and holidays, during the off-season and so forth?)

| | |
|----------------------------------|---|
| YES | 1 |
| NO | 2 |
| BUILDING ALWAYS IN FULL USE | 7 |
| DON'T KNOW | 8 |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

- D-5. Here is a card showing different types of equipment that may be part of the building's heating system. HAND CARD 4. During the past 12 months, did this building use any:

HAND
CARD
4

| <u>HEATING EQUIPMENT</u> | <u>YES</u> | <u>NO</u> | <u>DK</u> |
|---|------------|-----------|-----------|
| a. Boilers inside the building that produce steam or hot water? <i>(Also include boilers just outside of the building that are primarily associated with it.)</i> | 1 | 2 | 8 |
| b. Furnaces that heat air directly, without using steam or hot water? <i>(Similar to a residential furnace)</i> | 1 | 2 | 8 |
| c. Individual space heaters, free standing or mounted in wall, ceiling, or window? <i>(This would include portable heaters, hanging unit heaters, heating panels, electric baseboards, wood stoves, and fireplaces.)</i> | 1 | 2 | 8 |
| d. Packaged heating units, usually mounted on the roof or on a slab beside the building? <i>(These are self-contained units, usually serving more than one room, which contain both heating equipment and fans.)</i> | 1 | 2 | 8 |
| e. Heat pump for heating? | 1 | 2 | 8 |
| f. Air ducts or air handling units? | 1 | 2 | 8 |
| g. Heating or reheating coils in the air ducts or air handling units? | 1 | 2 | 8 |
| h. Circulating hot water with fans? <i>(That is, fan-coil units.)</i> | 1 | 2 | 8 |
| i. Steam or hot water baseboards or radiators? | 1 | 2 | 8 |
| j. Any other equipment for heating? <i>(SPECIFY) _____</i> _____ _____ | 1 | 2 | 8 |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

BOX 8

IF "NOT PERFORMED" IS CHECKED IN COLUMN C-3c ON THE FOLD-OUT PAGE, GO TO D-13 ON PAGE 14.

- D-6. During the cooling season in the past 12 months, what percentage of the (B-1/B-2 SQUARE FEET) square feet in the building was cooled by air-conditioning equipment?

PERCENTAGE

[RECONFIRM C-3c] BUILDING NOT COOLED 000 (D-13)
DON'T KNOW 998

- D-7. Do most of the people who work in the building, other than maintenance personnel, have any control over the amount of cooling in the building?

YES 1
NO 2 (D-9)
DON'T KNOW 8 (D-9)

- D-8. Can most of the people who work in the building set the temperature in their areas by using a thermostat?

YES 1
NO 2
DON'T KNOW 8

- D-9. Is there usually a reduction in the cooling produced by the system during the hours the building is not in full use?

(That is, in the evening, on weekends and holidays, during the off-season and so forth?)

YES 1
NO 2
BUILDING ALWAYS IN FULL USE 7
DON'T KNOW 8

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

- D-10. Here is a card showing different types of equipment that may be part of the building's cooling system.
HAND CARD 5. During the past 12 months, did this building use any:

**HAND
CARD
5**

| <u>COOLING EQUIPMENT</u> | <u>YES</u> | <u>NO</u> | <u>DK</u> |
|--|------------|-----------|-----------|
| a. Central chillers inside the building that chill water for air conditioning? <i>(Also include chillers just outside of the building that are primarily associated with it.)</i> | 1 | 2 | 8 |
| b. Individual room air conditioners mounted in a window or wall? | 1 | 2 | 8 |
| c. Packaged air conditioning units, usually mounted on the roof or on a slab beside the building? <i>(These are self-contained units, usually serving more than one room, which contain both cooling equipment and fans.)</i> | 1 | 2 | 8 |
| d. Heat pump for cooling? | 1 | 2 | 8 |
| e. Air ducts or air handling units? | 1 | 2 | 8 |
| f. Circulating chilled water with fans? <i>(That is, fan-coil units.)</i> | 1 | 2 | 8 |
| g. Any other equipment for cooling? <i>(SPECIFY) _____</i> _____ _____ | 1 | 2 | 8 |

BOX 9

**IF NO CENTRAL CHILLER (D-10a = "NO"), GO TO BOX 10
ON PAGE 14.**

- D-11. HAND CARD 6. When was the building's main central chiller installed?

**HAND
CARD
6**

| | |
|----------------------|---|
| 1959 OR BEFORE | 1 |
| 1960 - 1969 | 2 |
| 1970 - 1979 | 3 |
| 1980 - 1986 | 4 |
| 1987 - 1989 | 5 |
| DONT KNOW | 8 |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

BOX 10

IF NO PACKAGED AIR CONDITIONING
(D-10c = "NO"), GO TO D-13

D-12. HAND CARD 6. When was the building's main packaged air conditioning system installed?



| | |
|----------------------|---|
| 1959 OR BEFORE | 1 |
| 1960 - 1969 | 2 |
| 1970 - 1979 | 3 |
| 1980 - 1986 | 4 |
| 1987 - 1989 | 5 |
| DON'T KNOW | 8 |

D-13. Are any of the following types of equipment present in this building:

| | <u>YES</u> | <u>NO</u> | <u>DK</u> |
|--|------------|-----------|-----------|
| a. Commercial refrigeration units for the sale or storage of perishable materials, such as food or medical supplies? | 1 | 2 | 8 |
| b. Commercial freezers for the sale or storage of perishable materials, such as food or medical supplies? | 1 | 2 | 8 |
| c. Residential-type refrigerators? | 1 | 2 | 8 |
| d. Residential-type freezers? | 1 | 2 | 8 |
| e. Ice-making machines? | 1 | 2 | 8 |
| f. Soda or any other refrigerated vending machines? | 1 | 2 | 8 |
| g. Water coolers? | 1 | 2 | 8 |
| h. Any other refrigeration equipment, excluding air conditioning? | 1 | 2 | 8 |

(SPECIFY) _____

Commercial Buildings Energy Consumption Survey for 1989

Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

E. BUILDING OWNERSHIP AND OCCUPANCY CHARACTERISTICS

- E-1. The next few questions are about the ownership and occupancy of the building. Is the building owned by a government agency?

| | |
|------------------|---------|
| YES | 1 |
| NO | 2 (E-3) |
| DON'T KNOW | 8 (E-3) |

- E-2. Is the building owned by a Federal, State, or local government agency? CIRCLE ONLY ONE.

| | |
|---------------------------------|---|
| FEDERAL GOVERNMENT AGENCY | 1 |
| STATE GOVERNMENT AGENCY | 2 |
| LOCAL GOVERNMENT AGENCY | 3 |

- E-3. Here is a card that lists different ways establishments or organizations can occupy a building. By "occupy", we mean to hold or lease space on a full-time basis. HAND CARD 7. Please tell me which category best applies to this building. RECORD HERE AND ON FOLD-OUT PAGE.



| | |
|---|---------|
| ONE OCCUPANT: THE OWNER OR OWNER'S REPRESENTATIVE | 1 (E-6) |
| ONE OCCUPANT: NOT THE OWNER OR OWNER'S REPRESENTATIVE | 2 (E-6) |
| MORE THAN ONE OCCUPANT, INCLUDING THE OWNER OR OWNER'S REPRESENTATIVE | 3 |
| MORE THAN ONE OCCUPANT, BUT NOT THE OWNER OR OWNER'S REPRESENTATIVE | 4 |
| CURRENTLY UNOCCUPIED | 5 (E-6) |

- E-4. (Including the owner or owner's representative), how many establishments or organizations currently occupy the building?

_____ (E-6)
NUMBER OF OCCUPANTS

DON'T KNOW 9-8

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

- E-5. HAND CARD 8. Which category on this card best describes the number of establishments or organizations currently occupying the building?

**HAND
CARD
8**

| | |
|-------------------|---|
| 2 - 5 | 1 |
| 6 - 10 | 2 |
| 11 - 20 | 3 |
| 21 - 49 | 4 |
| 50 - 99 | 5 |
| 100 or more | 6 |
| DON'T KNOW | 8 |

- E-6. Was any space in the building vacant or unoccupied for at least 3 consecutive months during the past 12 months?

| | |
|------------------|---------|
| YES | 1 |
| NO | 2 (E-8) |
| DON'T KNOW | 8 (E-8) |

- E-7. Approximately what percentage of the square feet was vacant or unoccupied during that time?

PERCENTAGE VACANT

DON'T KNOW

998

- E-8. How many months out of the past 12 months was this building in use?

NUMBER OF MONTHS

NOT IN USE DURING PAST

| | |
|------------------|----------|
| 12 MONTHS | 00 (F-1) |
| DON'T KNOW | 98 |

- E-9. During the months when the building was in use, what were the usual operating hours on:

| DAY(S) | TIME | OPEN 24 HOURS | NOT OPEN | OR → | HOURS VARY |
|---------------------------|--------------------|--------------------------|--------------------------|---------------|---------------|
| a. Monday through Friday? | ____ AM to ____ PM | <input type="checkbox"/> | <input type="checkbox"/> | GO TO E-11 | □ E-10 |
| b. Saturday? | ____ AM to ____ PM | <input type="checkbox"/> | <input type="checkbox"/> | | |
| c. Sunday? | ____ AM to ____ PM | <input type="checkbox"/> | <input type="checkbox"/> | | |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

- E-10. HAND CARD 9. Which category on the card best describes the number of operating hours per week for most of the building when it was in use?



| | |
|------------------------|---|
| 0 HOURS | 0 |
| 1-39 HOURS | 1 |
| 40-48 HOURS | 2 |
| 49-60 HOURS | 3 |
| 61-84 HOURS | 4 |
| 85-167 HOURS | 5 |
| OPEN CONTINUOUSLY..... | 7 |
| DON'T KNOW | 8 |

- E-11. During the months the building was in use, how many people worked in the building during its main shift? Do not include employees who worked out of the building such as drivers with delivery routes, customers, patients, or students. Do include volunteer workers.

(F-1)

NUMBER OF PEOPLE

DON'T KNOW 9-8

- E-12. HAND CARD 10. Which category on this card best describes the number of people who worked in the building during its main shift in the months it was in use?



| | |
|---------------------|----|
| 0 | 00 |
| 1-4 | 01 |
| 5-9 | 02 |
| 10-19 | 03 |
| 20-49 | 04 |
| 50-99 | 05 |
| 100-249 | 06 |
| 250-499 | 07 |
| 500-999 | 08 |
| 1,000-2,499 | 09 |
| 2,500-4,999 | 10 |
| 5,000 or more | 11 |
| DON'T KNOW | 98 |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

F. BUILDING ENVELOPE CHARACTERISTICS

F-1. Now I would like to ask you some questions about the construction of the building.

When was the construction of the major or largest portion of the (B-1/B-2 SQUARE FEET) square feet completed?

YEAR

IF COMPLETED IN 1989, ASK F-2;
IF COMPLETED BEFORE 1989,
GO TO F-4

DON'T KNOW 9-8 (F-3)

F-2. In what month of 1989 was the building first open for occupancy?

MONTH

(F-4)

DON'T KNOW 98 (F-4)

F-3. Here is a card with categories of years. HAND CARD 11. In your estimation, which category contains the year the largest portion of the building was completed?

HAND
CARD
11

| | | | |
|----------------------|----|-------------------|----|
| 1899 or before | 01 | 1970 - 1979 | 06 |
| 1900 - 1919 | 02 | 1980 - 1983 | 07 |
| 1920 - 1945 | 03 | 1984 - 1986 | 08 |
| 1946 - 1959 | 04 | 1987 - 1989 | 09 |
| 1960 - 1969 | 05 | DON'T KNOW | 98 |

F-4. How many floors are in the tallest section of the building? Please include basements, floors that may be used as a parking garage, or any other floors below ground level.

OF FLOORS

DON'T KNOW 998

Commercial Buildings Energy Consumption Survey for 1989

Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

- F-5. Here is a card that shows different types of construction materials. HAND CARD 12. Which best describes the major type of exterior wall construction material used on this building? CIRCLE ONLY ONE.



| | |
|--|----|
| WINDOW OR VISION GLASS (GLASS THAT CAN BE SEEN THROUGH) | 01 |
| DECORATIVE OR CONSTRUCTION GLASS | 02 |
| CONCRETE PANELS | 03 |
| BRICK, STONE, STUCCO, OR OTHER MASONRY | 04 |
| WOOD, PLASTIC OR METAL SIDING, SHINGLES OR SHAKES | 05 |
| PRE-ENGINEERED METAL OR LIGHT-WEIGHT METAL PANELS | 06 |
| OTHER (SPECIFY) _____ | 07 |
| DON'T KNOW | 98 |

- F-6. Here is a card with different types of roofing materials. HAND CARD 13. Which best describes the building's major type of exterior roof surface? CIRCLE ONLY ONE.



| | |
|---|----|
| WOOD SHINGLES, SHAKES OR OTHER WOODEN MATERIALS | 01 |
| SLATE OR TILE SHINGLES | 02 |
| ASPHALT, FIBERGLASS, OR OTHER SHINGLES | 03 |
| BUILT-UP (TAR, FELTS OR FIBERGLASS AND A BALLAST, SUCH AS STONE) | 04 |
| METAL SURFACING | 05 |
| PLASTIC, RUBBER, OR SYNTHETIC SHEETING (SINGLE OR MULTIPLE PLY) | 06 |
| CONCRETE | 07 |
| OTHER (SPECIFY) _____ | 08 |
| DON'T KNOW | 98 |

Commercial Buildings Energy Consumption Survey for 1989

Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

G. THE LIGHTING SYSTEM

The next set of questions pertains to the lighting system used in this building during the past 12 months.

G-1. What percentage of the (B-1/B-2 SQUARE FEET) square feet of the interior of this building was lit...

a. During usual operating hours?

| | |
|-------------------------------|-----|
| | % |
| NOT IN USE DURING PAST | |
| 12 MONTHS | 997 |
| DONT KNOW | 998 |

b. During off-hours? Do not include the space lit by emergency lighting.

| | |
|---------------------------|-----|
| | % |
| NO OFF-HOURS | |
| 997 | |
| DONT KNOW | 998 |

IF ANY PERCENTAGE OF THE BUILDING WAS LIT DURING
THE PAST 12 MONTHS, CONTINUE WITH G-2; OTHERWISE
SKIP TO SECTION H.

| G-2. During the past 12 months, was any of the square footage in this building lit by: <u>LIGHTING TYPE</u> | COLUMN A | COLUMN B |
|--|--------------------------------|---|
| | <u>YES</u> <u>NO</u> <u>DK</u> | IF "YES" IN COLUMN A: What percentage of the electrically lighted <u>interior</u> space in the building is lit by (<u>LIGHTING TYPE</u>): |
| a. Incandescent bulbs? | 1 2 8 | _____ % |
| b. Fluorescent lights? | 1 2 8 | _____ % |
| c. High-Intensity Discharge lights such as mercury vapor, metal halide or high pressure sodium? | 1 2 8 | _____ % |
| d. Some other lighting equipment? | 1 2 8 (SPECIFY) _____ | _____ % |
| | | TOTAL MUST BE AT LEAST 100% |

Commercial Buildings Energy Consumption Survey for 1989

Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

H. ENERGY CONSERVATION FEATURES OR PRACTICES

| COLUMN A | COLUMN B | COLUMN C | | | | |
|--|--|----------|-----------|-------|---|----------------|
| | IF "YES" IN COLUMN A ASK: (Was/Were) the (FEATURE) installed during building construction or added afterwards? | | | | IF "ADDED" IN COLUMN B ASK: When was the (FEATURE) added? Was it in 1989, between 1984 and 1988, or before 1984? | |
| | | DK | INSTALLED | ADDED | 1984- 1988 | BEFORE 1984 |
| | | | | | 1989 | DK |
| a. Roof or ceiling insulation? | | | | | 1 | 2 |
| YES | 1 | —————> | 8 | 1 | 2 | 3 |
| NO | 2 | | | | 8 | |
| DON'T KNOW | 8 | | | | | |
| b. Insulation in exterior walls? | | | | | 1 | 2 |
| YES | 1 | —————> | 8 | 1 | 2 | 3 |
| NO | 2 | | | | 8 | |
| DON'T KNOW | 8 | | | | | |
| c. Storm windows, storm doors or double- or triple-paned glass? | | | | | 1 | 2 |
| YES | 1 | —————> | 8 | 1 | 2 | 3 |
| NO | 2 | | | | 8 | |
| DON'T KNOW | 8 | | | | | |
| d. Tinted or reflective glass or shading films? | | | | | 1 | 2 |
| YES | 1 | —————> | 8 | 1 | 2 | 3 |
| NO | 2 | | | | 8 | |
| DON'T KNOW | 8 | | | | | |
| e. Exterior or interior shadings or awnings? | | | | | 1 | 2 |
| YES | 1 | —————> | 8 | 1 | 2 | 3 |
| NO | 2 | | | | 8 | |
| DON'T KNOW | 8 | | | | | |
| f. Weather stripping or caulking? | | | | | 1 | 2 |
| YES | 1 | —————> | 8 | 1 | 2 | 3 |
| NO | 2 | | | | 8 | |
| DON'T KNOW | 8 | | | | | |
| g. High-efficiency ballasts for lighting? | | | | | 1 | 2 |
| YES | 1 | —————> | 8 | 1 | 2 | 3 |
| NO | 2 | | | | 8 | |
| DON'T KNOW | 8 | | | | | |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

- H-2. As of July 1, 1989, did the building have a computerized energy management and control system (EMCS)?

| | |
|------------------|---------|
| YES | 1 |
| NO | 2 (H-4) |
| DON'T KNOW | 8 (H-4) |

- H-3. As of July 1, 1989, did the EMCS control:

| | <u>YES</u> | <u>NO</u> | <u>DK</u> |
|--------------------------------------|------------|-----------|-----------|
| a. Lighting? | 1 | 2 | 8 |
| b. Heating and cooling (HVAC)? | 1 | 2 | 8 |
| c. Anything else? | 1 | 2 | 8 |
| SPECIFY _____ | | | |
| _____ | | | |

- H-4. As of July 1, 1989, was there a regularly scheduled maintenance and repair program for the heating and cooling system in the building?

| | |
|------------------|---|
| YES | 1 |
| NO | 2 |
| DON'T KNOW | 8 |

- H-5. As of July 1, 1989, did the building have any environmentally controlled space for computers; that is, a computer area with a separate air conditioning system?

| | |
|------------------|---|
| YES | 1 |
| NO | 2 |
| DON'T KNOW | 8 |

- H-6. As of July 1, 1989, had the building ever participated in a utility sponsored conservation program to improve the efficiency of the lighting system, the efficiency of any equipment, or the thermal efficiency of the building's shell?

| | |
|------------------|---|
| YES | 1 |
| NO | 2 |
| DON'T KNOW | 8 |

Commercial Buildings Energy Consumption Survey for 1989

Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

I. COGENERATION

- I-1. Is there equipment in the building that can generate electricity for any purpose other than emergency or backup power?

| | |
|------------------|---------|
| YES | 1 |
| NO | 2 (J-1) |
| DON'T KNOW | 8 (J-1) |

- I-2. Does the building have a cogeneration system? That is, does it have equipment that produces both electricity and usable heat?

| | |
|------------------|---------|
| YES | 1 |
| NO | 2 (I-6) |
| DON'T KNOW | 8 (I-6) |

- I-3. During the past 12 months, how many kilowatthours of electricity were cogenerated in the building?

KILOWATTHOURS

| | |
|--|-----|
| ELECTRICITY NOT GENERATED IN PAST 12 MONTHS | 0-0 |
| DON'T KNOW | 9-8 |

- I-4. What was the total nameplate capacity of all cogeneration units that were in place in the building on December 31, 1988?

KILOWATTS

| | |
|------------------|-----|
| DON'T KNOW | 9-8 |
|------------------|-----|

- I-5. As of December 31, 1988, was the building's cogeneration system electrically interconnected with an electric utility? That is, was it able to deliver electricity to the grid as well as receive electricity?

| | |
|------------------|---|
| YES | 1 |
| NO | 2 |
| DON'T KNOW | 8 |

- I-6. Is the building currently designated as a Qualifying Facility under the Public Utilities Regulatory Policies Act of 1978, or PURPA?

| | |
|------------------|---|
| YES | 1 |
| NO | 2 |
| DON'T KNOW | 8 |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

J. CENTRAL PHYSICAL PLANT/FACILITIES

- J-1. Is the building part of a multibuilding facility or complex? By a multibuilding facility or complex, we mean a group of two or more buildings on the same site owned or operated by a single organization, business or individual.

YES 1 (BOX 11)
NO 2 (BOX 12)

BOX 11

J-2 THROUGH J-6 SHOULD ONLY BE ASKED OF THE FIRST SAMPLED BUILDING AT THE FACILITY. IF THE ANSWERS TO THESE QUESTIONS (OR B-9 THROUGH B-13) ARE RECORDED IN ANOTHER QUESTIONNAIRE, ENTER THE ID NUMBER FOR THAT BUILDING AND GO TO BOX 12.

ID OF Q'NAIRE WITH FACILITY INFORMATION

- J-2. What is the full name of the facility?

FACILITY

- J-3. Does this facility have a central physical plant that produces district heating, district cooling, or electricity?

YES 1
NO 2 (BOX 12)

- J-4. Is the central physical plant for this facility located in the building we have been talking about?

YES 1 (J-6)
NO 2
DON'T KNOW 8 (J-6)

Commercial Buildings Energy Consumption Survey for 1989

Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

- J-5. What is the full name and address of the building containing the central plant?

BUILDING NAME

BUILDING STREET ADDRESS

CITY, STATE, ZIP

- J-6. What is the name and phone number of a contact person for this plant?

CONTACT NAME

CONTACT PHONE NUMBER

BOX 12

SCAN C-1 COLUMN ON THE FOLD-OUT PAGE. DOES THIS BUILDING HAVE
AT LEAST ONE SHADED ENERGY SOURCE CHECKED?

