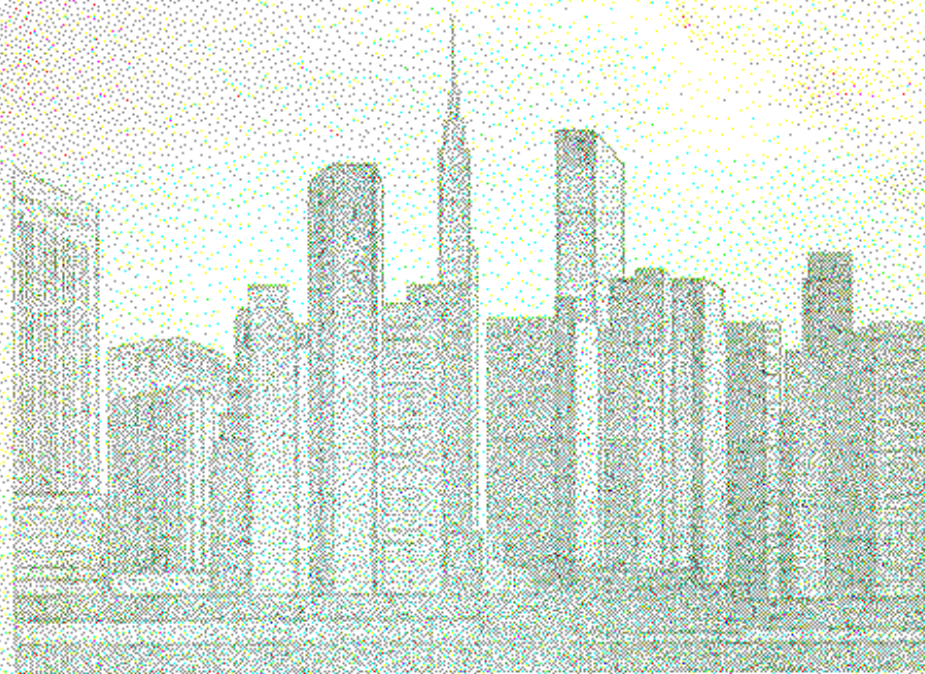


November 1995

# Federal Buildings Supplemental Survey 1993



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SR/EMEU/95-02  
Energy Information Administration  
Federal Buildings Supplemental Survey

# Federal Buildings Supplemental Survey 1993

November 1995

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

This report was prepared by the Energy Information Administration, the independent analytical agency within the Department of Energy. The information contained herein should not be construed as advocating or necessarily reflecting any policy position of the Department of Energy or any other organization.

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Public Use Data Diskettes containing FBSS data are available through the Office of Scientific and Technical Information (OSTI) and the National Technical Information Service (NTIS). (See Appendix F, "Related EIA Publications on Energy Consumption," for ordering information.) For questions about the contents of EPUB reports and data availability of this information on CD-ROM, call (202) 586-8800. EIA also maintains a Home Page(<http://www.eia.doe.gov>) on the Internet.

# Preface

The Energy Information Administration (EIA) of the U.S. Department of Energy (DOE) is mandated by Congress to be the agency that collects, analyzes, and disseminates impartial, comprehensive data about energy including the volume consumed, its customers, and the purposes for which it is used. To comply with this Congressional mandate, the EIA conducts a number of energy consumption surveys to provide meaningful, objective, and accurate energy information for a wide audience that includes Congress, Federal and State agencies, industry, and the general public.

The Federal Buildings Supplemental Survey (FBSS) was conducted by EIA in conjunction with DOE's Office of Federal Energy Management Programs (OFEMP) to gain a better understanding of how Federal buildings use energy. This report presents the data from 881 completed telephone interviews with Federal buildings in three Federal regions. These buildings were systematically selected using OFEMP's specifications; therefore, these data do not statistically represent all Federal buildings in the country .