YES (J-7)

NO (SKIP TO Q-2 ON PAGE 38)

- J-7. The next few questions are about the companies or organizations that supplied the building with energy during the past 12 months. An energy supplier may be a utility or private dealer, or it may be a central physical plant or distribution center.

Commercial Buildings Energy Consumption Survey for 1989

Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

K. ELECTRICITY PAGE

NO ELECTRICITY USED IN BUILDING. GO TO NATURAL GAS PAGE.

K-1. What is the name and address of the electric utility or central physical plant that supplied electricity to the building during the past 12 months?

Has any other supplier provided electricity to the building in the past 12 months? ASK K-1 UNTIL THE RESPONDENT ANSWERS "NO" AND CHECK THE "NO OTHER SUPPLIERS" BOX.

IF ONE OCCUPANT OR VACANT, GO TO K-5.

MULTIPLE OCCUPANTS

K-2. Is the electricity bill or statement from (SUPPLIER) for the entire building or do any of the tenants or establishments have separate statements?

K-3. How many separate bills or statements are there? PROBE IF ANSWER IS "DON'T KNOW": Could you give an estimate or the approximate number of separate bills or statements?

K-4. Please tell me the name of each company, organization or agency that received a bill or statement from (SUPPLIER) for electricity during the past 12 months.

IF LIST IS NOT PROVIDED, COMPLETE
A "SUPPLIER CUSTOMER SHEET."

ONE OCCUPANT OR VACANT

K-5. Does the bill or statement from (SUPPLIER) cover just this building or does it cover other buildings as well?

K-6. What is the approximate square footage of the other buildings that are included on this bill or statement?

BOX K

ASK ABOUT NEXT ELECTRICITY SUPPLIER. IF NO ADDITIONAL SUPPLIERS, GO TO NATURAL GAS PAGE.

**Commercial Buildings Energy Consumption Survey for 1989
Building Questionnaire, Form EIA-871A**

Form EIA-871A (06/89)

K. ELECTRICITY PAGE

| SUPPLIER NO. 1 | | SUPPLIER NO. 2 | | SUPPLIER NO. 3 | |
|--|---|---|---|---|---|
| K-1. NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ | NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ | NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ | <input type="checkbox"/> NO OTHER SUPPLIERS | <input type="checkbox"/> NO OTHER SUPPLIERS | <input type="checkbox"/> NO OTHER SUPPLIERS |
| K-2. ONE BILL/STATEMENT 1 (K-5) SEPARATE STATEMENTS 2 (K-3) | ONE BILL/STATEMENT 1 (K-5) SEPARATE STATEMENTS 2 (K-3) | ONE BILL/STATEMENT 1 (K-5) SEPARATE STATEMENTS 2 (K-3) | | | |
| K-3. NUMBER OF BILLS/STATEMENTS | NUMBER OF BILLS/STATEMENTS | NUMBER OF BILLS/STATEMENTS | | | |
| K-4. LIST PROVIDED 1 NOT PROVIDED 2 | LIST PROVIDED 1 NOT PROVIDED 2 | LIST PROVIDED 1 NOT PROVIDED 2 | | | |
| GO TO BOX K | GO TO BOX K | GO TO BOX K | | | |

| | | |
|--|---|---|
| K-5. JUST THIS BUILDING 1 (BOX K) OTHER BUILDING(S) 2 (K-6) DON'T KNOW 8 (BOX K) | JUST THIS BUILDING 1 (BOX K) OTHER BUILDING(S) 2 (K-6) DON'T KNOW 8 (BOX K) | JUST THIS BUILDING 1 (BOX K) OTHER BUILDING(S) 2 (K-6) DON'T KNOW 8 (BOX K) |
| K-6. SQUARE FOOTAGE DON'T KNOW 8 | SQUARE FOOTAGE DON'T KNOW 8 | SQUARE FOOTAGE DON'T KNOW 8 |

Commercial Buildings Energy Consumption Survey for 1989

Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

L. NATURAL GAS PAGE

NO NATURAL GAS USED IN BUILDING. GO TO FUEL OIL/DIESEL/KEROSENE PAGE.

- L-1. What is the name and address of the company that supplied natural gas to this building during the past 12 months?

Has any other company supplied natural gas to the building in the past 12 months? ASK L-1 UNTIL THE RESPONDENT ANSWERS "NO" AND CHECK THE "NO OTHER SUPPLIERS" BOX.

IF ONE OCCUPANT OR VACANT, GO TO L-5.

MULTIPLE OCCUPANTS

- L-2. Is the natural gas bill from (SUPPLIER) for the entire building or do any of the tenants or establishments have separate bills?

- L-3. How many separate bills are there? PROBE IF ANSWER IS "DONT KNOW": Could you give an estimate or the approximate number of separate bills?

- L-4. Please tell me the name of each company, organization or agency that received a bill from (SUPPLIER) for natural gas during the past 12 months.

IF LIST IS NOT PROVIDED, COMPLETE
A "SUPPLIER CUSTOMER SHEET."

ONE OCCUPANT OR VACANT

- L-5. Does the bill from (SUPPLIER) cover just this building or does it cover other buildings as well?

- L-6. What is the approximate square footage of the other buildings that are included on this bill?

BOX L

ASK ABOUT NEXT NATURAL GAS SUPPLIER. IF NO ADDITIONAL SUPPLIERS, GO TO FUEL OIL/DIESEL/KEROSENE PAGE.

Commercial Buildings Energy Consumption Survey for 1989

Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

L. NATURAL GAS PAGE

| SUPPLIER NO. 1 | SUPPLIER NO. 2 | SUPPLIER NO. 3 |
|--|---|---|
| L-1. NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ | NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ | NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ |
| <input type="checkbox"/> NO OTHER SUPPLIERS | <input type="checkbox"/> NO OTHER SUPPLIERS | <input type="checkbox"/> NO OTHER SUPPLIERS |
| L-2. ONE BILL/STATEMENT 1 (L-5) SEPARATE STATEMENTS 2 (L-3) | ONE BILL/STATEMENT 1 (L-5) SEPARATE STATEMENTS 2 (L-3) | ONE BILL/STATEMENT 1 (L-5) SEPARATE STATEMENTS 2 (L-3) |
| L-3. NUMBER OF BILLS/STATEMENTS | NUMBER OF BILLS/STATEMENTS | NUMBER OF BILLS/STATEMENTS |
| L-4. LIST PROVIDED 1 NOT PROVIDED 2 | LIST PROVIDED 1 NOT PROVIDED 2 | LIST PROVIDED 1 NOT PROVIDED 2 |
| GO TO BOX L | GO TO BOX L | GO TO BOX L |

| | | |
|--|---|---|
| L-5. JUST THIS BUILDING 1 (BOX L) OTHER BUILDING(S) 2 (L-6) DON'T KNOW 8 (BOX L) | JUST THIS BUILDING 1 (BOX L) OTHER BUILDING(S) 2 (L-6) DON'T KNOW 8 (BOX L) | JUST THIS BUILDING 1 (BOX L) OTHER BUILDING(S) 2 (L-6) DON'T KNOW 8 (BOX L) |
| L-6. SQUARE FOOTAGE DON'T KNOW 8 | SQUARE FOOTAGE DON'T KNOW 8 | SQUARE FOOTAGE DON'T KNOW 8 |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

M. FUEL OIL/DIESEL/KEROSENE PAGE

NO FUEL OIL/DIESEL/KEROSENE USED IN BUILDING. GO TO STEAM/HOT WATER/CHILLED WATER PAGE.

M-1. What is the name and address of the company that supplied (fuel oil/diesel/kerosene) to this building during the past 12 months?

Has any other company supplied (fuel oil/diesel/kerosene) to the building in the past 12 months? ASK M-1 UNTIL THE RESPONDENT ANSWERS "NO" AND CHECK THE "NO OTHER SUPPLIERS" BOX.

IF ONE OCCUPANT OR VACANT, GO TO M-5.

MULTIPLE OCCUPANTS

M-2. Is the (fuel oil/diesel/kerosene) bill from (SUPPLIER) for the entire building or do any of the tenants or establishments have separate bills?

M-3. How many separate bills are there? PROBE IF ANSWER IS "DON'T KNOW": Could you give an estimate or the approximate number of separate bills?

M-4. Please tell me the name of each company, organization or agency that received a bill from (SUPPLIER) for (fuel oil/diesel/kerosene) during the past 12 months.

IF LIST IS NOT PROVIDED, COMPLETE
A "SUPPLIER CUSTOMER SHEET."

ONE OCCUPANT OR VACANT

M-5. Does the bill from (SUPPLIER) cover just this building or does it cover other buildings as well?

M-6. What is the approximate square footage of the other buildings that are included on this bill?

BOX M

ASK ABOUT NEXT SUPPLIER. IF NO ADDITIONAL SUPPLIERS, GO TO STEAM/HOT WATER/CHILLED WATER PAGE. IF MORE THAN THREE FUEL OIL/DIESEL/KEROSENE SUPPLIERS, GO TO 'ADDITIONAL SUPPLIER PAGE.'

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

M. FUEL OIL/DIESEL/KEROSENE PAGE

| SUPPLIER NO. 1 | SUPPLIER NO. 2 | SUPPLIER NO. 3 |
|--|---|---|
| M-1. NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ | NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ | NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ |
| <input type="checkbox"/> NO OTHER SUPPLIERS | <input type="checkbox"/> NO OTHER SUPPLIERS | <input type="checkbox"/> NO OTHER SUPPLIERS |
| M-2. ONE BILL/STATEMENT 1 (M-5) SEPARATE STATEMENTS 2 (M-3) | ONE BILL/STATEMENT 1 (M-5) SEPARATE STATEMENTS 2 (M-3) | ONE BILL/STATEMENT 1 (M-5) SEPARATE STATEMENTS 2 (M-3) |
| M-3. NUMBER OF BILLS/STATEMENTS | NUMBER OF BILLS/STATEMENTS | NUMBER OF BILLS/STATEMENTS |
| M-4. LIST PROVIDED 1 NOT PROVIDED 2 | LIST PROVIDED 1 NOT PROVIDED 2 | LIST PROVIDED 1 NOT PROVIDED 2 |
| GO TO BOX M | GO TO BOX M | GO TO BOX M |

| | | |
|--|---|---|
| M-5. JUST THIS BUILDING 1 (BOX M) OTHER BUILDING(S) 2 (M-6) DON'T KNOW 8 (BOX M) | JUST THIS BUILDING 1 (BOX M) OTHER BUILDING(S) 2 (M-6) DON'T KNOW 8 (BOX M) | JUST THIS BUILDING 1 (BOX M) OTHER BUILDING(S) 2 (M-6) DON'T KNOW 8 (BOX M) |
| M-6. SQUARE FOOTAGE DON'T KNOW 8 | SQUARE FOOTAGE DON'T KNOW 8 | SQUARE FOOTAGE DON'T KNOW 8 |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

N. STEAM/HOT WATER/CHILLED WATER PAGE

NO STEAM, HOT WATER, OR CHILLED WATER USED IN BUILDING. GO TO SECTION O.

CHECK BOX ABOVE COLUMNS ON NEXT PAGE FOR EACH DISTRICT ENERGY SOURCE USED.

N-1. What is the name and address of the company or organization that supplied (steam/hot water/chilled water) to the building during the past 12 months?

IF CENTRAL PLANT WITH NAME AND ADDRESS RECORDED IN SECTION B OR J:
ENTER "CP" IN COLUMN AND GO TO N-5.

IF NOT CENTRAL PLANT: RECORD NAME AND ADDRESS IN COLUMN.

IF ONE OCCUPANT OR VACANT, GO TO N-5a.

MULTIPLE OCCUPANTS

N-2. Is the bill from (SUPPLIER) for (steam/hot water/chilled water) for the entire building or do any of the tenants have separate bills?

N-3. How many separate bills are there? PROBE IF ANSWER IS "DON'T KNOW": Could you give me an estimate or the approximate number of separate bills?

N-4. Please tell me the name of each company, organization or agency that received a bill from (SUPPLIER) during the past 12 months.

IF LIST IS NOT PROVIDED, COMPLETE A "SUPPLIER CUSTOMER SHEET."

ONE OCCUPANT OR VACANT

IF CENTRAL PLANT:

N-5. Is there a statement indicating how much (steam/hot water/chilled water) the central physical plant pipes into just this building or does the statement cover other buildings as well?

N-6. What is the approximate square footage of the other buildings on the district loop that serves this building?

IF NOT CENTRAL PLANT:

N-5a. Does the bill from (SUPPLIER) cover just this building or does it cover other buildings as well?

N-6a. What is the approximate square footage of the other buildings that are included on this bill?

BOX N

ASK ABOUT NEXT DISTRICT ENERGY SOURCE. IF NO ADDITIONAL DISTRICT SOURCES, GO TO SECTION P.

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

N. STEAM, HOT WATER, OR CHILLED WATER PAGE

| <input type="checkbox"/> STEAM | <input type="checkbox"/> HOT WATER | <input type="checkbox"/> CHILLED WATER | |
|---|---|---|---|
| N-1. | | | |
| NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ | NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ | NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ | |
| N-2. | ONE BILL 1 (N-5a) SEPARATE BILLS 2 (N-3) | ONE BILL 1 (N-5a) SEPARATE BILLS 2 (N-3) | ONE BILL 1 (N-5a) SEPARATE BILLS 2 (N-3) |
| N-3. | NUMBER OF BILLS | NUMBER OF BILLS | NUMBER OF BILLS |
| N-4. | LIST PROVIDED 1 NOT PROVIDED 2 | LIST PROVIDED 1 NOT PROVIDED 2 | LIST PROVIDED 1 NOT PROVIDED 2 |
| | GO TO BOX N | GO TO BOX N | GO TO BOX N |

| | | | |
|-------|---|---|---|
| N-5. | STATEMENT FOR BUILDING ONLY 1 (BOX N) STATEMENT INCLUDES OTHER BUILDING(S) 2 (N-6) NO STATEMENT 7 (BOX N) DON'T KNOW 8 (BOX N) | STATEMENT FOR BUILDING ONLY 1 (BOX N) STATEMENT INCLUDES OTHER BUILDING(S) 2 (N-6) NO STATEMENT 7 (BOX N) DON'T KNOW 8 (BOX N) | STATEMENT FOR BUILDING ONLY 1 (BOX N) STATEMENT INCLUDES OTHER BUILDING(S) 2 (N-6) NO STATEMENT 7 (BOX N) DON'T KNOW 8 (BOX N) |
| N-6. | SQUARE FOOTAGE DON'T KNOW 8 | SQUARE FOOTAGE DON'T KNOW 8 | SQUARE FOOTAGE DON'T KNOW 8 |
| N-5a. | BILL FOR BUILDING ONLY 1 (BOX N) BILL INCLUDES OTHER BUILDING(S) 2 (N-6A) DON'T KNOW 8 (BOX N) | BILL FOR BUILDING ONLY 1 (BOX N) BILL INCLUDES OTHER BUILDING(S) 2 (N-6A) DON'T KNOW 8 (BOX N) | BILL FOR BUILDING ONLY 1 (BOX N) BILL INCLUDES OTHER BUILDING(S) 2 (N-6A) DON'T KNOW 8 (BOX N) |
| N-6a. | SQUARE FOOTAGE DON'T KNOW 8 | SQUARE FOOTAGE DON'T KNOW 8 | SQUARE FOOTAGE DON'T KNOW 8 |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

O. **ADDITIONAL SUPPLIER PAGE** (FOR USE WHEN MORE THAN THREE SUPPLIERS FOR ANY ENERGY SOURCE)

- O-1. Has any other company supplied (ENERGY SOURCE) to the building in the past 12 months? ASK O-1 UNTIL THE RESPONDENT ANSWERS "NO" AND CHECK THE "NO OTHER SUPPLIERS" BOX.

IF ONE OCCUPANT OR VACANT, GO TO O-5.

MULTIPLE OCCUPANTS

- O-2. Is the (ENERGY SOURCE) bill from (SUPPLIER) for the entire building or do any of the tenants or establishments have separate bills?

- O-3. How many separate bills are there? PROBE IF ANSWER IS "DON'T KNOW": Could you give an estimate or the approximate number of separate bills?

- O-4. Please tell me the name of each company, organization or agency that received a bill from (SUPPLIER) for (ENERGY SOURCE) during the past 12 months.

IF LIST IS NOT PROVIDED, COMPLETE
A "SUPPLIER CUSTOMER SHEET."

ONE OCCUPANT OR VACANT

- O-5. Does the bill from (SUPPLIER) cover just this building or does it cover other buildings as well?

- O-6. What is the approximate square footage of the other buildings that are included on this bill?

BOX O

ASK ABOUT NEXT SUPPLIER. IF NO ADDITIONAL SUPPLIERS,
RETURN TO APPROPRIATE ENERGY SOURCE PAGE.

Commercial Buildings Energy Consumption Survey for 1989
Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

O. ADDITIONAL SUPPLIERS

| | | |
|---|---|---|
| ENERGY SOURCE O-1. NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ <input type="checkbox"/> NO OTHER SUPPLIERS | ENERGY SOURCE NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ <input type="checkbox"/> NO OTHER SUPPLIERS | ENERGY SOURCE NAME _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ <input type="checkbox"/> NO OTHER SUPPLIERS |
| O-2. ONE BILL/STATEMENT 1 (O-5) SEPARATE STATEMENTS 2 (O-3) | ONE BILL/STATEMENT 1 (O-5) SEPARATE STATEMENTS 2 (O-3) | ONE BILL/STATEMENT 1 (O-5) SEPARATE STATEMENTS 2 (O-3) |
| O-3. NUMBER OF BILLS/STATEMENTS | NUMBER OF BILLS/STATEMENTS | NUMBER OF BILLS/STATEMENTS |
| O-4. LIST PROVIDED 1 NOT PROVIDED 2 | LIST PROVIDED 1 NOT PROVIDED 2 | LIST PROVIDED 1 NOT PROVIDED 2 |
| GO TO BOX O | GO TO BOX O | GO TO BOX O |

| | | |
|--|---|---|
| O-5. JUST THIS BUILDING 1 (BOX O) OTHER BUILDING(S) 2 (O-6) DON'T KNOW 8 (BOX O) | JUST THIS BUILDING 1 (BOX O) OTHER BUILDING(S) 2 (O-6) DON'T KNOW 8 (BOX O) | JUST THIS BUILDING 1 (BOX O) OTHER BUILDING(S) 2 (O-6) DON'T KNOW 8 (BOX O) |
| O-6. SQUARE FOOTAGE DON'T KNOW 8 | SQUARE FOOTAGE DON'T KNOW 8 | SQUARE FOOTAGE DON'T KNOW 8 |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

P. ENERGY SOURCE DELIVERY

- P-1. NO ELECTRICITY USED IN BUILDING. GO TO P-2.

Earlier you mentioned that the building used electricity. This card lists different features found in electric rate schedules or tariffs. HAND CARD 14. Do any of the electricity accounts of the building have:

HAND
CARD
14

| RATE FEATURES | | YES | NO | DK |
|---------------|--|-----|----|----|
| a. | Seasonal pricing? <i>(The price depends on the season of the year.)</i> | 1 | 2 | 8 |
| b. | Time-of-day pricing? <i>(The pricing depends on the time of day.)</i> | 1 | 2 | 8 |
| c. | Time-of-day lock-out or limit? <i>(Use is prohibited or restricted to a reduced level at fixed times of the day.)</i> | 1 | 2 | 8 |
| d. | Interruptible or curtailable rate? <i>(Service is temporarily cut off or demand must be reduced by the customer on short notice to maintain service for higher priority users.)</i> | 1 | 2 | 8 |
| e. | Metered peak demand? | 1 | 2 | 8 |

- P-2. NO NATURAL GAS USED IN BUILDING. GO TO P-3.

Earlier you mentioned that the building used natural gas. During most of the past 12 months, were any of the natural gas accounts in the building on an interruptible service rate?

(This is a special rate offered by gas companies to customers that allows the gas company to cut back on the amount of gas supplied to the building during periods of high demand.)

YES 1
NO 2
DON'T KNOW 8

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

- P-3. NO FUEL OIL OR DIESEL USED IN BUILDING. GO TO P-4.

Earlier you said the building used (fuel oil/diesel). Think about all the fuel oil storage tanks for this building. What is the total capacity, in gallons, of all the fuel oil storage tanks?

GALLONS
DON'T KNOW 9-8

- P-4. BUILDING NOT HEATED. GO TO SECTION Q.

Could this building switch to a different main heating fuel within one week's time without substantially reducing the area heated or the temperature maintained in the heated area?

YES 1
NO 2 (SECTION Q)
DON'T KNOW 8 (SECTION Q)

- P-5. If the building did have to switch the main heating fuel within one week's time, what fuels would be used instead of (ENERGY SOURCE FROM C-3a)? CIRCLE ALL MENTIONED.

ELECTRICITY 01
NATURAL GAS 02
FUEL OIL/KEROSENE/DIESEL 03
DISTRICT STEAM 04
DISTRICT HOT WATER 05
OTHER (SPECIFY) 06

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

Q. WAIVERS

Q-1. As I mentioned, the purpose of this study is to relate building characteristics with energy consumption and expenditures. This information can only be obtained by going directly to each energy supplier of the building. In order for the energy company to release this information to Westat, we need to have an authorization form from you, or some other representative of your company. We also need account numbers for the building.

- a. Should the authorization form be signed by you or someone else?

RESPONDENT 1
SOMEONE ELSE (SPECIFY) 2

NAME: _____

TITLE: _____

ADDRESS: _____

CITY, STATE, ZIP: _____

PHONE NUMBER: (_____) _____

- b. Should the account number(s) be obtained from you or someone else?

RESPONDENT 1
INDIVIDUAL LISTED ABOVE 2
SOMEONE ELSE (SPECIFY) 3

NAME: _____

TITLE: _____

ADDRESS: _____

CITY, STATE, ZIP: _____

PHONE NUMBER: (_____) _____

BOX 13

AFTER WAIVER OBTAINED, CODE STATUS OF ACCOUNT NUMBER EFFORT

| | NOT OBTAINED | OBTAINED | INAPPLICABLE |
|-------------|-----------------|----------|--------------|
| ELECTRICITY | 1 | 2 | 3 |
| NATURAL GAS | 1 | 2 | 3 |

Q-2. RECORD TIME ENDED AND CONTINUE WITH SECTION S, THE CENSUS SUPPLEMENT.