OFEMP requested that the FBSS provide building-level energy-related characteristics for a special sample of commercial buildings owned by the Federal Government. This special sample met the following OFEMP-specified criteria:

- Federal buildings from different areas of the country -- Federal Regions 3, 6, and 9
- Fewer sampled buildings from Department of Defense (DOD) -- Sample selection ratio of 1:10 for DOD buildings in each Federal Region
- Commercial Building Eligibility based on (1) size -- 10,000 square feet or over and (2) building use -- exclude buildings with the majority of the floorspace used for warehouse/storage purposes.

The FBSS was conducted by telephone from July to December 1994 with Federal buildings in the following regions:

Federal Region 3 -- Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia

Federal Region 6 -- Arkansas, Louisiana, New Mexico, Oklahoma, and Texas

Federal Region 9 -- Arizona, California, Hawaii, and Nevada.

Information for Federal commercial buildings is also collected in the Commercial Buildings Energy Consumption Survey (CBECS), which is one of the consumption surveys conducted by EIA. CBECS is conducted on a triennial basis, and is a nationwide survey of approximately 6,500 commercial buildings and their energy suppliers. Government-owned commercial buildings are one type of building that is included in the CBECS sample. In the 1992 CBECS, approximately 15.1 billion square feet (22 percent) of commercial floorspace was government-owned.<sup>2</sup> Of this government-owned floorspace, 8 percent was in buildings owned by the Federal government. The number of Federal buildings that are selected for the relatively small CBECS sample does not allow for in-depth examination of energy use and characteristics of these buildings, which is necessary to meet the Energy Policy Act of 1992 (EPACT). Therefore, the FBSS was conducted to provide more detailed information about Federal buildings.

The purpose of the FBSS was threefold: (1) to understand the characteristics of Federal buildings and their energy use; (2) to provide a baseline in these three Federal regions to measure future energy use in Federal buildings as required in EPACT; and (3) to compare building characteristics and energy use with the data collected in the CBECS.

<sup>1</sup>Commercial Buildings Characteristics 1992, DOE/EIA-0246(92) (Washington, DC, April 1994).

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# 1. Introduction

The EIA conducts two types of surveys: (1) supply surveys and (2) consumption surveys:

- Supply surveys gather information from energy suppliers and marketers on the quantities and prices of specific energy sources produced or supplied to the market. The results of these surveys are published in fuel-specific EIA publications and in the *Monthly Energy Review*.
- Consumption surveys gather information directly from energy end users on the types of energy they consume, along with information on the energy-related characteristics of commercial buildings, households, vehicles, and manufacturing establishments.<sup>2</sup> The results of these surveys are published in energy consumption reports, such as this report, and in special analytical reports.

Respondents to the Federal Buildings Supplemental Survey (FBSS) 1993 were interviewed to collect information about the building, such as the principal building activity, structural characteristics, building use, energy sources, energy-using equipment, and conservation features and programs; as well as to collect billing data on energy consumption and expenditures. These billing data were collected from the Federal building manager because they were expected to have immediate access to their consumption and expenditure account data.

Following are examples of some of the data that were collected about the sampled Federal buildings:

- **Structural characteristics:** size (square feet of floorspace), year constructed, and roof and wall materials
- **Building use:** primary building activity, regular and additional operating hours, number of workers, and personal computers/terminals
- **Energy sources used:** four major sources; (1) electricity, (2) natural gas, (3) fuel oil (including kerosene), and (4) district sources (steam, hot water, or chilled water from a central plant or utility). The use of other energy sources in the building, such as propane, wood, coal, and solar energy, was also collected; however, no consumption statistics were gathered on these energy sources
- **Energy end use:** heating, air-conditioning, hot water heating, commercial cooking and serving, manufacturing, and electricity generation
- **Consumption:** consumption and expenditure estimates for electricity, natural gas, and district sources for Fiscal Year 1993
- **Energy-using equipment:** type of heating and cooling equipment and distribution systems, type of refrigeration, water-heating equipment and lighting
- **Motors:** number of motors with 10 or more horsepower; age, number of energy-efficient motors, and maintenance practices
- **Conservation features and programs:** energy audits, conservation features and programs related to building shell; heating, ventilation and air-conditioning (HVAC) systems (regular HVAC maintenance, variable-air volume, economizer cycles); and lighting (daylighting controls, manual dimmer switches, occupancy sensors, and reflectors).

<sup>2</sup>See Appendix F, "Related EIA Publications on Energy Consumption," for a listing of publications from the Commercial Buildings Energy Consumption Survey and from other EIA consumption surveys.



This report also includes estimates of energy intensities. Energy intensities provide a measure for controlling or adjusting the amount of energy consumed for the effects of various building characteristics, such as size or number of workers. The intensities in this report are all conditional (fuel-specific) intensities; for example, the intensity per square foot for electricity is calculated by dividing electricity consumption by the floorspace of only those buildings that use electricity. The adjustment facilitates comparisons of energy consumption across energy sources and building types.

Many of the questions that were asked in the 1992 CBECS were asked in the FBSS to provide a comparison with the CBECS. Prior to the telephone interview, the energy managers of the sample buildings were contacted by the survey contractor to schedule the telephone appointment and provide advance questions that might require research as follows:

- **Building Square Footage**
- **Motors Data:** Age and number of motors 10 or more horsepower, and maintenance practices
- **Energy Consumption:** Fiscal Year 1993 (October 1992 - September 1993)
- **Energy Expenditures:** Fiscal Year 1993

The statistics published in this report are from a systematically selected sample of Federal buildings in Federal Regions 3, 6, and 9. Interviews were completed at 881 of these sampled Federal buildings. EIA worked closely with the Federal regions to ensure that respondent burden was minimized in the sampled buildings. (See Appendix E, "Outreach Efforts," for more information.)

EIA gratefully acknowledges the cooperation of respondents for providing the information used to produce the estimates in this report.

## 2. At a Glance - Highlights on Federal Buildings

This section of *Federal Buildings Supplemental Survey 1993* provides synopses of selected energy-related characteristics. Extensive analysis of the data was not conducted because this report represents the 881 responding buildings (buildings for which interviews were completed) and cannot be used to generalize about Federal buildings in each region. Crosstabulations of the data from the 881 buildings are provided in the Detailed Tables section.

- **Energy Consumption:** In FY 1993, the 881 responding Federal commercial buildings in Federal Regions 3, 6, and 9 consumed about 22 trillion Btu of electricity, natural gas, fuel oil, and district heat (Table 2.1).
- **Energy Expenditures:** Expenditures for the 22 trillion Btu of energy consumed in the responding Federal commercial buildings totaled about \$308 million dollars (Table 2.1).
- **Energy Intensity:** The major fuel energy consumption intensity was 125.79 thousand Btu per square foot for the 881 buildings (Table 2.1).
- **Principal Building Activity:** Principal building activity, the activity that occupies the most floorspace in the building, indicates the diversity of the Federal commercial building population. In the 881 responding buildings in Federal Regions 3, 6, and 9, office buildings accounted for the greatest number of buildings, 33 percent, and about 48 percent of the floorspace. Although health care buildings were only about 14 percent of the buildings in the sample, they constituted 21 percent of the floorspace (Table 3.7).
- **Selected Characteristics by Agency:** In a commercial building, building size and number of workers impact the consumption, expenditures and the associated energy intensities. Table 2.1 provides these data on an agency level. In FY 1993, of the total Federal expenditures for major fuel consumption in the 881 responding buildings in Federal Regions 3, 6, and 9 (\$308 million), the General Services Administration (GSA) spent about \$105 million. Overall, the GSA consumed about 27 percent of the total energy consumed in the sampled buildings in Federal Regions 3, 6, and 9 in FY 1993. The Veterans Administration was the next largest consumer of energy among the participating FBSS agencies.