TIME ENDED: _____

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871H (87/88)
Collected for the U.S. Environmental
Protection Agency

OMB No: 2070-0104 Approval Expires: 10/12/1989

Public reporting burden for this collection of information is estimated to average six (6) minutes per response, including time for hearing and responding yes or no to each of five questions. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460; and to the Office of Management and Budget, Paperwork Reduction Project (2070-0104), Washington, D.C. 20503.

R. ASBESTOS IN BUILDINGS

LABEL

Now I would like to ask you a few questions about any asbestos the building may contain and any asbestos treatment that may have taken place. This information will be used to help establish environmental policies.

(Asbestos is a group of naturally occurring minerals that separate into long, thin fibers. It was used for many years to insulate and to fire-proof buildings.)

In this series of questions, we are only concerned with asbestos-containing materials inside the building. Asbestos in the attic, in the basement, or in the crawl spaces under the building is considered to be inside the building. We are not interested in asbestos used on the exterior of the building such as for roofing shingles or exterior wall shingles or siding.

R-1. Does the building, excluding the exterior roof and walls, currently contain asbestos?

| | |
|------------------|---------|
| YES | 1 |
| NO | 2 (R-3) |
| DON'T KNOW | 8 (R-3) |

R-2. Here is a card showing types of asbestos found in buildings. HAND CARD 14A. Does the building contain asbestos in:

HAND
CARD
14A

- | | YES | NO | DK |
|---|-----|----|----|
| a. Heating or cooling system insulation wrap? | 1 | 2 | 8 |
| b. Sprayed on or trowelled on surfacing material? | 1 | 2 | 8 |
| c. Ceiling tiles? | 1 | 2 | 8 |
| d. Flooring tiles? | 1 | 2 | 8 |
| e. Some other form? RECORD BELOW | 1 | 2 | 8 |

R-3. Has any asbestos ever been removed from or treated in the building?

| | |
|------------------|---------|
| YES | 1 |
| NO | 2 (R-5) |
| DON'T KNOW | 8 (R-5) |

**Commercial Buildings Energy Consumption Survey for 1989
Building Questionnaire, Form EIA-871A**

Form EIA-871H (07/89)

| COLUMN A | COLUMN B | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------------------|------------------------|------------------------|-----|-----|----|-----|----|----|-----|----|----|---|---|---|---|---|---|---|---|---|
| R-4. Here is a card showing different ways asbestos may have been treated in the building. HAND CARD 14B. At any time, was any asbestos: | IF "YES" IN COLUMN A, ASK FOLLOWING FOR EACH OF THREE TIME PERIODS: Was any of this work done: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; width: 33.33%;">(1) Since January 1, 1989?</th> <th style="text-align: center; width: 33.33%;">(2) During 1988?</th> <th style="text-align: center; width: 33.33%;">(3) Before 1988?</th> </tr> <tr> <th style="text-align: center;">YES</th> <th style="text-align: center;">NO</th> <th style="text-align: center;">DK</th> <th style="text-align: center;">YES</th> <th style="text-align: center;">NO</th> <th style="text-align: center;">DK</th> <th style="text-align: center;">YES</th> <th style="text-align: center;">NO</th> <th style="text-align: center;">DK</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">8</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">8</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">8</td></tr> </tbody> </table> | (1) Since January 1, 1989? | (2) During 1988? | (3) Before 1988? | YES | NO | DK | YES | NO | DK | YES | NO | DK | 1 | 2 | 8 | 1 | 2 | 8 | 1 | 2 | 8 |
| (1) Since January 1, 1989? | (2) During 1988? | (3) Before 1988? | | | | | | | | | | | | | | | | | | | | |
| YES | NO | DK | YES | NO | DK | YES | NO | DK | | | | | | | | | | | | | | |
| 1 | 2 | 8 | 1 | 2 | 8 | 1 | 2 | 8 | | | | | | | | | | | | | | |
| <p>HAND CARD 14B</p> <p align="center">TREATMENT</p> <p>a. Removed? YES 1—> NO 2 DONT KNOW 8</p> <p>b. Encapsulated or sealed with a protective coating? YES 1—> NO 2 DONT KNOW 8</p> <p>c. Enclosed behind an airtight permanent barrier? YES 1—> NO 2 DONT KNOW 8</p> <p>d. Treated in some other way? YES (SPECIFY) 1—> NO 2 DONT KNOW 8</p> <p>e. RESPONDENT MENTIONS THAT SOMETHING WAS DONE BUT DOES NOT KNOW SPECIFICALLY WHAT WAS DONE. YES 1—> NO 2</p> | | | | | | | | | | | | | | | | | | | | | | |

R-5. Has the building been inspected for asbestos by an EPA or State certified inspector?

YES 1
 NO 2

R MENTIONS INSPECTOR BUT DOES NOT KNOW IF CERTIFIED 3

DON'T KNOW 8

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871G (06/89)

Form Approval
OMB No: 0607-0543
Expires: December 31, 1990

S. CONSTRUCTION IMPROVEMENTS AND MAINTENANCE AND REPAIRS SUPPLEMENT

TIME BEGAN: _____

The final questions of the interview are about expenditures for construction improvements and maintenance and repairs to this building during 1989. This information will be used to measure the effect of these activities on the U.S. economy.

- S-1. The first question is about the cost of construction improvements, including additions, alterations, and major replacements to the building. Approximately, what is the total amount of money that will be spent in calendar year 1989 by all persons and businesses for construction improvements to the building? **Include expenditures to date plus estimated expenditures for the remainder of the year.** Construction improvements are defined on this card. HAND CARD 15.



\$ _____ (S-2)
DOLLARS

NEEDS A FEW DAYS TO COMPILE DATA ... 9-6 (S-1a)
DON'T KNOW 9-8 (S-1b)

- S-1a. When can I call you back to get this information?

_____ (S-2)
DATE TIME

- S-1b. What is the name, address, and telephone number of the person who is most likely to know the total amount expected to be spent on construction improvements to this building during calendar year 1989?

NAME: _____ (S-2)

ADDRESS: _____

CITY, STATE, ZIP: _____

PHONE NUMBER: (_____) _____

NO ONE PERSON KNOWS THE TOTAL 6 (BOX 14)
DON'T KNOW 8 (BOX 14)

BOX 14

CHECK QUESTIONS E-3 AND E-4 ON PAGE 15 AND CIRCLE ONE:

- CURRENTLY UNOCCUPIED (E-3 = 5) 1 (S-1c)
ONE OCCUPANT: THE OWNER (E-3 = 1) 2 (S-2)
ONE OCCUPANT: A TENANT (E-3 = 2) 3 (S-1c)
TWO OCCUPANTS: THE OWNER AND A TENANT
(E-3 = 3 AND E-4 = 2) 4 (S-1c)
ALL OTHER SITUATIONS (MORE THAN ONE TENANT) 5 (S-2)

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871G (06/89)

S-1c. How much money will the owner spend on construction improvements to this building during calendar year 1989?

\$ _____ (S-1e)
DOLLARS

DON'T KNOW 9-8 (S-1d)

S-1d. What is the name, address, and telephone number of the person who is most likely to know how much the owner will spend on construction improvements to this building?

NAME: _____ (S-1e)

ADDRESS: _____

CITY, STATE, ZIP: _____

PHONE NUMBER: (_____) _____

DON'T KNOW 8 (S-2)

S-1e. CURRENTLY UNOCCUPIED. SKIP TO S-2.

S-1f. How much (additional) money will the current tenant spend on construction improvements to this building during calendar year 1989?

\$ _____ (S-2)
DOLLARS

DON'T KNOW 9-8 (S-1g)

S-1g. What is the name, address, and telephone number of the current tenant in this building?

NAME: _____ (S-2)

ADDRESS: _____

CITY, STATE, ZIP: _____

PHONE NUMBER: (_____) _____

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871G (06/89)

- S-2. The next question is about expenditures for maintenance and repairs to the building. This refers to the cost for the upkeep of the building rather than additional investment in it and is described in more detail on this card. HAND CARD 16.

Approximately, what is the total amount of money that will be spent in calendar year 1989 by all persons and businesses for maintenance and repairs to the building? **Include expenditures to date plus estimated expenditures for the remainder of the year.**



\$ _____ (S-2e)
DOLLARS

NEEDS A FEW DAYS TO COMPILE DATA ... 9-6 (S-2a)
DON'T KNOW OR NO ONE PERSON
KNOWS 9-8 (BOX 15)

- S-2a. When can I call you back to get this information?

_____ (S-2e)
DATE TIME

BOX 15

CHECK QUESTIONS E-3 AND E-4 ON PAGE 15 AND CIRCLE ONE:

- | | |
|--|----------|
| CURRENTLY UNOCCUPIED (E-3 = 5) | 1 (S-2b) |
| ONE OCCUPANT: THE OWNER (E-3 = 1) | 2 (S-2e) |
| ONE OCCUPANT: A TENANT (E-3 = 2) | 3 (S-2b) |
| TWO OCCUPANTS: THE OWNER AND A TENANT (E-3 = 3 AND E-4 = 2) | 4 (S-2b) |
| ALL OTHER SITUATIONS (MORE THAN ONE TENANT) | 5 (S-2e) |

- S-2b. How much money will the owner spend on maintenance and repairs to this building during calendar year 1989?

\$ _____ (S-2c)
DOLLARS

DON'T KNOW 9-8 (S-2e)

- S-2c. CURRENTLY UNOCCUPIED. SKIP TO S-2e.

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871G (06/89)

S-2d. How much (additional) money will the current tenant spend on maintenance and repairs for this building during calendar year 1989?

\$ _____ (S-2e)
DOLLARS

DON'T KNOW 9-8 (S-2e)

S-2e. END: This completes the interview. Thank you very much for your time and help.

TIME ENDED: _____

| BOX 16 | | |
|--|---|---|
| INDICATE WHO PROVIDED THE EXPENDITURE INFORMATION FOR CONSTRUCTION IMPROVEMENTS AND MAINTENANCE AND REPAIRS: | | |
| | S-3 CONSTRUCTION IMPROVEMENTS (CIRCLE ONE) | S-4 MAINTENANCE AND REPAIRS (CIRCLE ONE) |
| a. OWNER | 1 | 1 |
| b. OWNER'S BUSINESS OR REPRESENTATIVE | 2 | 2 |
| c. TENANT | 3 | 3 |
| d. TENANT REPRESENTATIVE | 4 | 4 |
| e. OTHER (SPECIFY) | 5 | 5 |

RESPONDENT NAME: _____

TELEPHONE: (_____) _____

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

INTERVIEWER OBSERVATIONS

FILL THIS OUT IF YOU COMPLETE THE BUILDING INTERVIEW.

1. Building is, or is part of a facility that is, a (CIRCLE ONE):

| | |
|-------------------------------------|---|
| Hospital | 1 |
| College/University | 2 |
| Elementary/Middle/High School | 3 |
| Post Office | 4 |
| Other | 5 |

2. Does the interview's definition of the building agree with the listing sheet (BOX 3 = "CORRECT")?

| | |
|--------------------------------------|-------|
| YES, AGREES WITH LISTING | 1 (4) |
| NO | 2 |
| INAPPLICABLE (SHOPPING CENTER) | 7 (4) |

3. A. Please indicate the name and address(es) of the building from the listing sheet.

NAME: _____

ADDRESS: _____

- B. Please indicate the name and address(es) of the building as defined for the interview.

(A-8) NAME: _____

(A-7) ADDRESS: _____

- C. Please explain the circumstances of the disagreement between listing and interview definition of the building.

4. The individual who completed all or most of the questionnaire should be recorded on the front cover. Did any other person respond to the questionnaire?

| | |
|-----------|-------|
| YES | 1 |
| NO | 2 (6) |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

5. Please list all other respondents.

NAME: _____

TITLE: _____

LOCATION: _____ PHONE NO. (_____) _____

NAME: _____

TITLE: _____

LOCATION: _____ PHONE NO. (_____) _____

6. What is your observation of the type of building or kind of business that occurs within the building? Please be thorough in your description.

7. Is this building, as defined for the interview, freestanding or attached to another building?

FREESTANDING 1
ATTACHED 2

8. Please describe any unusual circumstances you may have encountered in obtaining the waiver. (If you did not obtain the waiver or account numbers, explain why.)

9. Is this a strip shopping center or enclosed mall?

STRIP SHOPPING CENTER 1
ENCLOSED MALL 2
NOT A STRIP CENTER/MALL 3 (END)

10. Approximately how many establishments are in this shopping center/mall?

2-5 1
6-10 2
11-20 3
21-49 4
50-99 5
100 OR MORE 6

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

NONINTERVIEW REPORT

FILL THIS OUT IF YOU DID NOT COMPLETE
THE BUILDING INTERVIEW.

1. Why were you unable to complete the interview?

| | |
|--|-------|
| REFUSAL/BREAKOFF | 1 |
| INELIGIBLE BUILDING | 2 (4) |
| RESPONDENT COULD NOT BE CONTACTED | 3 |

2. IF NOT RECORDED ON FRONT COVER: What is the name, title, and telephone number of the individual who refused, broke off, or could not be contacted for the interview?

NAME: _____

TITLE: _____

TELEPHONE NO. (_____) _____

3. Why did the respondent refuse? (RECORD VERBATIM) OR: Why were there problems contacting the respondent?

SKIP TO 5

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

4. Please explain in detail why the building was ineligible for the interview.

5. What is your observation of the type of building or kind of business that occurs within the building?

6. How many floors does the building have, ground level and above?

_____ # OF FLOORS

IF INELIGIBLE BUILDING: END.

7. IF INDUSTRIAL, AGRICULTURAL, OR RESIDENTIAL MENTIONED IN 5: Would you estimate that 50% or more of the space in this building is used for (industrial/agricultural/residential) activities?

| | |
|------------------|---|
| YES | 1 |
| NO | 2 |
| DON'T KNOW | 8 |

8. Which category in your estimation best applies to the total square feet in this building?

| | |
|-----------------------------------|---|
| 1,000 square feet or less | 1 |
| 1,001 to 50,000 square feet | 2 |
| Over 50,000 square feet | 3 |
| DON'T KNOW | 8 |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

SUPPLIER CUSTOMER SHEET

ENERGY SOURCE: _____

SUPPLIER'S NAME: _____

| LIST OF RECIPIENTS OF SEPARATE BILLS | ADDITIONAL INFORMATION TO EXPLAIN BILLING |
|--------------------------------------|---|
| 1. Name _____ Address _____ | |
| 2. Name _____ Address _____ | |
| 3. Name _____ Address _____ | |
| 4. Name _____ Address _____ | |
| 5. Name _____ Address _____ | |
| 6. Name _____ Address _____ | |
| 7. Name _____ Address _____ | |
| 8. Name _____ Address _____ | |
| 9. Name _____ Address _____ | |
| 10. Name _____ Address _____ | |
| 11. Name _____ Address _____ | |
| 12. Name _____ Address _____ | |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

SUPPLIER CUSTOMER SHEET

ENERGY SOURCE: _____

SUPPLIER'S NAME: _____

| LIST OF RECIPIENTS OF SEPARATE BILLS | ADDITIONAL INFORMATION TO EXPLAIN BILLING |
|--------------------------------------|---|
| 13. Name _____ Address _____ | |
| 14. Name _____ Address _____ | |
| 15. Name _____ Address _____ | |
| 16. Name _____ Address _____ | |
| 17. Name _____ Address _____ | |
| 18. Name _____ Address _____ | |
| 19. Name _____ Address _____ | |
| 20. Name _____ Address _____ | |
| 21. Name _____ Address _____ | |
| 22. Name _____ Address _____ | |
| 23. Name _____ Address _____ | |
| 24. Name _____ Address _____ | |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

SUPPLIER CUSTOMER SHEET

ENERGY SOURCE: _____

SUPPLIER'S NAME: _____

| LIST OF RECIPIENTS OF SEPARATE BILLS | | ADDITIONAL INFORMATION TO EXPLAIN BILLING |
|--------------------------------------|-----------------------------|---|
| 25. | Name _____ Address _____ | _____ |
| 26. | Name _____ Address _____ | _____ |
| 27. | Name _____ Address _____ | _____ |
| 28. | Name _____ Address _____ | _____ |
| 29. | Name _____ Address _____ | _____ |
| 30. | Name _____ Address _____ | _____ |
| 31. | Name _____ Address _____ | _____ |
| 32. | Name _____ Address _____ | _____ |
| 33. | Name _____ Address _____ | _____ |
| 34. | Name _____ Address _____ | _____ |
| 35. | Name _____ Address _____ | _____ |
| 36. | Name _____ Address _____ | _____ |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

SUPPLIER CUSTOMER SHEET

ENERGY SOURCE: _____

SUPPLIER'S NAME: _____

| LIST OF RECIPIENTS OF SEPARATE BILLS | ADDITIONAL INFORMATION TO EXPLAIN BILLING |
|--------------------------------------|---|
| 37. Name _____ Address _____ | |
| 38. Name _____ Address _____ | |
| 39. Name _____ Address _____ | |
| 40. Name _____ Address _____ | |
| 41. Name _____ Address _____ | |
| 42. Name _____ Address _____ | |
| 43. Name _____ Address _____ | |
| 44. Name _____ Address _____ | |
| 45. Name _____ Address _____ | |
| 46. Name _____ Address _____ | |
| 47. Name _____ Address _____ | |
| 48. Name _____ Address _____ | |

Commercial Buildings Energy Consumption Survey for 1989

Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

FOLD-OUT PAGE

| KEY BUILDING CHARACTERISTICS | |
|--|---|
| B-1/B-2 - SQUARE FEET: <hr/> <hr/> | E-3 OCCUPANT STATUS: 1 ONE OCCUPANT: THE OWNER 2 ONE OCCUPANT: NOT THE OWNER 3 MORE THAN ONE OCCUPANT, INCLUDING THE OWNER 4 MORE THAN ONE OCCUPANT, NOT INCLUDING THE OWNER 5 CURRENTLY UNOCCUPIED |

| | C-3. WHICH ENERGY SOURCES WERE USED IN PAST 12 MONTHS: | | | | | | |
|--|--|--|----------------------------|---|---|--|--|
| | a. Main fuel for heating | b. Secondary or backup fuel for heating | c. Fuel for cooling | d. Fuel for domestic hot water | e. Fuel for commercial/ institutional cooking | f. Fuel for manufacturing/ industrial activity | g. Fuel for electricity generation |
| NOT PERFORMED | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| C-1. ENERGY SOURCES (CHECK ALL USED) | CHECK ONE | CHECK ALL THAT APPLY | CHECK ALL THAT APPLY | CHECK ALL THAT APPLY | CHECK ALL THAT APPLY | CHECK ALL THAT APPLY | CHECK ALL THAT APPLY |
| a. Electricity | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Natural Gas | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Fuel Oil/Diesel/ Kerosene | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Bottled Gas | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e. District Steam | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| f. District Hot Water | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| g. District Chilled Water | <input type="checkbox"/> | | | <input type="checkbox"/> | | | |
| h. Wood | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| i. Coal | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| j. Active Solar | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| k. Other (Specify) <hr/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| END USE PERFORMED BUT ENERGY SOURCE NOT KNOWN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

Form Approval:
OMB No: 1905-0145
Expires: May 31, 1992

UNITED STATES DEPARTMENT OF ENERGY COMMERCIAL BUILDINGS ENERGY CONSUMPTION SURVEY AUTHORIZATION FORM

I hereby give permission to Westat, Inc., to obtain energy consumption information for confidential use in connection with their survey for the U.S. Department of Energy.

This authorization covers the total amount of fuels and the total price charged for the fuels consumed during the 26-month period of December 1, 1988 to January 31, 1991 by the building/establishment identified below.

Companies are authorized to provide this information by monthly periods or by delivery date, whichever is applicable. A photocopy of this authorization may be accepted with the same authority as the original.

Building name _____

Address _____

City _____

State _____

ZIP _____

| | | |
|---|---|-------------------------|
| Please print name of authorizing person _____ | Employed by _____ | Telephone (_____) _____ |
| X Signature of authorizing person _____ | Address (if different than above) _____ | |
| Title _____ | City _____ | State _____ |
| ZIP _____ | | |

PLEASE COMPLETE ONE BLOCK FOR EACH COMPANY THAT SUPPLIED FUEL
USED BY THE ABOVE NONRESIDENTIAL BUILDING SINCE DECEMBER 1, 1988.

Energy Source _____

| | | |
|----------------------------------|----------------------|-----------|
| Print full name of company _____ | | |
| Address (if known) _____ | City and State _____ | ZIP _____ |
| Telephone (_____) _____ | | |
| Account Number(s) _____ | | |
| Print full name of company _____ | | |
| Address (if known) _____ | City and State _____ | ZIP _____ |
| Telephone (_____) _____ | | |
| Account Number(s) _____ | | |
| Print full name of company _____ | | |
| Address (if known) _____ | City and State _____ | ZIP _____ |
| Telephone (_____) _____ | | |
| Account Number(s) _____ | | |

Energy Source _____

Energy Source _____

CONTINUED ON REVERSE SIDE

Commercial Buildings Energy Consumption Survey for 1989 Building Questionnaire, Form EIA-871A

Form EIA-871A (06/89)

COMMERCIAL BUILDINGS ENERGY CONSUMPTION SURVEY AUTHORIZATION FORM (Continued)

X

Signature of Authorizing Person

Energy Source

Print full name of company

Address (if known)

City and State

ZIP

()

Telephone

Account Number(s)

Energy Source

Print full name of company

Address (if known)

City and State

ZIP

()

Telephone

Account Number(s)

Energy Source

Print full name of company

Address (if known)

City and State

ZIP

()

Telephone

Account Number(s)

Energy Source

Print full name of company

Address (if known)

City and State

ZIP

()

Telephone

Account Number(s)

Energy Source

Print full name of company

Address (if known)

City and State

ZIP

()

Telephone

Account Number(s)

Energy Source

Print full name of company

Address (if known)

City and State

ZIP

()

Telephone

Account Number(s)

Facility Form, Form EIA-871B

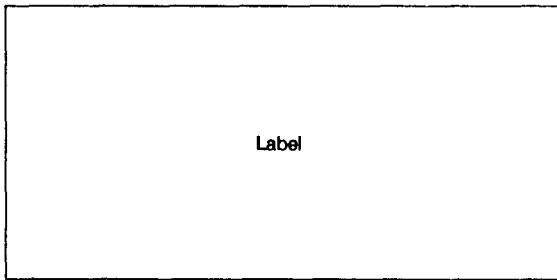
Form EIA-871B (10/25/89)

Form Approval
OMB No: 1905-0145
Expires: May 31, 1992



U.S. DEPARTMENT OF ENERGY
ENERGY INFORMATION ADMINISTRATION

COMMERCIAL BUILDINGS ENERGY CONSUMPTION SURVEY FOR 1989 FACILITY FORM



Information is to be provided for the facility described on the label.