**Table 2.1. Selected Energy-Related Statistics by Federal Agency, 1993**

| Federal Agencies in FBSS - Federal Regions 3, 6, and 9  | Number of Buildings | Floorspace (thousand square feet) | Number of Workers | Sum of Major Fuel Consumption (billion Btu) | Major Fuel Intensity (thousand Btu per square foot) | Sum of Major Fuel Expenditures (thousand dollars) | Major Fuel Expenditures per square foot (dollars) |
|---|---------------------|-----------------------------------|-------------------|---|---|---|---|
| Responding Agencies . . . . .                           | 881                 | 175,012                           | 492,172           | 22,014                                      | 125.79  | 308,401   | 1.76  |
| Department of Agriculture . . . . .                     | 14                  | 720                               | 1,156             | 148   | 205.98  | 2,008   | 2.79  |
| Department of Commerce . . . . .                        | 17                  | 2,390                             | 3,579             | 682   | 285.31  | 9,481   | 3.97  |
| Department of Defense . . . . .                         | 122                 | 24,145                            | 60,534            | 3,192                                       | 132.20  | 43,274  | 1.79  |
| Department of Education . . . . .                       | 2                   | 80                                | 131               | 6   | 78.88   | 55  | .69   |
| Department of Energy . . . . .                          | 86                  | 7,990                             | 14,001            | 2,473                                       | 309.53  | 32,400  | 4.05  |
| Department of Justice . . . . .                         | 20                  | 1,212                             | 1,947             | 231   | 190.57  | 3,065   | 2.53  |
| Department of Labor . . . . .                           | 7                   | 729                               | 577               | 54  | 74.07   | 666   | .91   |
| Department of the Interior . . . . .                    | 30                  | 971                               | 1,378             | 63  | 65.15   | 963   | .99   |
| Department of the Treasury . . . . .                    | 2                   | 800                               | 1,580             | 59  | 73.41   | 1,003   | 1.25  |
| Department of Transportation . . . . .                  | 13                  | 1,426                             | 4,909             | 189   | 132.19  | 2,882   | 2.02  |
| Environmental Protection Agency . . . . .               | 1                   | 50                                | 145               | 13  | 251.87  | 176   | 3.53  |
| Federal Emergency Management Agency . . . . .           | 2                   | 81                                | 103               | 7   | 86.68   | 75  | .92   |
| General Accounting Office . . . . .                     | 1                   | 1,844                             | 2,588             | 106   | 57.28   | 1,827   | .99   |
| General Services Administration . . . . .               | 157                 | 66,598                            | 220,080           | 5,919                                       | 88.88   | 105,118   | 1.58  |
| Government Printing Office . . . . .                    | 2                   | 1,420                             | 4,100             | 220   | 155.22  | 2,777   | 1.96  |
| Health and Human Services . . . . .                     | 23                  | 2,042                             | 4,243             | 760   | 372.11  | 7,940   | 3.89  |
| National Aeronautics and Space Administration . . . . . | 52                  | 4,180                             | 9,878             | 913   | 218.52  | 11,881  | 2.84  |
| National Science Foundation . . . . .                   | 1                   | 23                                | 20                | 27  | 1,164.35 <sup>a</sup>                               | 476   | 20.70   |
| United States Postal Service . . . . .                  | 181                 | 24,806                            | 103,458           | 2,373                                       | 95.66   | 32,732  | 1.32  |
| Veterans Administration . . . . .                       | 148                 | 33,504                            | 57,765            | 4,579                                       | 136.67  | 49,603  | 1.48  |

<sup>a</sup>The National Science Foundation building is the National Radio Astronomy Observatory and includes the consumption and expenditures for the observatory as well as the office floorspace.

Notes: • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Totals may not equal sum of components due to independent rounding. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993).

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

## Conservation and Energy Management

In response to OFEMP's request that EIA provide detailed information on energy efficiency and energy management for Federal buildings, the FBSS included a number of questions about energy efficiency features, energy management practices, and the reduction of equipment use during off-hours. Federal agencies have a variety of strategies available for implementation to reduce their energy consumption including energy-efficient equipment retrofits.

There are various sponsors and assistance programs available to retrofit equipment. The following synopsis provides data for retrofitting equipment practices for the FBSS.

- Of the 881 Federal commercial buildings that responded to the FBSS, about 39 percent reported using boilers as their heating equipment and 36 percent reported using district steam. In about 70 percent of the buildings using boilers and 84 percent of buildings using district steam, the equipment was 10 years or older (Table 2.2).
- Less than 10 percent of FBSS buildings reported using heat pumps as their heating equipment, and as might be expected, the majority of the heat pumps were less than 10 years old. Buildings with packaged units for heating were about evenly divided between those less than 10 years old and those 10 years or older.
- In buildings with water heating equipment, approximately 62 percent of that equipment was 10 years or older.
- The vast majority of building respondents reported purchasing new equipment rather than retrofitting existing equipment within the past 10 years.
- Lighting equipment was an overwhelming "favorite" for retrofitting or purchasing (56 percent of the 871 buildings with lighting equipment) followed by retrofits or purchases for heating equipment, water-heating equipment and central chillers. Of the 487 building respondents reporting either the retrofit or purchase of their lighting equipment, about 39 percent reported retrofitting rather than purchasing.
- With the exception of retrofitting lighting equipment, the majority of the 881 Federal buildings that were surveyed did not report the purchase or retrofit of energy-using equipment within the last 10 years.

**Table 2.2. Age of Equipment and Whether Retrofitted or Purchased in Past Ten Years, Number of FBSS Buildings, 1993**

| Type of Equipment<br>(more than one may apply) | All Buildings with Each Type of Equipment | Age of Equipment        |                    |  |                            | Retrofitted or Purchased Equipment in Past Ten Years |           |                                |                            |
|--|---|-------------------------|--------------------|--|----------------------------|--|-----------|--------------------------------|----------------------------|
|  |   | Less Than Ten Years Old | Ten Years or Older | Some Less Than Ten Years, Some More than Ten Years | Don't Know/Not Ascertained | Retrofitted  | Purchased | Both Retrofitted and Purchased | Don't Know/Not Ascertained |
| <b>Heating<br/>(more than one may apply)</b>   |   |                         |                    |  |                            |  |           |                                |                            |
| Furnace .....                                  | 59  | 25                      | 32                 | 0  | 2                          | 1  | 16        | 0                              | 1                          |
| Heat Pump .....                                | 84  | 55                      | 28                 | 0  | 1                          | 2  | 36        | 0                              | 2                          |
| Space Heater .....                             | 138                                       | 70                      | 64                 | 0  | 4                          | 2  | 53        | 0                              | 2                          |
| District Steam .....                           | 320                                       | 45                      | 269                | 3  | 3                          | 10   | 25        | 0                              | 3                          |
| Boiler .....                                   | 341                                       | 83                      | 238                | 4  | 16                         | 13   | 54        | 0                              | 17                         |
| Packaged Unit .....                            | 151                                       | 66                      | 67                 | 3  | 15                         | 3  | 46        | 0                              | 15                         |
| <b>Central Chillers</b> .....                  | 419                                       | 128                     | 257                | 18   | 16                         | 15   | 98        | 2                              | 20                         |
| <b>Water-Heating</b> .....                     | 857                                       | 285                     | 528                | 4  | 36                         | 23   | 199       | 0                              | 38                         |
| <b>Lighting</b> .....                          | 871                                       | NA                      | NA                 | NA   | NA                         | 190  | 288       | 9                              | 46                         |
| <b>Refrigeration</b> .....                     | 242                                       | 90                      | 136                | 3  | 13                         | 8  | 58        | 1                              | 5                          |

NA= Not Applicable.

Notes: •Only buildings in which the equipment was less than ten years old or the age was unknown were asked whether it was retrofitted or purchased (buildings answering no are not provided). •These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993).

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

Sponsors of programs aimed at assisting buildings in purchasing new equipment or retrofitting existing equipment include utilities, the Federal government (under the Federal Energy Management Program (FEMP)), and third-parties such as an energy service company (ESCO). Buildings can also institute energy-saving programs in-house (Table 2.3).

- Of the buildings that had retrofitted or purchased equipment, the majority did so within programs that were sponsored in-house.
- Of the buildings that reported receiving assistance from FEMP, most reported assistance in the area of lighting equipment.