Data may be submitted directly on the reporting form inside this folder, or in any other format, such as computer-generated listing, which provides the same information and is convenient for your company.

Whatever format is used to submit data, answers to all questions on this form must be included with the submission.

Additional instructions for completing the form are inside this folder.

IF YOU HAVE ANY QUESTIONS, PLEASE CALL 800-937-6232
TOLL FREE AND ASK FOR THE SUPPLIER SURVEY SPECIALIST.

This report is mandatory under Public Law 93-275, as amended. Failure to comply may result in criminal fines, civil penalties, and other sanctions as provided by law. For the provisions concerning the confidentiality of information submitted on this form, see the General Instructions. Public reporting burden for this collection of information is estimated to average 60 minutes per response, including the time of reviewing instructions, searching existing data records, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Energy Information Administration, Office of Statistical Standards EI-73, Mail Station: 1H-023, 1000 Independence Avenue SW, Washington, DC 20585, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

Please use the enclosed self-addressed, postage-paid envelope to return the completed forms, or mail the forms to:

U.S. Department of Energy
c/o Westat, Inc.
P.O. Box 6422
Rockville, MD 20850

Facility Form, Form EIA-871B

Form EIA-871B (10/25/89)
Facility Form

Form Approval
OMB No. 1905-0145
Expires: May 31, 1992

1. What is the principal activity of this facility or complex? (Circle one.)

| | | | |
|--|----|--|----|
| College or university | 01 | Hotel/Motel | 09 |
| Secondary school | 02 | Prison/Jail/Reformatory | 10 |
| Elementary school | 03 | Entertainment or sports complex/Museum | 11 |
| Office | 04 | Other activity such as laboratory or | |
| Shopping center/Mall | 05 | warehouse | 12 |
| Hospital or other inpatient health service | 06 | (specify) _____ | |
| Industrial/Manufacturing | 07 | | |
| Agricultural | 08 | | |

- 2a. How many buildings were on this facility as of December 31, 1989?

NOTE: Include all buildings, regardless of size or primary purpose.

2a. _____
Number of buildings

- 2b. What was the total enclosed square footage of the buildings reported in 2a?

2b. _____
Square feet

- 3a. Excluding (1) buildings 1000 square feet or smaller and (2) those whose primary purpose is agricultural, industrial, or residential, how many buildings were there on this facility as of December 31, 1989? (See "Instructions for Specific Items" for definitions.)

3a. _____
Number of buildings

- 3b. What was the total enclosed square footage of the buildings reported in 3a?

3b. _____
Square feet

4. As of December 31, 1989, was this facility designated as a Qualifying Facility (QF) under the Public Utilities Regulatory Policies Act of 1978 (PURPA)?

Yes
 No
 Don't Know

5. Is there a central power plant on this facility that produces steam, hot water, chilled water, or electricity?

Yes
 No (Skip to Item 11)

6. Does the central power plant on this facility have a cogeneration system; that is, does it have equipment that produces both electricity and usable heat from the same input fuel?

Yes
 No (Skip to Item 9)

7. What was the total nameplate capacity of all cogeneration units that were in place at this facility on December 31, 1989?

7. _____
Kilowatts

8. As of December 31, 1989, was the generation system on this facility electrically interconnected with an electric utility (that is, able to deliver electricity to the grid as well as receive it)?

Yes
 No
 Don't Know

Facility Form, Form EIA-871B

Form EIA-871B (10/25/89)
Facility Form

Form Approval
OMB No. 1905-0145
Expires: May 31, 1992

9. SYSTEM INPUTS

In the table below, please provide the total input fuels consumed by the central power plant and the expenditures for those fuels from January 1, 1989 through December 31, 1989, or the closest time period for which the information is available. Please indicate the consumption units and type of fuel.

| INPUT FUELS | CONSUMPTION PERIOD | | TOTAL CONSUMPTION INPUT FUEL | TOTAL EXPENDITURES FOR INPUT FUEL |
|--|---|-------------|---------------------------------|--------------------------------------|
| | Beginning Date | Ending Date | | |
| FUEL OIL UNITS <input type="checkbox"/> Gallons <input type="checkbox"/> Barrels <input type="checkbox"/> Other _____ | TYPE <input type="checkbox"/> Distillate <input type="checkbox"/> Residual <input type="checkbox"/> Other _____ | mo/da/yr | mo/da/yr | consumption \$ _____ |
| NATURAL GAS UNITS <input type="checkbox"/> 100 Cubic Feet (Ccf) <input type="checkbox"/> 1000 Cubic Feet (McF) <input type="checkbox"/> Therms <input type="checkbox"/> Decatherms <input type="checkbox"/> Other _____ | | mo/da/yr | mo/da/yr | consumption \$ _____ |
| COAL UNITS <input type="checkbox"/> Tons <input type="checkbox"/> Other _____ | TYPE <input type="checkbox"/> Anthracite <input type="checkbox"/> Bituminous <input type="checkbox"/> Other _____ | mo/da/yr | mo/da/yr | consumption \$ _____ |
| SYSTEM INPUT ELECTRICITY <input type="checkbox"/> Million Kilowatthours <input type="checkbox"/> Thousand Kilowatthours <input type="checkbox"/> Kilowatthours | | mo/da/yr | mo/da/yr | consumption \$ _____ |
| OTHER Input Fuel: _____ Units: _____ | | mo/da/yr | mo/da/yr | consumption \$ _____ |

Facility Form, Form EIA-871B

Form EIA-871B (10/25/89)
Facility Form

Form Approval
OMB No. 1905-0145
Expires: May 31, 1992

10. TOTAL SYSTEM OUTPUT FROM PLANT TO DISTRICT SYSTEM

In the space provided below, provide the plant outputs to the district system from January 1, 1989 through December 31, 1989, or the closest time period for which the information is available. If at all possible, the time period used should be the same as for Item 9, System Inputs.

| OUTPUT FUELS | OUTPUT PERIOD | | TOTAL YEARLY PLANT OUTPUT | TOTAL NUMBER OF BUILDINGS SERVED BY OUTPUT ENERGY* | TOTAL SQUARE FOOTAGE SERVED BY OUTPUT ENERGY* |
|---|----------------|-------------|------------------------------|--|---|
| | Beginning Date | Ending Date | | | |
| STEAM <input type="checkbox"/> Million Btu <input type="checkbox"/> Thousand pounds <input type="checkbox"/> Pounds <input type="checkbox"/> Other _____ | mo/da/yr | mo/da/yr | _____ | no. of buildings | square footage |
| HOT WATER <input type="checkbox"/> Million Btu <input type="checkbox"/> Other _____ | mo/da/yr | mo/da/yr | _____ | no. of buildings | square footage |
| CHILLED WATER <input type="checkbox"/> Ton-hours <input type="checkbox"/> Other _____ | mo/da/yr | mo/da/yr | _____ | no. of buildings | square footage |
| ELECTRICITY – TOTAL <input type="checkbox"/> Kilowatthours <input type="checkbox"/> Other _____ | mo/da/yr | mo/da/yr | _____ | no. of buildings | square footage |
| ELECTRICITY – COGENERATED <input type="checkbox"/> Kilowatthours <input type="checkbox"/> Other _____ | mo/da/yr | mo/da/yr | _____ | no. of buildings | square footage |

*Include all buildings served, regardless of size or primary purpose.

11. Form completed by:

NAME: _____ **TELEPHONE:** (_____) _____ **DATE:** _____
(Please print) Area code

TITLE: _____

Building Natural Gas Usage Form, Form EIA-871C-1

Form EIA-871C-1 (10/25/89)

Form Approval
OMB No: 1905-0145
Expires: May 31, 1992



U.S. DEPARTMENT OF ENERGY
ENERGY INFORMATION ADMINISTRATION

COMMERCIAL BUILDINGS ENERGY CONSUMPTION SURVEY FOR 1989 BUILDING NATURAL GAS USAGE FORM

Label

Consumption data are to be provided for the entire building described on the label.
A copy of the authorization form signed by the building owner/manager is included inside.

Data may be submitted directly on the reporting form inside this folder, or in any other format, such as computer print-out, which provides the same information and is convenient for your company.

Whatever format is used to submit data, answers to all questions on this form must be included with the submission.

See the separate Instructions Booklet for additional instructions for completing the form.

IF YOU HAVE ANY QUESTIONS, PLEASE CALL 800-937-6232
TOLL FREE AND ASK FOR THE SUPPLIER SURVEY SPECIALIST.

This report is mandatory under Public Law 93-275, as amended. Failure to comply may result in criminal fines, civil penalties, and other sanctions as provided by law. For the provisions concerning the confidentiality of information submitted on this form, see the General Instructions. Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time of reviewing instructions, searching existing data records, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Energy Information Administration, Office of Statistical Standards EI-73, Mail Station: 1H-023, 1000 Independence Avenue SW, Washington, DC 20585, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

Please use the enclosed self-addressed, postage-paid envelope to return the completed forms, or mail the forms to:

U.S. Department of Energy
c/o Westat, Inc.
P.O. Box 6422
Rockville, MD 20850

Building Natural Gas Usage Form, Form EIA-871C-1

Form EIA-871C-1 (10/25/89)
Natural Gas Usage

Form Approval
OMB No. 1905-0145
Expires: May 31, 1992

1. In the table below, please report total natural gas consumption in this building during the period from December 1, 1988 through January 31, 1990.

| Time Period | CONSUMPTION PERIOD | | NUMBER OF ACCOUNTS | | CONSUMPTION DATA | | Column C Quantities reported in Cols. A and B are: A = All Actual E = Some or All Estimated (CIRCLE ONE) | Column D TOTAL DOLLAR AMOUNT FOR ALL CONSUMPTION* (Cols. A + B) | |
|-------------|--|-------------|---|--------------------------------------|--------------------------------------|---|--|---|---|
| | IF ONLY ONE ACCOUNT OR IF ALL ACCOUNTS ARE ON THE SAME BILLING CYCLE | | IF ACCOUNTS ARE ON DIFFERENT BILLING CYCLES, RECORD MONTH | New Accounts Opened In this Building | Old Accounts Closed in this Building | Indicate unit of measure for the quantities reported below: | | | |
| | Beginning Date | Ending Date | | | | <input type="checkbox"/> Therms | | | <input type="checkbox"/> 100 cu.ft. (Ccf) |
| 1 | | | | | | | A | E | |
| 2 | | | | | | | A | E | |
| 3 | | | | | | | A | E | |
| 4 | | | | | | | A | E | |
| 5 | | | | | | | A | E | |
| 6 | | | | | | | A | E | |
| 7 | | | | | | | A | E | |
| 8 | | | | | | | A | E | |
| 9 | | | | | | | A | E | |
| 10 | | | | | | | A | E | |
| 11 | | | | | | | A | E | |
| 12 | | | | | | | A | E | |
| 13 | | | | | | | A | E | |
| 14 | | | | | | | A | E | |

*TOTAL DOLLAR AMOUNT should include:
 . State and local taxes,
 . Fuel adjustment charges,
 . System charges (minimum bill or base charge),
 . Demand charges, and
 . Transportation charges.

*TOTAL DOLLAR AMOUNT should exclude:
 . Merchandise,
 . Repair charges,
 . Service charges (hookup or disconnect fees, late payment fees, etc.), and
 . Any other charges not specifically listed at left.

IF ANY CUSTOMERS IN THIS BUILDING ARE ON A BUDGETED BILLING CYCLE, DO NOT REPORT FIGURES FROM THE BUDGETED BILL. INSTEAD, PLEASE REPORT THE TOTAL DOLLAR AMOUNT FOR THE COST OF ACTUAL CONSUMPTION DURING EACH CONSUMPTION PERIOD.

Building Natural Gas Usage Form, Form EIA-871C-1

Form EIA-871C-1 (10/25/89)
Natural Gas Usage

Form Approval
OMB No. 1905-0145
Expires: May 31, 1992

2. Does the response to Item 1 above include all accounts active in this building as of January 31, 1990? Yes No Don't Know

3. Does the information in Item 1 above include consumption in any building(s) other than the building shown on the label on the cover of this folder? Yes No Don't Know

4. How do you classify this building/account in your records? (CHECK ONE)

- Residential
 Commercial
 Industrial
 Commercial/Industrial
 Other _____
(specify)

NOTE: Please provide the reported information for this building even if this is not a commercial building according to your definition or records.

5. Form completed by:

NAME (Please Print)

(
Area
Code

TELEPHONE

DATE

TITLE

Worksheet for Natural Gas Usage, Form EIA-871C-2

Form EIA-871C-2 (10/25/89)

Form Approval
OMB No. 1905-0145
Expires: May 31, 1992

WORKSHEET FOR NATURAL GAS USAGE*

For each of the buildings below, enter the requested information for the period of December 1, 1988 through January 31, 1990. Then sum the consumption and expenditures for all the buildings and provide the totals on the last line of this form. The colored page, which should be returned to Westat, will conceal the figures for individual buildings and display only the final totals.

| Name/Address of Building | How do you classify these buildings in your records? (CHECK ONE) R = Residential C = Commercial I = Industrial C/I = Comm/Ind. O = Other | CONSUMPTION PERIOD | | QUANTITY USED Consumption amounts reported in: (CHECK ONE) <input type="checkbox"/> Therms <input type="checkbox"/> 100 cu. ft. (Ccf) <input type="checkbox"/> Cu. ft. (cf) <input type="checkbox"/> 1000 cu. ft. (Mcft) <input type="checkbox"/> Other (SPECIFY) _____ | TOTAL DOLLAR AMOUNT |
|--------------------------|--|--------------------|--|--|---------------------|
| | | | | | |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> R C I C/I O | | | | |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> R C I C/I O | | | | |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> R C I C/I O | | | | |
| | | | | TOTALS | |

*Retain this page for your organization. Return only the second (colored) page to Westat.
See the back of this form for further instructions.

District Heating and Cooling Usage Form, Form EIA-871D

Form EIA-871D (10/25/89)

Form Approval
OMB No: 1905-0145
Expires: May 31, 1992



U.S. DEPARTMENT OF ENERGY
ENERGY INFORMATION ADMINISTRATION

COMMERCIAL BUILDINGS ENERGY CONSUMPTION SURVEY FOR 1989

DISTRICT HEATING AND COOLING FORM

Label

Consumption data are to be provided for the entire building described on the label.

A copy of the authorization form signed by the building owner/manager is included inside.

Data may be submitted directly on the reporting form inside this folder, or in any other format, such as computer-generated listing, which provides the same information and is convenient for your company.

Whatever format is used to submit data, answers to all questions on this form must be included with the submission.

Additional instructions for completing the form are included in this folder.

IF YOU HAVE ANY QUESTIONS, PLEASE CALL 800-937-6232
TOLL FREE AND ASK FOR THE SUPPLIER SURVEY SPECIALIST.

This report is mandatory under Public Law 93-275, as amended. Failure to comply may result in criminal fines, civil penalties, and other sanctions as provided by law. For the provisions concerning the confidentiality of information submitted on this form, see the General Instructions. Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time of reviewing instructions, searching existing data records, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Energy Information Administration, Office of Statistical Standards EI-73, Mail Station: 1H-023, 1000 Independence Avenue SW, Washington, DC 20585, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

Please use the enclosed self-addressed, postage-paid envelope to return the completed forms, or mail the forms to:

U.S. Department of Energy
c/o Westat, Inc.
P.O. Box 6422
Rockville, MD 20850

District Heating and Cooling Usage Form, Form EIA-871D

Form EIA-871D (10/25/89)
District Heating and Cooling Usage

Form Approval
OMB No: 1905-0145
Expires: May 31, 1992

1. In the table below, please report all steam, hot water, and chilled water delivered to this building during the period from December 1, 1988, through January 31, 1990. The checkbox indicates the sources reported during an interview with a representative from the building. If you are unable to isolate the information for the specific building, report the entire consumption for the system and refer to Item 2 for making estimates about the building.

| Time Period | CONSUMPTION PERIOD | | <input type="checkbox"/> STEAM | | <input type="checkbox"/> HOT WATER | | <input type="checkbox"/> CHILLED WATER | |
|-------------|--------------------|-------------|--------------------------------|---|------------------------------------|--|--|--|
| | | | Indicate Units: | <input type="checkbox"/> Million Btu <input type="checkbox"/> Thousand pounds <input type="checkbox"/> Pounds <input type="checkbox"/> Other _____ | Indicate Units: | <input type="checkbox"/> Million Btu <input type="checkbox"/> Other _____ | Indicate Units: | <input type="checkbox"/> Ton-hours <input type="checkbox"/> Other _____ |
| | Beginning Date | Ending Date | QUANTITY | TOTAL DOLLAR AMOUNT* | QUANTITY | TOTAL DOLLAR AMOUNT* | QUANTITY | TOTAL DOLLAR AMOUNT* |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |

*TOTAL DOLLAR AMOUNT should include State and local taxes and exclude all merchandise or repair charges.

District Heating and Cooling Usage Form, Form EIA-871D

Form EIA-871D (10/25/89)
District Heating and Cooling Usage

Form Approval
OMB No: 1905-0145
Expires: May 31, 1992

| | Steam | Hot Water | Chilled Water | | |
|---|--|---|---|-----------|------|
| 2. Does the information in Item 1 above include consumption in any building(s) other than the building shown on the label on the cover of this folder? (CHECK ONE BOX FOR EACH TYPE OF DISTRICT HEATING OR COOLING SUPPLIED.) | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know | | |
| For each YES, please help us estimate the percentage used in the building shown on the label by answering ONE of the following (that is, either 2a OR 2b and 2c): | | | | | |
| 2a. What is your estimate of the percentage of the reported quantity used by the building? | 2a. _____ % _____ % _____ % | | | | |
| OR | 2b. What is the square footage of the building on the label? AND 2c. What is the square footage of all the buildings on this district loop, including the building on the label? | | | | |
| | 2b. _____ <small>building square feet</small> | 2c. _____ <small>loop square feet</small> | 2c. _____ <small>loop square feet</small> | | |
| 3. Does the information in Item 1 above include all district heating/cooling supplied by your system to all portions of the building on the label during the time periods reported? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know | | |
| 4a. Was service to this building or to any portion of this building interrupted or terminated between December 1, 1988 and January 31, 1990? | 4a. <input type="checkbox"/> Yes (go to 4b) <input type="checkbox"/> No <input type="checkbox"/> Don't Know | 4a. <input type="checkbox"/> Yes (go to 4b) <input type="checkbox"/> No <input type="checkbox"/> Don't Know | 4a. <input type="checkbox"/> Yes (go to 4b) <input type="checkbox"/> No <input type="checkbox"/> Don't Know | | |
| 4b. If yes, please indicate the date of each initiation or termination and the fraction of the building's floorspace that began or ended service on that date. Do not include seasonal interruptions and resumptions of services. | 4b. _____ _____ _____ _____ | | | | |
| 5. Is the building identified on the label billed for the steam, hot water, or chilled water piped into it? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know | | |
| 6. Is the building identified on the label a heating or cooling plant, that is, does it contain equipment used to heat or cool other buildings? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know | | | | |
| 7. Form completed by: _____ | NAME (Please Print) | TITLE | Area Code _____ | TELEPHONE | DATE |

Building Electricity Usage Form, Form EIA-871E-1

Form EIA-871E-1 (10/25/89)

Form Approval
OMB No: 1905-1045
Expires: May 31, 1992



U.S. DEPARTMENT OF ENERGY ENERGY INFORMATION ADMINISTRATION

COMMERCIAL BUILDINGS ENERGY CONSUMPTION SURVEY FOR 1989 BUILDING ELECTRICITY USAGE FORM

Label

Consumption data are to be provided for the entire building described on the label.
A copy of the authorization form signed by the building owner/manager is included
inside.

Data may be submitted directly on the reporting form inside this folder, or in any other
format, such as computer print-out, which provides the same information and is
convenient for your company.

Whatever format is used to submit data, answers to all questions on this form
must be included with the submission.

See the separate Instructions Booklet for additional instructions for completing the
form.

IF YOU HAVE ANY QUESTIONS, PLEASE CALL 800-937-6232
TOLL FREE AND ASK FOR THE SUPPLIER SURVEY SPECIALIST.

This report is mandatory under Public Law 93-275, as amended. Failure to comply may result in criminal fines, civil penalties, and other sanctions as provided by law. For the provisions concerning the confidentiality of information submitted on this form, see the General Instructions. Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time of reviewing instructions, searching existing data records, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Energy Information Administration, Office of Statistical Standards EI-73, Mail Station: 1H-023, 1000 Independence Avenue SW, Washington, DC 20585, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

Please use the enclosed self-addressed, postage-paid envelope to return the completed forms, or mail the forms to:

U.S. Department of Energy
c/o Westat, Inc.
P.O. Box 6422
Rockville, MD 20850

Building Electricity Usage Form, Form EIA-871E-1

Form EIA-871E-1 (10/25/89)
Electricity Usage

Form Approval
OMB No: 1905-0145
Expires: May 31, 1992

1. In the table below, please report total electricity consumption in this building during the period from December 1, 1988 through January 31, 1990.

| Time Period | CONSUMPTION PERIOD | | NO. OF ACCOUNTS | | CONSUMPTION DATA | | BILLING DATA | |
|-------------|--|----------------|--|--|--|-------------------|------------------------------------|---|
| | IF ONLY ONE ACCOUNT OR IF ALL ACCOUNTS ARE ON THE SAME BILLING CYCLE | | IF ACCOUNTS ARE ON DIFFERENT BILLING CYCLES, RECORD MONTH | New Accounts Opened in this Building | Old Accounts Closed in this Building | TOTAL kWh USED | METERED KILOWATT (kW) DEMAND | Quantities Reported Are: A = All Actual E = Some or All Estimated (Circle One) |
| | Beginning Date | Ending Date | | | | | | |
| 1 | | | | | | | A E | |
| 2 | | | | | | | A E | |
| 3 | | | | | | | A E | |
| 4 | | | | | | | A E | |
| 5 | | | | | | | A E | |
| 6 | | | | | | | A E | |
| 7 | | | | | | | A E | |
| 8 | | | | | | | A E | |
| 9 | | | | | | | A E | |
| 10 | | | | | | | A E | |
| 11 | | | | | | | A E | |
| 12 | | | | | | | A E | |
| 13 | | | | | | | A E | |
| 14 | | | | | | | A E | |

*TOTAL DOLLAR AMOUNT should include:

- State and local taxes,
- Fuel adjustment charges,
- System charges (minimum bill or base charge), and
- Demand charges.

*TOTAL DOLLAR AMOUNT should exclude:

- Merchandise,
- Repair charges,
- Service charges (hookup or disconnect fees, late payment fees, etc.), and
- Any other charges not specifically listed at left.

IF ANY CUSTOMERS IN THIS BUILDING ARE ON A BUDGETED BILLING CYCLE, DO NOT REPORT FIGURES FROM THE BUDGETED BILL. INSTEAD, PLEASE REPORT THE TOTAL DOLLAR AMOUNT FOR THE COST OF ACTUAL CONSUMPTION DURING EACH CONSUMPTION PERIOD.

Building Electricity Usage Form, Form EIA-871E-1

Form EIA-871E-1 (10/25/89)
Electricity Usage

Form Approval
OMB No: 1905-0145
Expires: May 31, 1992

2. Does the response to Item 1 above include all accounts active in this building as of January 31, 1990? Yes No Don't Know
3. Does the information in Item 1 above include consumption in any building(s) other than the building shown on the label on the cover of this folder? Yes No Don't Know
4. How do you classify this building/account in your records? (CHECK ONE)
- Residential
 Commercial
 Industrial
 Commercial/Industrial
 Other _____
(specify)

NOTE: Please provide the reported information for this building even if this is not a commercial building according to your definition or records.

5. Form completed by:

NAME (Please Print) _____ () _____ Area Code _____ TELEPHONE _____ DATE _____

TITLE _____

Worksheet for Electricity Usage, Form EIA-871E-2

Form EIA-871E-2 (10/25/89)

Form Approval
OMB No: 1905-0145
Expires: May 31, 1992

WORKSHEET FOR ELECTRICITY USAGE*

For each of the buildings below, enter the requested information for the period of December 1, 1988 through January 31, 1990. Then sum the consumption and expenditures for all of the buildings and provide the totals on the last line of this form. The colored page, which should be returned to Westat, will conceal the figures for individual buildings and display only the final totals.

| Name/Address of Building | How do you classify these buildings in your records? (CHECK ONE) | CONSUMPTION PERIOD | | CONSUMPTION Kilowatthours (kWh) Used | TOTAL DOLLAR AMOUNT |
|--------------------------|---|--------------------|-------------|--|---------------------------|
| | | Beginning Date | Ending Date | | |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> R C I C/I O | | | | |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> R C I C/I O | | | | |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> R C I C/I O | | | | |
| | | | | TOTALS | |

*Retain this page for your organization. Return only the second (colored) page to Westat.
See the back of this form for further instructions.

Building Fuel Oil Usage Form, Form EIA-871F

Form EIA-871F (10/25/89)

Form Approval
OMB No: 1905-0145
Expires: May 31, 1992



U.S. DEPARTMENT OF ENERGY
ENERGY INFORMATION ADMINISTRATION

COMMERCIAL BUILDINGS ENERGY CONSUMPTION SURVEY FOR 1989 BUILDING FUEL OIL USAGE FORM

Label

Consumption data are to be provided for the entire building described on the label.

A copy of the authorization form signed by the building owner/manager is included inside.

Data may be submitted directly on the reporting form inside this folder, or in any other format, such as computer-generated listing, which provides the same information and is convenient for your company.

Whatever format is used to submit data, answers to all questions on this form must be included with the submission.

Additional instructions for completing the form are included in this folder.

IF YOU HAVE ANY QUESTIONS, PLEASE CALL 800-937-6232
TOLL FREE AND ASK FOR THE SUPPLIER SURVEY SPECIALIST.

This report is mandatory under Public Law 93-275, as amended. Failure to comply may result in criminal fines, civil penalties, and other sanctions as provided by law. For the provisions concerning the confidentiality of information submitted on this form, see the General Instructions. Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time of reviewing instructions, searching existing data records, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Energy Information Administration, Office of Statistical Standards EI-73, Mail Station: 1H-023, 1000 Independence Avenue SW, Washington, DC 20585, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

Please use the enclosed self-addressed, postage-paid envelope to return the completed forms, or mail the forms to:

U.S. Department of Energy
c/o Westat, Inc.
P.O. Box 6422
Rockville, MD 20850

Building Fuel Oil Usage Form, Form EIA-871F

Form EIA-871F (10/25/89)
Fuel Oil Usage

Form Approval
OMB No: 1905-0145
Expires: May 31, 1992

1. In the table below, please report the date, quantity delivered, and dollar amount for all deliveries of fuel oil to this building during the period from December 1, 1988 through January 31, 1990, beginning at Time Period 1. Indicate for Time Period 0 the date of the last delivery prior to those for which quantities are reported.

| Time Period | Delivery Date | Check (/) if first delivery to a new customer | Gallons Delivered | Did this delivery fill the tank(s)? Circle One Answer (DK = Don't Know) | TOTAL DOLLAR AMOUNT* |
|-------------|---------------|---|-------------------|---|----------------------|
| 0 | | | | | |
| 1 | | | | YES NO DK | |
| 2 | | | | YES NO DK | |
| 3 | | | | YES NO DK | |
| 4 | | | | YES NO DK | |
| 5 | | | | YES NO DK | |
| 6 | | | | YES NO DK | |
| 7 | | | | YES NO DK | |
| 8 | | | | YES NO DK | |
| 9 | | | | YES NO DK | |
| 10 | | | | YES NO DK | |
| 11 | | | | YES NO DK | |
| 12 | | | | YES NO DK | |
| 13 | | | | YES NO DK | |
| 14 | | | | YES NO DK | |

*TOTAL DOLLAR AMOUNT should include State and local taxes, and exclude merchandise, repair or service charges.

2. Types of fuel oil delivered. Please check box(es) to indicate type(s) of the fuel oil supplied to this building:

- Distillate (#1, #2, and #4 fuel oil; #1 and #2 diesel oil)
- Residual (#5 and #6 fuel oil)
- Kerosene
- Other (please specify): _____

3. Does the response to Item 1 include all accounts or customers active in this building as of January 31, 1990?

- Yes
- No
- Don't Know

4. Does the information in Item 1 include deliveries to any building(s) other than the building shown on the label on the cover of this folder?

- Yes
- No
- Don't Know

5. How do you classify this building/account in your records? (CHECK ONE)

- Residential
- Commercial
- Industrial
- Commercial/Industrial
- Other (please specify): _____

NOTE: Please provide the requested information for this building even if this is not a commercial building according to your definition.

6. Form completed by:

NAME (Please Print) _____

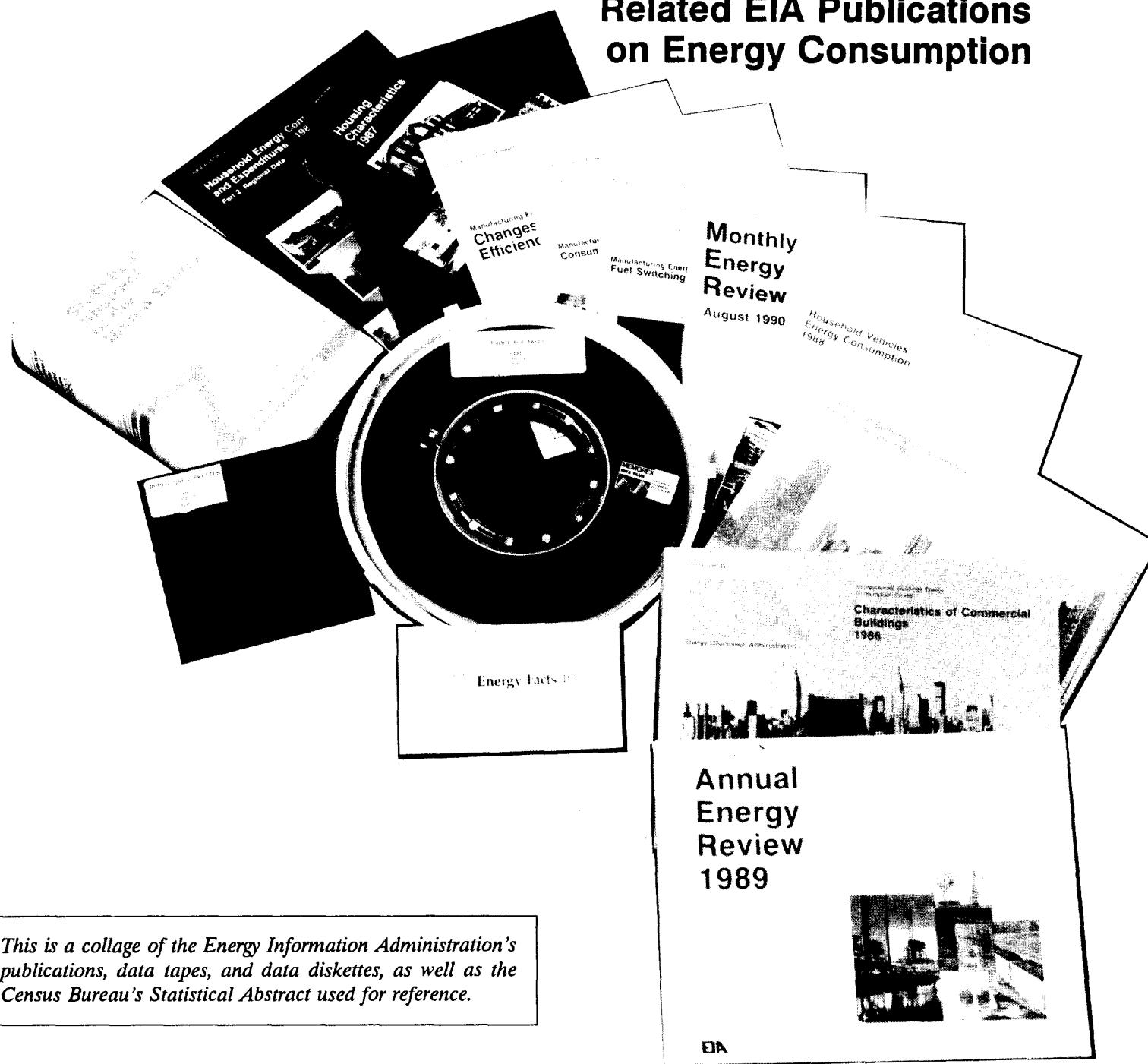
TITLE _____

(_____) Area Code TELEPHONE _____

DATE _____

Appendix G

Related EIA Publications on Energy Consumption



Appendix G

Related EIA Publications on Energy Consumption

For information about how to obtain these publications, see the inside cover of this report. Please note that the prices quoted here are subject to change.

In addition to the reports listed below, public use data tapes and data diskettes for the residential, residential transportation and commercial sectors are available from the National Technical Information Service (NTIS). To obtain information on how to order the tapes/diskettes, you may call NTIS at 703/487-4807, FAX number 703/321-8547. Data diskettes can also be obtained from GPO. For ordering information call 202/275-0186.

Commercial Sector

Note: The name of the Nonresidential Buildings Energy Consumption Survey was changed to the Commercial Buildings Energy Consumption Survey, beginning with the 1989 survey. The survey name was also dropped from the report title.

Characteristics of Buildings

Commercial Buildings Characteristics 1989; June 1991, DOE/EIA-0246(89), GPO Stock No. 061-003-00699-0, \$18.00.

Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1986; September 1988, DOE/EIA-0246(86), GPO Stock No. 061-003-00580-2, \$16.00.

Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1983; July 1985, DOE/EIA-0246(83), GPO Stock No. 061-003-00439-3, \$7.50.

Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings,

1983; A Supplemental Reference, DOE/EIA-M008, \$22.95. Available from the NTIS, Order No. DE-85015581.

Nonresidential Buildings Energy Consumption Survey: Fuel Characteristics and Conservation Practices; June 1981, DOE/EIA-0278, GPO Stock No. 061-00300200-5, \$9.00.

Nonresidential Buildings Energy Consumption Survey: Building Characteristics; March 1981, DOE/EIA-0246, GPO Stock No. 061-003-00171-8, \$6.50.

Consumption and Expenditures

Nonresidential Buildings Energy Consumption Survey: Commercial Buildings Consumption and Expenditures 1986; May 1989, DOE/EIA-0318(86), GPO Stock No. 061-003-00613-2, \$19.00.

Nonresidential Buildings Energy Consumption Survey: Commercial Buildings, Consumption and Expenditures 1983; September 1986, DOE/EIA-0318(83), GPO Stock No. 061-003-00496-2, \$13.00.

Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures, Part 1: Natural Gas and Electricity; March 1983, DOE/EIA-0318/1, GPO Stock No. 061-003-00298-6, \$9.50.

Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures, Part 2: Steam, Coal, Fuel Oil, LPG, and Total Fuels; December 1983, DOE/EIA-0318(79)/2, GPO Stock No. 061003-00366-4, \$6.00.

Other Publications on the Commercial Sector

Analysis Report: Lighting in Commercial Buildings; March 1992, DOE/EIA-0555(92)/1, GPO Stock No. 061-003-00749-0, \$6.50.

Residential Transportation Sector

Note: The survey name was dropped from the beginning of the report title starting with the 1988 data report, and the report title changed to "Household Vehicles Energy Consumption 1988."

Household Vehicles Energy Consumption 1988; February 1990, DOE/EIA-0464(88), GPO Stock No. 061-003-00652-3, \$11.00.

Residential Transportation Energy Consumption Survey: Consumption Patterns of Household Vehicles 1985; April 1987, DOE/EIA-0464(85), GPO Stock No. 061-003-00521-7, \$8.50.

Residential Transportation Energy Consumption Survey: Consumption Patterns of Household Vehicles, 1983; January 1985, DOE/EIA-0464(83), GPO Stock No. 061-003-00420-2, \$4.50.

Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, Supplement: January 1981 to September 1981; February 1983, DOE/EIA-0328, GPO Stock No. 061-003-00297-8, \$4.75.

Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, June 1979 to December 1980; April 1982, DOE/EIA-0319 (no GPO Stock No.).

Residential Sector

Housing Characteristics

Note: The survey name was dropped from the beginning of the report title starting with the 1987 data reports.

Housing Characteristics 1987; May 1989, DOE/EIA-0314(87), GPO Stock No. 061-003-00619-1, \$13.00.

Residential Energy Consumption Survey: Housing Characteristics 1984; October 1986, DOE/EIA-0314(84), GPO Stock No. 061-003-00499-7, \$12.00.

Residential Energy Consumption Survey: Housing Characteristics, 1982; August 1984, DOE/EIA-0314(82), GPO Stock No. 061-003-00393-1, \$7.00.

Residential Energy Consumption Survey Housing Characteristics, 1981; August 1983, DOE/EIA-0314(81), GPO Stock No. 061-003-00330-3, \$6.50.

Residential Energy Consumption Survey: Housing Characteristics, 1980; June 1982, DOE/EIA-0314, GPO Stock No. 061-003-00256-1, \$11.00.

Residential Energy Consumption Survey: Characteristics of the Housing Stock and Households, 1978; February 1980, DOE/EIA-0207/2, GPO Stock No. 061-003-00093-2, \$4.25.

Residential Energy Consumption Survey: Conservation; February 1980, DOE/EIA-0207/3, GPO Stock No. 061003-00087-8, \$6.00.

Preliminary Conservation Tables from the National Interim Energy Consumption Survey; August 1979, DOE/EIA-0193/P (no GPO Stock No.).

Characteristics of the Housing Stock and Households: Preliminary Findings from the National Interim Energy Consumption Survey; October 1979, DOE/EIA-0199/P (no GPO Stock No. available).

Consumption and Expenditures

Note: The survey name was dropped from the beginning of the report title starting with the 1987 data reports. The titles were changed to *Household Energy Consumption and Expenditures 1987, Part 1: National and Part 2: Regional.*

Household Energy Consumption and Expenditures 1987, Part 1: National Data; October 1989, DOE/EIA-0321/1(87), GPO Stock No. 061-003-00635-3, \$15.00. Note: Energy end-use data are included in this report.

Household Energy Consumption and Expenditures 1987, Part 2: Regional Data; DOE/EIA-0321/2(87) (no GPO Stock No available), \$16.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 Through March 1985, Part 1: National Data; March 1987, DOE/EIA-0321/1(84), GPO Stock No. 061-003-00519-5, \$9.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 Through March 1985, Part 2: Regional Data; May 1987, DOE/EIA-

0321/2(84), GPO Stock No. 061-003-00528-4, \$17.00. Note: Energy end-use data are included in this report.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1982 Through March 1983, Part 1: National Data; November 1984, DOE/EIA-0321/1(82), GPO Stock No. 061-003-00411-3, \$7.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1982 Through March 1983, Part 2: Regional Data; December 1984, DOE/EIA-0321/2(82), GPO Stock No. 061-003-00414-8, \$9.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, Part 1: National Data; September 1983, DOE/EIA-0321/1(81), GPO Stock No. 061-003-00340-1, \$6.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, Part 2: Regional Data; October 1983, DOE/EIA-0321/2(81), GPO Stock No. 061-003-00357-5, \$8.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 1: National Data; September 1982, DOE/EIA-0321/1(80), GPO Stock No. 061-003-00278-1, \$7.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 2: Regional Data; June 1983, DOE/EIA-0321/2(80), GPO Stock No. 061-00300319-2, \$7.00.

Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures, Part 1: National Data (Including Conservation); April 1981, DOE/EIA-0262/1, GPO Stock No. 061-00300191-2, \$6.50.

Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures, Part II: Regional Data; May 1981, DOE/EIA-0262/2, GPO Stock No. 061-003-00189-1, \$8.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1978 Through March

1979; July 1980, DOE/EIA-0207/5, GPO Stock No. 061-003-00131-9, \$7.50.

Single-Family Households: Fuel Oil Inventories and Expenditures: National Interim Energy Consumption Survey; December 1979, DOE/EIA-0207/1, GPO Stock No. 061-003-00075-4, \$3.50.

Other Publications on the Residential Sector

"End-Use Consumption of Residential Energy" (Article), pp. vii-xiv, Monthly Energy Review, July 1987, DOE/EIA-0035(87/07).

Residential Energy Consumption Survey: Trends in Consumption and Expenditures 1978-1984 June 1987, DOE/EIA-0482, GPO Stock No. 061-003-00535-7, \$12.00.

Residential Conservation Measures; July 1986, SR/EEUD/86/01 (no GPO Stock No.). An Economic Evaluation of Energy Conservation and Renewable Energy Tax Credits; October 1985, Service Report (no GPO Stock No.).

Residential Energy Consumption and Expenditures by End Use for 1978, 1980, and 1981; December 1984, DOE/EIA-0458, GPO Stock No. 061-003-00415-6, \$4.50.

Weatherization Program Evaluation, SR-EEUD-84-1; August 1984 (available from the Office of the Assistant Secretary for Conservation and Renewable Energy, Department of Energy).

Residential Energy Consumption Survey: Regression Analysis of Energy Consumption by End Use; October 1983, DOE/EIA-0431, GPO Stock No. 061-00300347-8, \$5.00.

National Interim Energy Consumption Survey: Exploring the Variability In Energy Consumption; July 1981, DOE/EIA-0272, GPO Stock No. 061-003-00205-6, \$5.00.

National Interim Energy Consumption Survey: Exploring the Variability in Energy Consumption--A Supplement; October 1981, DOE/EIA-0272/S, GPO Stock No. 061-003-00217-0, \$4.50.

Energy Use by U.S. Households; November 1980, DOE/EIA-0248 (brochure, no GPO Stock No.).

Industrial Sector

Manufacturing Energy Consumption Survey: Changes in Energy Intensity in the Manufacturing Sector 1980 - 1988; DOE/EIA-0552(80-88). GPO Stock No. 061-003-00734-1, \$4.75.

Manufacturing Energy Consumption Survey: Manufacturing Fuel-Switching Capability 1988; September 1991, DOE/EIA-0515(88), GPO Stock No. 061-003-00720-1, \$9.00.

Manufacturing Energy Consumption Survey: Consumption of Energy, 1988; May 1991, DOE/EIA 0512(88), GPO Stock No. 061-003-00703-8, \$11.00.

Manufacturing Energy Consumption Survey: Energy Efficiency in Manufacturing, 1985; January 1990, DOE/EIA-0516(85), GPO Stock No. 061-00300650-7, \$4.25.

Manufacturing Energy Consumption Survey: Fuel-Switching Capability, 1985; December 1988, DOE/EIA-0515(85), GPO Stock No. 061-003-00601-9, \$3.50.

Manufacturing Energy Consumption Survey: Methodological Report, 1985; November 1988, DOE/EIA-0514(85), GPO Stock No. 061-00300595-1, \$6.00.

Manufacturing Energy Consumption Survey: Consumption of Energy, 1985; November 1988, DOE/EIA-0512(85), GPO Stock No. 061-003-00594-2, \$6.00.

"*Manufacturing Sector Energy Consumption 1985 Provisional Estimates,*" *Monthly Energy Review,* January 1987, DOE/EIA-0035(87/01), pp. vii-x. *Report on the 1980 Manufacturing Industries' Energy Consumption Study and Survey of Large Combustors;* February 1983, DOE/EIA-0358, GPO Stock No. 061-003-00293-5, \$5.00.

Industrial Energy Consumption, "Survey of Large Combustors: Report on Alternate Fuel-Burning Capabilities of Large Boilers in 1979"; February 1982, DOE/EIA-0304, GPO Stock No. 061-003-0233-1, \$2.50.

Methodological Report of the 1980 Manufacturing Industries Survey of Large Combustors (EIA-463); March 1982, DOE/EIA-0306 (no GPO Stock No.).

Cross-Sector

Energy Consumption by End-Use Sector: A Comparison of Measures by Consumption and Supply Surveys; April 6, 1990, DOE/EIA-0533 (no GPO Stock No. available), \$2.50.

Natural Gas: Use and Expenditures; April 1983, DOE/EIA-0382, GPO Stock No. 061-003-00307-9, \$5.50.

Public Use Tapes

Note: All tapes are available through the NTIS.

Residential and Residential Transportation Sectors

Residential Energy Consumption Survey: 1987 and Residential Transportation Energy Consumption Survey, 1988; Order No. PB90-501461, \$220.

Residential Energy Consumption Survey: 1984 and Residential Transportation Energy Consumption Survey, 1985; Order No. PB87-186540, \$220.

Residential Energy Consumption Survey: 1982 and Residential Transportation Energy Consumption Survey, 1983; Order No. PB85-221760, \$220.

Residential Energy Consumption Survey: Consumption and Expenditures, 1980-1981; Monthly Billing Data; Order No. PB84-166230, \$220.

Residential Energy Consumption Survey: Housing Characteristics, 1981; Consumption and Expenditures, 1981-1982; Monthly Billing Data; Order No. PB84-120476, \$220.

Residential Energy Consumption Survey: Housing Characteristics, Annualized Consumption and Expenditures, 1980-1981; Order No. PB83-199554, \$220.

Residential Energy Consumption Survey: Household Transportation Panel Monthly Gas Purchases and Vehicle and Household Characteristics, 6/79-9/81; Order No. PB84-162452, \$220.

Residential Energy Consumption Survey: Household Screener Survey, 1979-1980; Order No. PB82-114877, \$220.

Residential Energy Consumption Survey: Household Monthly Energy Consumption and Expenditures, 1978-1979; Order No. PB82-114901, \$220.

National Interim Energy Consumption Survey (Residential), 1978; Order No. PB81-108714, \$220.

Commercial Sector

Nonresidential Buildings Energy Consumption Survey: 1986 Data; Order No. PB90-500034, \$220.

Nonresidential Buildings Energy Consumption Survey: 1979 and 1983 Data; Order No. PB88-245162, \$220.

Public Use Diskettes

Note: Diskettes are available through the NTIS and GPO.

Residential Energy Consumption Survey 1987 data, NTIS - ASCII format: Order No. PB-91-505115, \$130, and dBASE format: Order No. PB-91-505107, \$130. GPO - ASCII/dBASE format, order by title, \$45 for each set.

Commercial Buildings Energy Consumption Survey 1989 data diskettes planned for release in June 1992.

Nonresidential Buildings Energy Consumption Survey 1986 Data, NTIS ASCII format: Order No. PB91-506808, \$130.

Residential Transportation Energy Consumption Survey 1988 data, NTIS - ASCII format: Order No.

PB91- 507269, dBASE format: Order No. PB91-507277, \$50 each. GPO - ASCII/dBASE format, order by title, \$15 for each set.

Planned Publications

Manufacturing Energy Consumption Survey: Changes in Energy Consumption 1985 - 1988; planned, 1993.

Housing Characteristics 1990; planned for April 1992.

Household Energy Consumption and Expenditures 1990; planned for December 1992.

Household Vehicles Energy Consumption 1991; planned for December 1992.

Development Methodology for the 1991 MECS Based on Data Users and Industry Input, planned for May 1992.

Derived Annual Estimates of Purchased Energy in Manufacturing, 1974-1988; planned for September 1992.

Commercial Campuses and Complexes 1989: A Pilot Study of District Heating and Cooling; planned for December 1992.

Note: the Energy Information Administration also publishes the *State Energy Data Report Consumption Estimates* DOE/EIA-0214 annually. This report contains State-level annual consumption information derived from EIA Supply surveys.

Glossary

Ability to Switch Main Heating Fuel: See **Fuel-Switching Capability.**

Account Classification: As used in this report, this term refers to the way in which suppliers of electricity, natural gas, or fuel oil classify and bill their customers. Commonly used account classifications are "Commercial," "Industrial," and "Residential." Suppliers' definitions of these terms vary from supplier to supplier and from the definitions used in CBECS. In addition, the same customer may be classified differently by each of its energy suppliers.

Active Solar: As an energy source, energy from the sun collected and stored using mechanical pumps or fans to circulate heat-laden fluids or air between solar collectors and the building. Examples include the use of solar collectors for water or space heating. The 1989 CBECS did not gather consumption and expenditures data for active solar. Data on the passive collection of solar energy, such as by trombe walls, were not collected on the 1989 CBECS. (See **Energy Source.**)

Agricultural: As used in this survey, activities involving the manufacturing, processing, sale, storage, or housing of agricultural products, including livestock. These buildings were listed during the listing stage. However, buildings that had 50 percent or more of the floorspace devoted to agricultural activity were considered out of scope and were dropped from the sample during the interview phase. Farms and farm buildings (silos, grain elevators, and barns) were out of scope for the CBECS and were not listed during the listing stage. (See **Commercial Building, Out of Scope, Nonresidential Building, Building, Principal Building Activity**, and Appendix A, "How the Survey was Conducted.")

Air Conditioning: See **Cooling.**

Air Ducts or Air-Handling Units: A vehicle for channeling warm or cool air to different parts of a building. The process of moving the conditioned air often involves passing air over heating or cooling coils and forcing it from a central location through ducts or air-handling units. Air-handling units are hidden in the walls or ceilings, where they use steam or hot water to heat the air or chilled water to cool the air, inside the duct work. (See **Cooling, Duct, and Space Heating.**)

Alternate Main Heating Fuel: The fuel that would be used in place of the usual main heating fuel, if the building had to switch fuels. (See **Fuel-Switching Capability.**)

Authorization Form: A form signed by the respondent from a building, authorizing energy supplier companies that serve the building to release information on the amounts and costs of energy consumed in the building during a specified period. (See **Energy Supplier** and Appendix A, "How the Survey Was Conducted.")

Ballast: See **High-Efficiency Ballast.**

Barrel: A volumetric unit of measure for crude oil and petroleum products equivalent to 42 U.S. gallons. (See **Gallon.**)

Baseboard: As a type of heating equipment, a system in which either electric resistance coils or finned tubes carrying steam or hot water are mounted behind shallow panels along baseboards. Baseboards rely on passive convection to distribute heated air in the space. Electric baseboards are an example of an "Individual Space Heater." (See **Individual Space Heater.**)

Boiler: A type of space-heating equipment consisting of a vessel or tank where heat produced from the combustion of fuels such as natural gas, fuel oil, or coal is used to generate hot water or steam. Many buildings have their own boilers, while other buildings have steam or hot water piped in from a central plant.

For this survey, only boilers inside the building (or serving only that particular building) are counted as part of the building's heating system. Steam or hot water piped into a building from a central plant is considered district heat. (See **Furnace**, **HVAC**, and **District Heat**.)

Bottled Gas: See **Liquefied Petroleum Gas (LPG)** and **Propane**.

British Thermal Unit: See **Btu**.

Btu (British Thermal Unit): A unit of energy consumed by or delivered to a building. A Btu is defined as the amount of energy required to increase the temperature of 1 pound of water by 1 degree Fahrenheit, at normal atmospheric pressure. Energy consumption is expressed in Btu in this report to allow for consumption comparisons among fuels that are measured in different units. (See **Metric Conversion Factors**.)

Btu Conversion Factors: The Btu conversion factors for this survey are as follows:

| | Btu Equivalent | Unit |
|--|----------------|--------------|
| Electricity | 3,412 | Kilowatthour |
| Natural Gas | 1,030 | cubic foot |
| Distillate Fuel Oils (Nos. 1,2, and 4) | 138,690 | gallon |
| Residual Fuel Oils (Nos. 5 and 6) | 149,690 | gallon |
| Kerosene | 135,000 | gallon |
| District Heat (Steam and Hot Water) | 1,000 | pound |

Note: Btu of district hot water have been converted into equivalent pounds of steam using the conversion 1,000 Btu hot water \approx 1 pound steam.

Sources: Energy Information Administration, *Monthly Energy Review* (June 1991), pp. 125-129 for electricity, natural gas, distillate, residual, and kerosene; and *Methodological Issues In the Nonresidential Buildings Energy Consumption Survey* (September 1983) pp. 173-175 for district steam.

Building: For this survey, a structure totally enclosed by walls extending from the foundation to the roof, containing over 1,000 square feet of floorspace, and intended for human occupancy. Structures that were included in the survey as a specific exception were parking garages not totally enclosed by walls and a roof, as well as structures erected on pillars to elevate the first fully enclosed level, but leaving the sides at ground level open.

Excluded from the survey as nonbuildings were the following: structures (other than the exceptions just noted) that were not totally enclosed by walls and a roof (such as oil refineries, steel mills, and water towers); street lights, pumps, billboards, bridges, swimming pools, and construction sites; mobile homes and trailers, even if they housed commercial activity; and oil storage tanks. (See **Commercial Building** and **Nonresidential Building**.)

Building Floorspace: See **Floorspace**.

Building Shell (Envelope): The thermal envelope of the building, that is, the roof, exterior walls, and bottom floors that enclose conditioned space through which thermal energy may be transferred to or from the exterior.

Building Shell Conservation Feature: A building feature designed to reduce the energy loss or gain through the shell or envelope of the building. The 1989 CBECS collected data on the following specific building shell energy conservation features: roof, ceiling or wall insulation; storm windows or double- or triple-paned glass (multiple glazing); tinted or reflective glass or shading films; exterior or interior shadings or awnings; and weather stripping or caulking. (See **Roof or Ceiling Insulation**, **Wall Insulation**, **Reflective or Shading Glass or Film**, **Storm or Multiple Glazing**, **Building Shell (Envelope)**, **Exterior or Interior Shadings or Awnings**, and **Weather Stripping or Caulking**.)

Built-Up Roof: A roof covering consisting of several successive layers (each of which is called a ply) usually of roofing felt with moppings of hot asphalt between layers and topped by a mineral-surfaced layer or by gravel embedded in a heavy coat of asphalt.

Campus or Complex: See Multibuilding Facility.

Caulking: See Weather Stripping or Caulking.

CDD: See Cooling Degree-Days (CDD).

Census Division: A geographic area consisting of several States defined by the U.S. Department of Commerce, Bureau of the Census. (See the Census Regions and Divisions map in Appendix E.) The States are grouped into nine divisions and four regions:

| Region | Division | States |
|-----------|--------------------|---|
| Northeast | New England | Connecticut, Maine, Massachusetts, New Hampshire, Vermont, and Rhode Island |
| | Middle Atlantic | New Jersey, New York, and Pennsylvania |
| Midwest | East North Central | Illinois, Indiana, Michigan, Ohio, and Wisconsin |
| | West North Central | Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota |
| South | South Atlantic | Delaware, the District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia |
| | East South Central | Alabama, Kentucky, Mississippi, and Tennessee |
| | West South Central | Arkansas, Louisiana, Oklahoma, and Texas |
| West | Mountain | Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming |
| | Pacific | Alaska, California, Hawaii, Oregon, and Washington |

Census Region: See Census Division and the Census Regions and Divisions map in Appendix E.

Central Chiller: Any centrally located air-conditioning system that produces chilled water in order to cool air. The chilled water or cold air is then distributed throughout the building using pipes or air ducts, or both. These systems are also commonly known as "chillers," "centrifugal chillers," "reciprocating chillers" or "absorption chillers." Chillers are generally located in or just outside the building they serve. Buildings receiving district chilled water are served by chillers located at central physical plants. (See Cooling, District Chilled Water, Central Physical Plant, and HVAC.)

Central Physical Plant: A plant that is owned by, and on the grounds of, a multibuilding facility and that provides district heating, district cooling, or electricity to other buildings on the same facility. To qualify as a central plant for this survey, the plant must provide district heat, district chilled water, or electricity to at least one other building. The central physical plant may be by itself in a separate building or may be located in a building where other activities occur. (See Multibuilding Facility; District Heat; and District Chilled Water.)

Chiller: See Central Chiller.

Climate Zone: One of five climatically distinct areas defined by long-term weather conditions affecting the heating and cooling loads in buildings. The zones were developed by the Energy End Use and Integrated Statistics Division (EEUISD) from seven distinct climate categories originally identified by the American Institute of Architects (AIA) for the U.S. Department of Energy and the U.S. Department of Housing and Urban Development.

The zones were determined according to the 45-year average (1931-1975) of the annual heating and cooling degree-days (base 65 degrees Fahrenheit). An individual building was assigned to a climate zone according to the 45-year average annual degree-days for its NOAA Division. (See Heating Degree-Days (HDD), Cooling Degree-Days (CDD), Degree-Days 45-Year Average and NOAA Division.)

The zones are defined as follows:

| AIA Group | EEUD Climate Zone | Average Annual Cooling Degree-Days | Average Annual Heating Degree-Days |
|-----------|-------------------|------------------------------------|------------------------------------|
| 1 | 1 | Less than 2,000 | More than 7,000 |
| 2 | 2 | Less than 2,000 | 5,500 to 7,000 |
| 3 | 3 | Less than 2,000 | 4,000 to 5,499 |
| 4 | 4 | Less than 2,000 | 2,000 to 3,999 |
| 5 | 4 | Less than 2,000 | Less than 2,000 |
| 6 | 5 | 2,000 or more | Less than 2,000 |
| 7 | 5 | 2,000 or more | 2,000 to 3,999 |

Coal: In this report, the term includes anthracite, bituminous, and subbituminous coal, as well as the derivative of coal known as coke. The 1989 CBECS determined if coal was used in the commercial building but did not collect consumption and expenditure data on the use of coal as an energy source. (See Energy Source.)

Cogeneration: The sequential generation of electric power and useful heat by a single process. In essence, cogeneration involves the recovery of waste-heat from electric power generation. Neither generation of electricity without use of the byproduct heat, nor waste-heat recovery from processes other than electricity generation is included in the definition of cogeneration. (See Electricity Generation.)

Commercial Building: A building with more than 50 percent of its floorspace used for commercial activities. Commercial buildings include, but are not limited to, stores, offices, schools, churches, gymnasiums, libraries, museums, hospitals, clinics, warehouses, and jails. Government buildings were included except for buildings on site with restricted access, such as some military bases or reservations. Farms and buildings located on farms (such as silos, grain elevators, and barns) were excluded from the survey. For a more complete list of buildings in the survey, see Appendix D, "Types of Buildings." (See Building, Commercial, Residential, Manufacturing/Industrial, Agricultural, Nonresidential Building, and Principal Building Activity.)

Commercial Freezer: See Refrigeration Equipment.

Commercial Refrigeration Unit: See **Refrigeration Equipment**.

Commercial: Neither residential, manufacturing, nor agricultural. (See **Residential, Manufacturing/Industrial, Agricultural, and Commercial Building**.)

Computer Area with Separate Air-Conditioning System: In this survey, this term is used to denote space specifically designed and equipped to meet the needs of computer equipment for controlled temperatures and/or humidity. The air-conditioning system for this area is separate from that used to control the environment in other parts of the building.

Computerized Energy Management and Control System: See **Energy Management and Control System (EMCS)**.

Concrete Panel: A wall construction panel made of concrete, which is either prefabricated in a factory or poured at the site and then hoisted onto the structure.

Concrete Roof: For this survey, a poured concrete roof, often intended to bear the load of a parking garage that occupies the roof area of a building.

Conditional Energy Intensity: Total consumption of a particular energy source(s) or fuel(s) divided by the total floorspace of buildings that use the energy source(s) or fuel(s), i.e., the ratio of consumption to energy source-specific floorspace. (See **Energy Source-Specific Floorspace**.)

Confidence Interval: A range that is estimated to include the population value at a given confidence level. The range is calculated from the sample date. The confidence level is the expected fraction of such confidence intervals that actually do include the corresponding, unknown population value. (See Appendix B, "Nonsampling and Sampling Errors.")

Conservation Feature: A feature in the building designed to reduce the usage of energy. (See **Building Shell Conservation Feature**, **HVAC Conservation Feature**, and **Lighting Conservation Feature**.)

Consumption: The amount of energy used by, or delivered to, a building during a given period of time. For this report, all consumption statistics unless otherwise noted, are net energy consumption, which includes electric utility sales to commercial buildings but excludes electrical system and district heat energy losses. In contrast, primary energy consumption takes into account the fuels that are required to generate electricity. Statistics for this report are presented on an annual basis for the 365-day period of calendar year 1989. Data on energy consumption were not collected by end uses separately. For example, although it might be known that electricity was used in some buildings for heating, the consumption of electricity reported for those buildings would typically include other uses of electricity as well (such as lighting and water heating). (See **Btu, Delivered Energy, Energy Supplier, Expenditures**, and "Annual Consumption and Expenditures" in Appendix B, "Nonsampling and Sampling Errors.")

Consumption per Square Foot: The aggregate ratio of total consumption for a particular set of buildings to the total floorspace of those buildings. (See **Consumption, Energy Intensity**, and **Floorspace**.)

Consumption per Worker: The aggregate ratio of total consumption to total number of workers. (See **Consumption and Number of Workers in the Building**.)

Continuous-Delivery Energy Sources: Those energy sources provided continuously to a building. In this report, continuous delivery energy sources are electricity, natural gas, and district heating and cooling. (See **Energy Source** and **Discrete-Delivery Energy Sources**.)

Conversion Factors: See **Btu and Metric Conversion Factors**.

Cooking: In this report, the use of energy for commercial or institutional food preparation. The 1989 CBECS asked specifically about "commercial or institutional cooking," which was intended to include any kitchen facility that was not part of a residence. This is one of six energy end uses specifically asked for in this survey. (See Energy End Use.)

Cooling: Conditioning of room air for human comfort by a refrigeration unit (such as an air-conditioner or heat pump) or by circulating chilled water through a central cooling or district cooling system. Use of fans or blowers by themselves, without chilled air or water, is not included in this definition of cooling. This is one of six end uses specifically asked for in this survey. (See Energy End Use, Central Cooling, Heat Pump, and HVAC.)

Cooling Degree-Days (CDD): A measure of how hot a location was over a period of time, relative to a base temperature. In this report, the base temperature is 65 degrees Fahrenheit, and the period of time is 1 year. The cooling degree-days for a single day is the difference between that day's average temperature and the base temperature if the daily average is greater than the base and zero if the daily average temperature is less than or equal to the base temperature. The cooling degree-days for a longer period of time is the sum of the daily cooling degree-days for the days in that period. (See Heating Degree-Days (HDD) and Climate Zone.)

Cubic Foot (cf): As a natural gas measure, the volume of gas contained in a cube with an edge that is 1 foot long at standard temperature and pressure (60 degrees Fahrenheit and 14.73 pounds standard per square inch.) The thermal content varies by the composition of the gas. (See Natural Gas and Btu.)

Decorative or Construction Glass: An exterior building wall material of glass decorative coverings such as glass blocks or spandrels, that are not window or vision (see-through) glass. Structural glass or glass curtain walls used on the outside of buildings are also included in this category. For this report, decorative or construction glass was included in the "Other" exterior wall material category. (See Window or Vision Glass.)

Degree-Days 1989: The total annual heating and cooling degree-days (base 65 degrees Fahrenheit) during calendar year 1989. For this report, each building was assigned to a National Oceanic and Atmospheric Administration (NOAA) Division, and the division's daily temperature averages were used to compute degree-days for 1989. The daily temperature data were obtained from NOAA. (See Heating Degree-Days (HDD), Cooling Degree-Days (CDD), Degree-Days 45-Year Average, and NOAA Division.)

Degree-Days 45-Year Average: The average of the 45 total annual heating and cooling degree days (base, 65 Degrees Fahrenheit) in each NOAA Division, for the years 1931 through 1975. Computed form the Division's daily temperature averages for each year in question. Used to assign individual buildings to climate zones. (See Heating Degree-Days (HDD), Cooling Degree-Days (CDD), Degree-Days 1989, NOAA Division, and Climate Zone.)

Delivered Energy: In this report, the amount of energy delivered to the site (building); no adjustment was made for the fuels consumed to produce electricity or district sources. This is also referred to as net energy.

Demand: The rate of energy consumption per unit time. The term is most commonly applied to electricity, for which demand is typically measured in watts (W) or kilowatts (kW). (See Consumption and Peak Demand.)

Demand-Metered: Having a meter to measure peak demand (in addition to total consumption) during a billing period. The 1989 CBECS collected data on metered demand only for electricity. Demand is not usually metered for other energy sources. (See Demand, Peak Demand, and "Peak Electricity Demand" in Appendix B, "Nonsampling and Sampling Errors.")

Demand-Side Management (DSM) Programs: These are organized utility-sponsored activities that are intended to affect the amount and timing of customer electricity use.

Discrete-Delivery Energy Sources: Energy sources that must be delivered to a site. In this report, fuel oil is the only discrete delivery energy source. (See **Energy Source** and **Continuous-Delivery Energy Sources**.)

District Chilled Water: Chilled water from an outside source used as an energy source for cooling in a building. The water is chilled in a central plant and piped into the building. Chilled water may be purchased from a utility or provided by a central physical plant in a separate building that is part of the same multibuilding facility (for example, a hospital complex or university). (See **Energy Source**, **Central Physical Plant**, and **Multibuilding Facility**.)

District Heat: Steam or hot water from an outside source used as an energy source for space heating or another end use in a building. The steam or hot water is produced in a central plant and piped into the building. The district heat may be purchased from a utility or provided by a central physical plant in a separate building that is part of the same multibuilding facility (for example, a hospital complex or university). For this report, district steam and district hot water are usually reported together as district heat. (See **Energy Source**, **Central Physical Plant**, and **Multibuilding Facility**.)

District Hot Water: District heat in the form of hot water. (See **District Heat**.)

District Steam: District heat in the form of steam. (See **District Heat**.)

DSM: See **Demand-Side Management Programs**.

Duct: A passageway made of sheet metal or other suitable material to convey air from the heating, ventilating, and cooling systems to and from the point of utilization.

Electric Baseboard: An individual space heater with electric resistance coils mounted behind shallow panels along baseboards. Electric baseboards rely on passive convection to distribute heated air to the space. (See **Individual Space Heater** and **Baseboard**.)

Electricity: As an energy source for this report, electric energy supplied to a building by a central utility via power lines or from a central physical plant in a separate building that is part of the same multibuilding facility. Electric power generated within a building for exclusive use in that building is specifically excluded from the definition of electricity as an energy source. (See **Energy Source**, **Central Physical Plant**, and **Multibuilding Facility**.)

Electricity Generation: The onsite production of electricity using electricity generators on either a regular or emergency basis. This is one of the end uses of energy specifically asked for in this survey. Not included in this survey were electricity-generating plants belonging to utility companies, which produce electric power for sale to other buildings. (See **Energy End Use**, **Electricity**, **Multibuilding Facility**, and **Cogeneration**.)

EMCS: See **Energy Management and Control System (EMCS)**

Energy End Use: A use for which energy is consumed in a building. Information on six specific end uses was collected in this survey. However, data are reported on five end uses in the tables in this report, since buildings reported electricity generation as an end use. (See **Cooking**, **Cooling**, **Space Heating**, **Electricity Generation**, **Manufacturing**, and **Water Heating**.)

Energy Intensity: The ratio of consumption to floorspace. In this report, energy intensity is usually given on an aggregate basis, as the ratio of the total consumption for a set of buildings to the total floorspace in those buildings. This report presents both conditional energy intensity and gross energy intensity. The energy intensity can also be computed for individual buildings. (See **Consumption**, **Conditional Energy Intensity**, **Gross Energy Intensity**, and **Floorspace**.)

Energy Management and Control System (EMCS): An energy conservation feature that uses mini/microcomputers, instrumentation, control equipment, and software to manage a building's use of energy for heating, ventilation, air conditioning, lighting, and/or business-related processes. These systems can also manage fire control, safety, and security. Not included as EMCS are time-clock thermostats. (See Occupant Control of Heating, and Occupant Control of Cooling.)

Energy Source: A type of energy or fuel consumed in the building. For this report, the energy sources for which consumption and expenditures statistics are presented are electricity, natural gas, fuel oil, district heat, and district chilled water. The 1989 CBECS also collected information on the use, but not on the amounts consumed of, or spent for, these energy sources: propane, wood, coal, and active solar. (See Electricity, Natural Gas, Fuel Oil, District Heat, District Chilled Water, Liquefied Petroleum Gas (LPG), Propane, Wood, Coal, and Active Solar.)

Energy Source-Specific Floorspace: Total floorspace of those buildings that use a particular fuel. (See Conditional Energy Intensity.)

Energy Supplier: A company that provides electricity, natural gas, fuel oil, or other sources of energy to a building. In the 1989 CBECS, only suppliers of electricity, natural gas, fuel oil, and district heat or chilled water were sent the Supplier Survey. (See Energy Source.)

Envelope: See Building Shell (Envelope).

Establishment: As defined by the Standard Industrial Classification Manual developed by the Office of Management and Budget, "an economic unit, generally, at a single physical location where business is conducted or where services or industrial operations are performed." However, "establishment" is not synonymous with "building." In this survey, respondents were asked how many establishments or organizations occupy the building (i.e., hold or lease space in it on a full-time basis).

Evaporative Cooler ("Swamp" Cooler): A type of cooling equipment using the evaporation of water to cool air. This type of equipment is commonly found in warm, dry climates. In this report, evaporative coolers are included under "Other Cooling Equipment." (See Cooling.)

Expenditures: Funds spent for the energy consumed in, or delivered to, a building during a given period of time. For this report, all expenditure statistics are presented on an annual basis, for calendar year 1989. The total dollar amount includes State and local taxes, fuel adjustment charges, system charges, and demand charges. The total dollar amount excludes merchandise, repair charges, and service charges. Data on energy expenditures were not collected by end uses separately. For example, although it might be known that electricity was used in some buildings for heating, the expenditures for electricity reported for those buildings would typically include other uses of electricity as well (such as lighting and water heating). (See Consumption, Energy Supplier, and "Annual Consumption and Expenditures" in Appendix B, "Nonsampling and Sampling Errors.")

Expenditures per Million Btu: The aggregate ratio of a group of buildings' total expenditures for a given fuel to the total consumption of that fuel. (See Expenditures and Consumption.)

Expenditures per Square Foot: The aggregate ratio of a group of buildings' total expenditures for a given fuel to the total floorspace in those buildings. (See Expenditures and Total Floorspace.)

Exterior or Interior Shadings or Awnings: A covering designed to reduce the flux of light into a building. Exterior shadings or awnings include any type of shading (including architectural) or awning on the outside of the building designed to limit solar penetration. Interior shadings are drapes, venetian blinds, shades or any other means of covering a window from the inside to limit the amount of solar or thermal penetration. (See Building Shell Conservation Feature.)

Facility: At the sampling stage, an economic unit that operates in more than one building at a single location. Examples include college campuses and large hospital complexes. The building represents the interviewed sampling unit for this survey. Listings for the area sample ordinarily identified each building individually. However, the listings for the large and specialized buildings lists sometimes included a facility with several buildings. If an intended sampling unit turned out to be a cluster of buildings such as a campus, sampling proceeded in one of two ways: (1) If there were three or fewer buildings in the cluster, all buildings were sampled; or (2) If there were four or more buildings, subsampling from the cluster was performed.

At the interview stage, a survey question determined whether the sampled building was part of a multibuilding facility. In many cases, a building was reported at interview to be part of a multibuilding facility even though the building had not been identified as part of a facility at the sampling stage. More rarely, a building identified as part of a facility during sampling was reported not to be part of a multibuilding facility at interview. (See **Building**, **List Sample**, **Multibuilding Facility**, and Appendix A, "How the Survey was Conducted.")

Fan-Coil Unit: A type of heating and cooling distribution equipment using circulating hot or chilled water with fans. Fan-coil units have thermostatically controlled built-in fans that draw air from the room and then across finned tubes containing hot water, steam, or chilled water. The hot water, steam or chilled water can be produced by equipment within the building or be piped into the building as part of a district heating or cooling system. (See **Space Heating and Cooling**.)

Floors: The number of levels in the tallest section of a building, including parking areas, basements, or other floors below ground level.

Floorspace: All the area enclosed by the exterior walls of a building, including indoor parking facilities, basements, hallways, lobbies, stairways, and elevator shafts. For aggregate floorspace statistics, floorspace was summed or aggregated over all buildings in a category (such as all office buildings in the United States). (See **Energy Source-Specific Floorspace**, **Gross Floorspace**, **Square Footage**, and **Weight**.)

Fluorescent Lamp: A lamp made of a glass tube coated on the inside with fluorescent material. The lamp produces light by passing electricity through mercury vapor, which causes the fluorescent coating to glow or fluoresce. (See **Lamp**.)

Fuel: See **Energy Source**.

Fuel Oil: A liquid petroleum product less volatile than gasoline, used as an energy source. In this report, fuel oil includes distillate fuel oil (No. 1, No. 2, and No. 4,), residual fuel oil (No. 5 and No. 6), and kerosene. (See **Energy Source**.)

Fuel-Switching Capability: As used in this report, the ability to change to a different main heating fuel within 1 week's time without substantially reducing the area heated or the temperature maintained in the heated area. This is intended to represent reversible substitutions using equipment already in place. (See **Alternate Main Heating Fuel**.)

Furnace: Space heating equipment consisting of an enclosed chamber where fuel is burned or electrical resistance is used to heat air directly, without using steam or hot water. The warm air is for heating, which is distributed throughout the building, typically by air ducts. (See **Boiler**, **Ducts**, **Space Heating**, and **HVAC**.)

Gallon: A volumetric measure equal to 4 quarts (231 cubic inches) used to measure fuel oil. One barrel equals 42 gallons. (See **Barrel**.)

Gas Transported for the Account of Others: See **Transported Gas**.

Government Owned: Owned by a Federal, State, or local government agency. The building may be occupied by agencies of more than one government and may also be shared with nongovernment establishments.

Gross Floorspace: Total floorspace of a group of buildings, regardless of which end uses are present or which energy sources or fuels are used within the buildings. (See **Energy Source-Specific Floorspace** and **Energy Intensity**.)

Gross Energy Intensity: Total consumption of a particular energy source(s) or fuel(s) by a group of buildings, divided by the total floorspace of those buildings, including buildings and floorspace where the energy source or fuel is not used, i.e., the ratio of consumption to gross floorspace. (See **Energy Intensity** and **Conditional Energy Intensity**.)

HDD: See **Heating Degree-Days (HDD)**.

Heat Pump: Heating and/or cooling equipment that, during the heating season, draws heat into a building from outside and, during the cooling season, ejects heat from the building to the outside. Heat pumps are vapor-compression refrigeration systems whose indoor/outdoor coils are used reversibly as condensers or evaporators, depending on the need for heating or cooling. (See **Cooling**, **Space Heating**, **Central Cooling**, and **HVAC**.)

Heating: See **Space Heating**.

Heating or Reheating Coils: See **Reheating Coils**.

Heating Degree-Days (HDD): A measure of how cold a location was over a period of time, relative to a base temperature. In this report, the base temperature used is 65 degrees Fahrenheit, and the period of time is 1 year. The heating degree-days for a single day is the difference between the base temperature and the day's average temperature if the daily average is less than the base, and zero if the daily average temperature is greater than or equal to the base temperature. The heating degree-days for a longer period of time is the sum of the daily heating degree-days for days in that period. (See **Cooling Degree-Days (CDD)**, **Climate Zone**, and **NOAA Division**.)

HID: See **High-Intensity Discharge (HID) Lamp**.

High-Efficiency Ballast: A lighting conservation feature consisting of an energy-efficient version of a conventional electromagnetic ballast. The ballast is the transformer for fluorescent and HID lamps, which provides the necessary current, voltage, and wave-form conditions to operate the lamp. A high-efficiency ballast requires lower power input than a conventional ballast to operate HID and fluorescent lamps.

High-Efficiency Lighting: As used in this report, lighting provided by high-intensity discharge (HID) lamps and/or fluorescent lamps. (See **High-Intensity Discharge (HID) Lamp** and **Fluorescent Lamp**.)

High-Intensity Discharge (HID) Lamp: A lamp that produces light by passing electricity through gas, which causes the gas to glow. Examples of HID lamps are mercury vapor lamps, metal halide lamps, and high-pressure sodium lamps. (See **Lamp**.)

Hot-Deck Imputation: An imputation procedure using random resampling from nonmissing cases to fill in values for missing cases. (See **Imputation** and Appendix B, "Nonsampling and Sampling Errors.")

Hours of Operation: See **Weekly Operating Hours**.

HVAC: An abbreviation for the heating, ventilation, and air-conditioning system; the system or systems that condition air in a building.

HVAC Conservation Feature: A building feature designed to reduce the amount of energy consumed by the heating, cooling, and ventilating equipment. The 1989 Building Characteristics Survey collected data on the presence of two HVAC conservation features: preventive maintenance program for the heating and cooling equipment and energy management and control systems. (See **Preventive Maintenance Program for the Heating and/or Cooling Equipment, Occupant Control of Heating, Occupant Control of Cooling, Reduced Use-Off Hours, and Energy Management and Control System (EMCS)**.)

Imputation: A statistical method used to fill in values for missing items, designed to minimize the bias of estimates based on the filled-in data set. (See **Hot-Deck Imputation**, and Appendix B, "Nonsampling and Sampling Errors.")

Ice-Making Machines: See **Refrigeration Equipment**.

Incandescent Lamp: A lamp that produces light by electrically heating a filament so that it glows. Included in this category are the familiar household light bulbs which screw into sockets, as well as energy-efficient incandescent bulbs such as Tungsten Halogen (spotlights), Reflector or R-Lamps (accent and task lighting), Parabolic Aluminized Reflector (PAR) lamps (flood and spot lighting), and Ellipsoidal Reflector (ER) lamps (recessed lighting). (See **Lamp**.)

Individual Air Conditioners in Walls or Windows: Self-contained air-conditioning units installed in either walls or windows (with heat-radiating condensers exposed to the outdoor air). These units are characterized by a lack of pipes or duct work for distributing the cool air; the units condition air only in the room or areas where they are located. (See **Cooling**.)

Individual Space Heater: A free-standing or self-contained unit that generates and delivers heat to a local zone within the building. The heater may be permanently mounted in a wall or floor, or may be portable. Examples of individual space heaters include electric baseboards, electric radiant or quartz heaters, heating panels, gas- or kerosene-fired unit heaters, wood stoves, and infrared radiant heaters. These heaters are characterized by a lack of pipes or duct work for distributing hot water, steam, or warm air through the building. (See **Electric Baseboard**.)

Industrial: See **Manufacturing/Industrial**.

In Scope: Meeting the requirements for eligibility in the CBECS, and, therefore, included in the population covered by the survey. For the 1989 survey, these eligibility requirements were (a) that the structure be a building, according to the CBECS definition; (b) that the building be larger than 1,000 square feet; and (c) that more than 50 percent of the floorspace be used for commercial activities. (See **Building, Commercial, Floorspace**, and Appendix A, "How the Survey Was Conducted.")

Insulation: A building shell conservation feature consisting of material placed between the interior of a building and the outdoor environment to reduce the rate of heat loss to the environment or heat gain from the environment. Examples include glass-wool fill and foam board. (See **Roof or Ceiling Insulation, Wall Insulation**, and **Building Shell Conservation Feature**.)

Intensity: The amount of a quantity per unit floorspace. This is a method of adjusting either the amount of energy consumed or expenditures spent, for the effects of various building characteristics, such as size of the building, number of workers, or number of operating hours, to facilitate comparisons of energy across time, fuels and buildings. (See **Conditional Energy Intensity, Energy Intensity, Expenditures per Square Foot, Gross Energy Intensity, Intensity per Hour of Operation, and Peak Intensity**.)

Intensity per Hour: Total consumption of a particular fuel(s) divided by the total floorspace of buildings that use the fuel(s) divided by total annual hours of operation.

Interruptible or Curtailable Rate: A special electricity or natural gas rate under which, in return for lower rates, the customer must either reduce energy demand on short notice or allow the electric or natural gas utility to temporarily cut off the energy supply so that the utility can maintain service for higher priority users. This interruption or reduction in demand typically occurs during periods of high demand for the energy (summer for electricity and winter for natural gas). (See **Rate Features**.)

Kerosene: A petroleum distillate with properties similar to No. 1 fuel oil, used primarily in space heaters, cooking stoves, and water heaters. In this report, no distinction is made between kerosene and fuel oil. (See **Fuel Oil**.)

Kilowatthour (kWh): A unit of work or energy, measured as 1 kilowatt (1,000 watts) of power expended for 1 hour. One Kwh is equivalent to 3,412 Btu. (See **Btu, Electricity, and Consumption**.)

Lamp: A term generally used to describe a manmade source of light. The term is often used when referring to a "bulb" or "tube." The CBECS collects data about lamps that only use electricity. (See **Incandescent Lamp, Fluorescent Lamp, and High-Intensity Discharge (HID) Lamp**.)

Large and Specialized Buildings Lists: Lists that were used to select a supplementary sample of buildings for the CBECS. The sample of buildings drawn from these lists was used to supplement the Multistage Area Probability Sample within each selected PSU. (See **Multistage Area Probability Sample, List Sample, and Appendix A, "How the Survey was Conducted."**)

Licensed Bed Capacity: The number of beds that a hospital, inpatient health service, skilled nursing, or residential care facility is licensed to have. (See **Principal Building Activity, Special Measures of Occupancy, and Appendix D, "Types of Buildings."**)

Lighting Conservation Feature: A building feature or practice designed to reduce the amount of energy consumed by the lighting system. The 1989 CBECS collected data on one lighting conservation feature--high-efficiency ballasts. (See **High-Efficiency Ballast**.)

Liquefied Petroleum Gas (LPG): Gas fuel in liquid form supplied to a building as an energy source. The fuel is usually delivered by tank trucks and stored near the building in a tank or cylinder until used. LPG contains mostly propane, but can contain such gases as butane, propylene, butylene, or ethane. For this report, any LPG reported was assumed to be propane. The 1989 CBECS did not collect consumption and expenditures data for LPG. (See **Energy Source, Propane, and Natural Gas**.)

List Sample: A sample drawn from the large and specialized building lists used to supplement the area probability sample. (See **Large and Specialized Buildings Lists** and **Appendix A, "How the Survey Was Conducted."**)

Load Factor: The ratio of average demand to peak demand, usually computed only for electricity demand. In this report, load factors were determined on an annual basis, for calendar year 1989, as

$$\text{Load Factor} = \frac{\text{Annual Consumption (kWh)}}{\text{Annual Peak Demand (kW)}} / (365 \times 24 \text{ Hours})$$

Load Factors were computed only for individual buildings, not for aggregates, since aggregate peak demand could not be meaningfully determined. (See **Consumption, Demand, Peak Demand, and "Electricity Peak Demand"** in **Appendix B, "Nonsampling and Sampling Errors."**)

LPG: See **Liquefied Petroleum Gas (LPG)**.

Major Energy Sources: The energy sources or fuels for which consumption and expenditures data were collected on the 1989 CBECS. These fuels or energy sources are electricity; fuel oil; natural gas; district steam;

district hot water, and district chilled water. District chilled water is not included in any totals for the sum of major energy sources or fuels; all other major fuels are included in these totals. Unlike previous CBECS's, liquefied petroleum gas (LPG) was not included as a major energy source or fuel in the 1989 survey.

Major Fuels: See Major Energy Sources.

Manufacturing: As an energy end use, any of the energy-using operations required for manufacturing/industrial processes. Manufacturing is one of the six end uses of energy specifically requested in this survey. (See Energy End Use and Manufacturing/Industrial.)

Manufacturing/Industrial: As a building activity in this survey, activities involving the processing or procurement of goods, merchandise, raw materials, or food. These activities include: food processing; leather/textile mills; light assembly factories, such as those for apparel and electronic instruments; heavy assembly factories, such as those for machinery and other heavy equipment; paper processing; chemical or petroleum processing, metalworks, glassworks, and other similar manufacturing plants; printing and publishing; generation, transmission, or distribution of electricity, natural gas, steam, or other utility or sanitary service; and construction and natural resource procurement.

In this survey, manufacturing/industrial buildings were excluded from the population covered. Such buildings could be included in the sample during the listing stage. However, buildings that had 50 percent or more of their square footage devoted to manufacturing or industrial activities were dropped from the sample during the interview stage. (See Principal Building Activity, Appendix A, "How the Survey Was Conducted," and Appendix D, "Types of Buildings.")

Masonry: A general term covering wall construction using masonry materials such as brick, concrete block, stone, and tile that are set in mortar; also included in this category is stucco. This category does not include concrete panels since concrete panels represent a different method of constructing buildings. Concrete panels are reported separately. (See Concrete Panel.)

Master-Metering: Measurement of electricity or natural gas consumption in a building using a single meter to measure the total consumption by several tenants or establishments in the building. (See Separate Metering.)

Mean: The simple arithmetic average for a population; that is, the sum of all the values in a population divided by the size of the population. For this report, population means are estimated by computing the weighted sum of the sample values, then dividing by the sum of the sample weights. (See Median and Weight.)

Measures of Occupancy: See Special Measures of Occupancy.

Median: The middle value in the population. Half the population has a value above the median and half has a value below. The median is different from the mean in that its estimate is not influenced much by extremes in the sample. An estimate of the mean square feet per building would be affected by the inclusion of some very large buildings and would not express square footage for a "typical" building. In contrast, the median square feet would not be so affected. (See Mean.)

Metal Panel: An exterior wall construction material made of aluminum or galvanized steel panels fabricated in factories and fastened to the frame of the building to form outside walls. Pre-engineered metal buildings are also included in this category.

Metal Surfacing: Light-gauge metal sheets used for roofing.

Metered Peak Demand: The presence of a device to measure the maximum rate of electricity consumption per unit of time. This device allows electric utility companies to bill their customers for maximum rate of consumption, as well as for total consumption. (See Rate Features.)

Metric Conversion Factors: In this report, estimates are presented in customary U.S. units. Floorspace estimates may be converted to metric units by using the relationship, 1 square foot is approximately equal to .0929 square meters. Energy estimates may be converted to metric units by using the relationship, 1 Btu is approximately equal to 1,055 joules. One kilowatthour is exactly to 3,600,000 joules. One gigajoule is approximately 278 kilowatthours (kWh). (See **Btu**.)

Metropolitan: Buildings located within Metropolitan Statistical Areas (MSA's) as defined in the 1980 Census. Except in New England, an MSA is a county or a group of contiguous counties that contains at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000. The contiguous counties are included in an MSA if they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England, MSA's consist of towns and cities rather than counties. (See **Nonmetropolitan**.)

Metropolitan Status: A building classification, either metropolitan or nonmetropolitan. (See **Metropolitan** and **Nonmetropolitan**.)

MSA: See **Metropolitan**.

Multibuilding Establishment: An establishment that operates in a multibuilding facility. (See **Multibuilding Facility**.)

Multibuilding Facility: A group of two or more buildings on the same site owned or operated by a single organization, business, or individual. Examples include university campuses and hospital complexes. (See **Building**, **Facility**, and Appendix A, "How the Survey Was Conducted.")

Multistage Area Probability Sample: A sample design executed in stages with geographic "clusters" of sampling units selected at each stage. This procedure reduces survey expense while maintaining national coverage. (See Appendix A, "How the Survey Was Conducted.")

Multiple-Establishment Building: A single building that houses more than one establishment. Examples include enclosed shopping malls and office suites. In this survey, the building was the interviewed sampling unit. If establishments in the building were billed for an energy source using separate meters or accounts, the utility (or energy supplier) was asked to provide data on consumption and expenditures for the entire building, on an "aggregate" reporting form that was provided. (See **Establishment**, **Single-Establishment Building**, **Multibuilding Establishment**, and **Building**.)

Natural Gas: Hydrocarbon gas (mostly methane) supplied as an energy source to individual buildings by pipelines from a central utility company. Natural gas does not refer to liquefied petroleum gas or to privately owned gas wells operated by a building owner. (See **Energy Source**, **Liquefied Petroleum Gas (LPG)**, and **Propane**.)

Net Energy: See **Consumption and Delivered Energy**.

No Peaking: Having no metered peak demand. (See **Metered Peak Demand**.)

NOAA Division: One of the 356 weather divisions designated by the National Oceanic and Atmospheric Administration (NOAA), encompassing the United States and the District of Columbia. These divisions usually follow county borders to encompass counties with similar weather conditions. However, the NOAA Division does not follow county borders when weather conditions vary considerably within a county, as is likely to be the case when a county borders the ocean or contains high mountains. (See **Climate Zone**, **Cooling Degree-Days (CDD)**, and **Heating Degree-Days (HDD)**.)

Nominal Dollars: As used in this report, dollar values expressed in the current dollars at the time of the specific CBECS data collection. The dollar amounts are not directly comparable across time periods since they

have not been adjusted for the effects of inflation. In contrast, real dollars have been adjusted for the effects of inflation.

Nonmetropolitan: Buildings not located within Metropolitan Statistical Areas as defined in the 1980 Census. (See **Metropolitan**.)

Nonresidential Building: A building used for some purpose other than residential. Nonresidential buildings comprise three groups: commercial, manufacturing/industrial, and agricultural. Commercial buildings are the focus of this report. See **Commercial Building**, **Manufacturing/Industrial Building**, **Residential Principal Building Activity**, **Out of Scope**, and Appendix D, "Types of Buildings."

Number of Rooms - Lodging: The number of guest rooms or quarters in a short-term residential building, such as a motel, tourist home, or hotel; or the number of bedrooms or residential suites in a long-term facility, such as a dormitory, boarding house, orphanage, convent, monastery, fraternity, or sorority house. (See **Principal Building Activity**, **Special Measures of Occupancy**, and Appendix D, "Types of Buildings.")

Number of Workers in the Building: The number of people working in a building during the main shift on a typical workday during the year. Included in this definition are self-employed workers and volunteers. Excluded from this definition are customers, patients, and students, unless they are working for establishments in the building. Also excluded are employees who work out of the office, such as salespeople who report in, delivery people with routes, and messengers. (See Appendix B, "Nonsampling and Sampling Errors.")

Occupant Control of Cooling: Control by individuals, other than maintenance personnel, of the cooling equipment in a building.

Occupant Control of Heating: Control by individuals, other than maintenance personnel, of the heating equipment in a building.

Out of Scope: Violating one or more of the requirements for eligibility in the survey, therefore not included in the population covered by the 1989 CBECS. (See **In Scope**.)

Owner Occupied: Having the owner or the owner's business represented at the site. A building is considered owner occupied if an employee or representative of the owner (such as a building engineer or building manager) maintains office space in the building. Similarly, a chain store is considered owner occupied even though the actual owner may not be in the building but headquartered elsewhere. Other examples of the owner's business occupying a building include State-owned university buildings, elementary and secondary schools owned by a public school district, and a post office where the building is owned by the U.S. Postal Service.

Packaged Cooling Units: See **Packaged Units**.

Packaged Heating Units: See **Packaged Units**.

Packaged Units: Units built and assembled at a factory and installed as a self-contained unit to heat or cool all or portions of a building. Packaged units are in contrast to engineer-specified units built up from individual components for use in a given building. "Packaged Units" is a term that can apply to heating equipment, cooling equipment, or combined heating and cooling equipment. Some types of electric packaged units are also called "Direct Expansion" or DX units. (See **Cooling**, **HVAC**, and **Space Heating**.)

Peak Demand: The maximum rate of energy consumption per unit time over a period of measurement (also called "peak load"). In this report, peak demand was determined on an annual basis for calendar year 1989 and peak demand data were presented only for electricity. Peak demand was computed only for individual buildings, not for aggregates, since aggregate peak demand could not be meaningfully determined. (See **Demand** and **"Peak Electricity Demand"** in Appendix B, "Nonsampling and Sampling Errors.")

Peak Intensity: The ratio of peak demand to floorspace, usually determined only for electricity. [In this report, peak intensity was computed only for individual buildings, not for aggregates, since aggregate peak demand could not be meaningfully determined.] (See **Peak Demand**, **Floorspace**, and "Electricity Peak Demand" in Appendix B, "Nonsampling and Sampling Errors.")

Peak Load: See **Peak Demand**.

Percent Cooled: The percentage of the building's square footage that is cooled to meet the comfort requirements of the occupants. For the 1989 CBECS, the point of reference for the percent cooled was the cooling season during the 12 months prior to the interview. (See **Square Footage and Cooling**.)

Percent Heated: The percentage of the building's square footage designed to be heated to at least 50 degrees Fahrenheit. For the 1989 CBECS, the percent heated was for the heating season during the 12 months prior to the interview. (See **Total Square Footage and Space Heating**.)

Percent Lit When Closed: The percentage of the building's square footage that was lit electrically during all hours other than the usual operating hours during the 12 months prior to the interview. (See **Percent Lit When Open**, **Square Footage**, and **Weekly Operating Hours**.)

Percent Lit When Open: The percentage of the building's square footage that was lit electrically during usual operating hours during the 12 months prior to the interview. (See **Percent Lit When Closed**, **Square Footage**, and **Weekly Operating Hours**.)

Potential Consumption: The total amount of consumption that would have occurred had the intensity of consumption remained the same over a period of time.

Pounds (District Heat): A weight quantity of steam, also used in this report to denote a quantity of energy in the form of steam. The amount of usable energy obtained from a pound of steam depends on its temperature and pressure at the point of consumption and on the drop in pressure after consumption. For the CBECS, a conversion factor of 1,000 Btu per pound was used for steam. Hot water, always reported in Btu, was converted to equivalent pounds of steam using the same factor of 1,000 Btu per pound. (See **Btu**, **District Steam**, and **District Heat**.)

Preventive Maintenance Program for Heating and/or Cooling Equipment: As used in this report, a HVAC conservation feature consisting of a program of routine inspection and service for the heating and/or cooling equipment. The inspection is performed on a regular basis, even if there are no apparent problems. (See **HVAC Conservation Feature**.)

Primary Energy: See **Consumption**.

Primary Sampling Unit (PSU): The sampling units selected at the first stage in a multistage area probability sample. A PSU typically consists of one to several contiguous counties--for example, a metropolitan area with surrounding suburban counties. (See **Multistage Area Probability Sample**, **Metropolitan**, and Appendix A, "How the Survey Was Conducted.")

Principal Building Activity: The activity or function occupying the most floorspace in the building. The categories were designed to group buildings that have similar patterns of energy consumption. Examples of various types of principal activity include office, health care, lodging, and mercantile and service. (See Appendix D, "Types of Buildings.")

Propane: A gaseous petroleum product that liquefies under pressure; propane is a major component in liquefied petroleum gas, or LPG. Any LPG usage reported in the CBECS was assumed to be propane. (See **Liquefied Petroleum Gas (LPG)**.)

PSU: See Primary Sampling Unit (PSU).

Quad: Quadrillion (10^{15}) Btu. (See Btu.)

Radiator: Space-heating equipment that transfers heat from steam or hot water to air by a combination of direct radiation, conduction, and convection. Typically, a radiator is a freestanding, cast-iron fixture exposed in the space it heats. (See Space Heating.)

Rate Features: Special rate schedules or tariffs offered to customers by electric and/or natural gas utilities. In this survey, information was collected on five electric rate features: seasonal pricing, time-of-day pricing, time-of-day lock-out or limit, interruptible or curtailable rate, and metered peak demand. Natural gas customers were asked about an interruptible service rate. (See Seasonal Pricing, Time-of-Day Pricing, Time-of-Day Lock-out or Limit, Interruptible or Curtailable Rate, Metered Peak Demand, and Appendix B, "Nonsampling and Sampling Errors.")

Reduced Use--Off Hours: A conservation feature consisting of manually or automatically reducing the amount of heating or cooling produced during the hours a building is not in full use. (See Space Heating, Cooling and Conservation Feature.)

Real Dollars: The value of the dollar after adjusting for the effects of inflation. Also referred to as constant dollars.

Reflective or Shading Glass or Film: A building shell energy conservation feature consisting of tinted or reflective glass or shading films installed on the exterior glazing of a building to reduce the rate of solar penetration into the building. (See Building Shell Conservation Feature.)

Refrigerated Vending Machines: See Refrigeration Equipment.

Refrigeration Equipment: A type of equipment such as commercial refrigeration/freezer units for the sale or storage of perishable materials; residential-type refrigerators/freezers; ice-making machines; soda or any other refrigerated vending machines; water coolers; or any other refrigeration equipment, excluding air conditioning. Freezers are designed to keep their contents below the freezing point (32 degrees Fahrenheit), and refrigeration equipment is designed to maintain the stored items below room temperature, but above the freezing point. In the 1989 CBECS, data were collected on refrigeration/freezer equipment inside and/or adjacent to the building.

Regression: A statistical procedure used in this report to estimate consumption of, or expenditures for, energy when data were unavailable. The procedure takes into account many characteristics of buildings (such as size, age, principal activity, heating fuels). (See Imputation and Appendix B, "Nonsampling and Sampling Errors.")

Regular HVAC Maintenance: See Preventive Maintenance Program for Heating and/or Cooling Equipment.

Reheating Coils: A part of some air-conditioning systems. Electric coils in air ducts used primarily to raise the temperature of circulated air after it was over cooled to remove moisture. Some buildings report reheating coils as their sole heating source. (See Space Heating, Cooling, and Air Duct or Air-Handling Units.)

Relative Standard Error: See RSE (Relative Standard Error).

Residential: As used in this survey, activities related to use as a dwelling for one or more households. In this survey, residential buildings that contained commercial activities were included in the sample during the listing stage. However, buildings that had 50 percent or more of their square footage devoted to residential activities were considered out of scope and were dropped from the sample during the interview stage. (See Principal Building Activity, In Scope, Commercial Building, and Appendix A, "How the Survey Was Conducted.")

Residential Freezers: See **Refrigeration Equipment**.

Residential Refrigerators: See **Refrigeration Equipment**.

Roof or Ceiling Insulation: A building shell conservation feature consisting of insulation placed in the roof (below the waterproofing layer) or in the ceiling of the top floor in the building. (See **Insulation and Building Shell Conservation Feature**.)

RSE (Relative Standard Error): A measure of the reliability or precision of a survey statistic. The Relative Standard Error, or RSE, is defined as the standard error of a survey estimate, expressed as a percent of the estimate. For example, an RSE of 10 percent means that the standard error is one-tenth as large as the survey estimate. (See **Standard Error** and "Generalized Variances" in Appendix B, "Nonsampling and Sampling Errors.")

RSE Column Factor: An adjustment factor used to compute RSE's. For a survey estimate in a particular row and a column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that cell. (See **RSE (Relative Standard Error)**, **RSE Row Factor**, and "Generalized Variances" in Appendix B, "Nonsampling and Sampling Errors.")

RSE Row Factor: A factor used to compute RSE's. The row factor is equal to the geometric mean of the RSE's in a particular row of the main tables. For a survey estimate in a particular row and column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that cell. (See **RSE (Relative Standard Error)**, **RSE Column Factor**, and "Generalized Variances" in Appendix B, "Nonsampling and Sampling Errors.")

Sales Accounts: See **Account Classification**.

Sampling: The procedure used to select cases (in this survey, buildings) for interview from the population (commercial buildings in the United States). (See **Multistage Area Probability Sampling** and Appendix A, "How the Survey Was Conducted.")

Seasonal Pricing: A special electric rate feature under which the price per unit of energy depends on the season of the year. (See **Rate Features**.)

Seating Capacity - Classrooms: The number of students that can be seated in the classrooms and/or lecture halls of an education building at a given time. (See **Principal Building Activity**, **Special Measures of Occupancy**, and Appendix D, "Types of Buildings.")

Seating Capacity - Food Service: The number of patrons that can be seated in a food service building at a given time. (See **Principal Building Activity**, **Special Measures of Occupancy**, and Appendix D, "Types of Buildings.")

Separate Metering: Measurement of electricity or natural gas consumption in a building using a separate meter for each of several tenants or establishments in the building. (See **Master-Metering**.)

Shadings or Awnings: See **Exterior or Interior Shadings or Awning**.

Shakes: Flat pieces of weatherproof material laid with others in a series of overlapping rows as covering for roofs and sometimes the sides of buildings. Shakes are similar to wood shingles, but instead of having a cut and smoothly planed surface, shakes have textured grooves and a rough or "split" appearance to give a rustic feeling. (See **Shingles**, **Siding**, and **Wooden Materials**.)

Shingles: Flat pieces of weatherproof material laid with others in a series of overlapping rows as covering for roofs and sometimes the sides of buildings. Shingles are manufactured in a variety of materials including

fiberglass, wood, plastic, baked clay, tile, asbestos, asphalt, and aluminum. (See **Siding, Shakes, and Wooden Materials.**)

Siding: An exterior wall covering material made of wood, plastic (including vinyl), or metal. Siding is generally produced in the shape of boards and is applied to the outside of a building in overlapping rows.

Single-Establishment Building: A building that houses only one establishment, for example, a building dedicated to the offices of a single corporation. (See **Establishment, Multibuilding Establishment, Multiple-Establishment Building, and Building.**)

Slate or Tile: A type of roofing material. Tile refers to any thin, square, or rectangular piece of baked clay, stone, or concrete used as a roofing material. Slate refers to a particular stone used for roofing.

Solely or in Combination: In the CBECS tables, a row stub accompanied by this phrase indicates overlapping categories, so that a particular building may be included in more than one line under this stub. In general, row stubs without this designation are exclusive; that is, they divide the population of buildings into distinct groups so that a particular building is represented in no more than one line under this stub.

Space Heating: The use of mechanical equipment (including wood stoves and active solar heating devices) to heat all, or part, of a building to at least 50 degrees Fahrenheit. This is one of the six end uses of energy specifically asked for in this survey. (See **Energy End Use.**)

Special Measures of Occupancy: A measure relating to the use of a building for certain types of buildings. For example, the number of licensed beds in a hospital or the number of guest rooms in a hotel. (See **Seating Capacity - Classrooms, Seating Capacity - Food Service, Number of Rooms - Lodging, and Licensed Bed Capacity.**)

Square Feet per Worker: The ratio of the total square footage in a category to the total number of workers in the category.

Square Footage: Floorspace, in units of square feet. One square foot is approximately equal to 0.0929 square meters. (See **Floorspace and Metric Conversion.**)

Standard Error: A measure of the precision of an estimate, equal to the square root of the variance. (See **Variance, RSE (Relative Standard Error), and Appendix B, "Nonsampling and Sampling Errors."**)

Steam: See **District Steam.**

Steam or Hot Water Radiators: See **Baseboard and Radiator.**

Storm or Multiple Glazing: A building shell conservation feature consisting of storm windows, storm doors, or double- or triple-paned glass that are placed on the exterior of the building to reduce the rate of heat loss. (See **Building Shell Conservation Feature.**)

Summer and Winter Peaking: Having the annual peak demand reached both during the summer months (May through October) and during the winter months (November through April). (See **Peak Demand, Summer Peaking, Winter Peaking, and "Peak Electricity Demand" in Appendix B, "Nonsampling and Sampling Errors."**)

Summer Peaking: Having the annual peak demand falling during the summer. In this report, a building was classified as summer peaking if its annual peak demand was reached during any of the months from May through October. (See **Peak Demand and "Peak Electricity Demand" in Appendix B, "Nonsampling and Sampling Errors."**)

Switch: See **Fuel-Switching Capabilities.**

Synthetic or Rubber Roofing: A layer (either single- or multi-ply) of heavy gauge plastic or rubber used for roofing.

Thermostat: A device that adjusts the amount of heating and cooling produced and/or distributed by automatically responding to the temperature in the environment.

Time-of-Day Lock-out or Limit: A special electric rate feature under which electricity usage is prohibited or restricted to a reduced level at fixed times of the day, in return for a reduction in the price per kilowatthour. (See Rate Features.)

Time-of-Day Pricing: A special electric rate feature under which the price per kilowatthour depends on the time of day. (See Rate Features.)

Tinted Glass: See Reflective or Shading Glass or Film.

Total Square Footage: Square footage of floorspace summed or aggregated over all buildings in a category (such as all office buildings in the United States). In this survey, aggregate square footage was estimated by multiplying each building's square footage by its weight, then summing over all sample buildings of interest to represent nationwide totals. (See Floorspace and Weight.)

Transported Gas: Natural gas physically delivered to a building by a local utility, but not bought from that utility. A separate transaction was made to purchase the volume of gas and the utility was paid for the use of its pipeline to deliver the gas. Also called "Direct-Purchase Gas," "Spot Market Gas," "Spot Gas," "Gas for the Account of Others", and "Self-Help Gas." (See Appendix B, "Nonsampling and Sampling Errors.")

Trillion Btu: Equivalent to 1,000,000,000,000 (10^{12}) Btu. (See Btu.)

Utility-Sponsored Conservation Program: Any program sponsored by an electric and/or natural gas utility to review operating practices, equipment and construction features in buildings, and advise on ways to increase the energy efficiency of buildings. Also included are utility-sponsored demand-side management programs to encourage the use of more energy-efficient equipment or practices. Included in this survey were programs to improve the energy efficiency in the lighting system or building equipment, or the thermal efficiency of the building shell. (See Demand-Side Management (DSM) Programs.)

Vacant: As a principal building activity, the designation for a building in which most of the floorspace was not occupied by any tenant or establishment. A vacant building may contain occupants who are using up to 50 percent of the floorspace. The CBECS also measures vacancy in terms of the fraction of space vacant within an individual building and the fraction of time the building was in use. For all buildings, data were collected on the percent of floorspace vacant three or more months, and on the number of months the building was in use. (See Principal Building Activity, and Appendix D, "Types of Buildings.")

Variance: A measure of the variability of a set of observations that are subject to some chance variation, equal to the expected squared difference between a single observation and the average of all possible observations obtained in the same manner. The variance is the square of the standard error of estimates. For statistics presented in this report, the variance indicates the likely difference between the value computed from the CBECS sample and the average of the values that could have been computed from all possible samples that might have been obtained by the same sample selection process. (See Standard Error, Appendix A, "How the Survey was Conducted" and Appendix B, "Nonsampling and Sampling Errors.")

Vintage: The year of origin or age. As used in the CBECS report, the year of construction for the building, as in "building vintage," or the age of the central chillers or packaged refrigeration units, as in "vintage of refrigeration equipment." (See Year Constructed, Central Chillers, and Packaged Units.)

Wall Insulation: A building shell conservation feature consisting of insulation placed between the exterior and interior walls of a building. (See **Insulation** and **Building Shell Conservation Feature**.)

Warm-Air Furnace: See **Furnace**.

Water Coolers: See **Refrigeration Equipment**.

Water Heating: The use of energy to heat water for purposes other than space heating. This is one of the six end uses of energy specifically asked for in this survey. (See **Energy End Use**.)

Weather Stripping or Caulking: A building shell conservation feature that includes any material placed between the door or window and the door frame or window frame to reduce the rate of loss of heat or cold caused by air infiltration. (See **Building Shell Conservation Feature**.)

Weekly Operating Hours: The number of hours per week that a building is used, excluding hours when the building is occupied only by maintenance, security, or other support personnel. For buildings with a schedule that varied during the year, "weekly operating hours" refers to the total weekly hours for the schedule most often followed. If operating hours varied throughout a building, the usual operating hours of the largest business in the building (based on square footage) determined the operating hours for the building.

Weight: The number of buildings in the United States that a particular sample building represents. To estimate the total value of an attribute (such as square footage) in the U.S. commercial building population as a whole, each sample building's value is multiplied by the building's weight. Summing the weighted sample values provides an estimate of the nationwide total. (See **Multistage Area Probability Sample**, **Total Square Footage**, and Appendix B, "Nonsampling and Sampling Errors.")

Window or Vision Glass: An exterior wall construction material made of glass that can be seen through from the inside of the building--the glass especially found in windows. Walls that are glass covered or constructed of glass material, but cannot be seen through, are excluded from this category. (See **Decorative or Construction Glass**.)

Winter Peaking: Having the annual peak demand occurring during the winter. In this report, a building was classified as winter peaking if its annual peak demand was reached during any of the months from November through April. (See **Peak Demand** and "Peak Electricity Demand" in Appendix B, "Nonsampling and Sampling Errors.")

Wood: As an energy source, wood logs, chips, or wood products that are used as fuel. In the 1989 CBECS, information about the use of wood as fuel in commercial buildings was obtained, but consumption and expenditures data for wood were not collected. (See **Energy Source**.)

Wooden Materials: Wood shingles, wood shakes, or other wooden materials used as roofing materials. (See **Shingles and Shakes**.)

Workers: See **Number of Workers in the Building**.

Year Constructed: The year in which the major part or the largest portion of a building was constructed.

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