**Table 2.3. Sponsor of Retrofit or Purchase of Equipment, Number of FBSS Buildings, 1993**

| Type of Equipment<br>(More than one may apply) | Buildings that<br>Retrofitted or<br>Purchased<br>Equipment in<br>Past Ten<br>Years | Sponsor of Retrofit or Purchase (More than one may apply) |            |                |          |           | Don't<br>Know/Not<br>Ascertained |
|--|--|---|------------|----------------|----------|-----------|----------------------------------|
|  |  | Electric<br>Utility                                       | In-House   | Third<br>Party | Other    | FEMP      |                                  |
| <b>Heating(more than one may apply)</b>        |  |   |            |                |          |           |                                  |
| Furnace .....                                  | 17   | 0   | 13         | 4              | 0        | 0         | 0                                |
| Heat Pump .....                                | 38   | 0   | 29         | 7              | 0        | 1         | 1                                |
| Space Heater .....                             | 55   | 0   | 48         | 5              | 2        | 0         | 0                                |
| District Steam .....                           | 35   | 0   | 27         | 8              | 0        | 0         | 1                                |
| Boiler .....                                   | 67   | 3   | 45         | 9              | 3        | 3         | 4                                |
| Packaged Unit .....                            | 49   | 0   | 42         | 5              | 2        | 0         | 1                                |
| <b>Central Chillers .....</b>                  | <b>115</b>   | <b>3</b>  | <b>84</b>  | <b>18</b>      | <b>3</b> | <b>3</b>  | <b>8</b>                         |
| <b>Water-Heating .....</b>                     | <b>222</b>   | <b>3</b>  | <b>190</b> | <b>24</b>      | <b>1</b> | <b>1</b>  | <b>4</b>                         |
| <b>Lighting .....</b>                          | <b>487</b>   | <b>46</b>   | <b>387</b> | <b>49</b>      | <b>5</b> | <b>15</b> | <b>4</b>                         |

Note: • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993).

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

Federal buildings have access to various types of programs aimed at saving energy. Among the programs that assist in either the purchase of new energy-using equipment or the retrofit of existing equipment are: incentives that offer monetary or non-monetary awards such as low-interest loans, rebates, and direct installation of low-cost measures; the Federal Energy Efficiency Fund (FEEF), sponsored by FEMP, that provides grants to Federal agencies to assist them in meeting energy efficiency and water conservation requirements; and alternative energy rates offered by utilities that are intended to reduce consumer bills and shift hours of operation of equipment from on-peak to off-peak periods (Table 2.4).

- For the most part, those buildings that had purchased or retrofitted equipment did not receive assistance in upgrading their equipment.
- Incentives were the most often reported type of assistance. This was followed by assistance from the FEEF and use of alternatives rates.

**Table 2.4. Type of Assistance Received for Retrofit or Purchase of Equipment, Number of FBSS Buildings, 1993**

| Type of Equipment<br>(more than one may apply) | Types of Assistance (More than one may apply)                                      |   |            |                      |                   |                |                                  |
|--|--|---|------------|----------------------|-------------------|----------------|----------------------------------|
|  | Buildings that<br>Retrofitted or<br>Purchased<br>Equipment<br>in Past<br>Ten Years | Federal<br>Energy<br>Efficiency<br>Fund | Incentives | Alternative<br>Rates | Fuel<br>Switching | Other/<br>None | Don't<br>Know/Not<br>Ascertained |
| <b>Heating(more than one may apply)</b>        |  |   |            |                      |                   |                |                                  |
| Furnace .....                                  | 17   | 0                                       | 0          | 0                    | 2                 | 12             | 3                                |
| Heat Pump .....                                | 38   | 1                                       | 2          | 2                    | 2                 | 29             | 5                                |
| Space Heater .....                             | 55   | 1                                       | 0          | 1                    | 0                 | 52             | 1                                |
| District Steam .....                           | 35   | 0                                       | 0          | 0                    | 0                 | 33             | 2                                |
| Boiler .....                                   | 67   | 2                                       | 1          | 5                    | 1                 | 47             | 11                               |
| Packaged Unit .....                            | 49   | 1                                       | 0          | 2                    | 0                 | 44             | 3                                |
| <b>Central Chillers .....</b>                  | <b>115</b>   | <b>1</b>                                | <b>1</b>   | <b>6</b>             | <b>0</b>          | <b>98</b>      | <b>11</b>                        |
| <b>Water-Heating .....</b>                     | <b>222</b>   | <b>3</b>                                | <b>2</b>   | <b>5</b>             | <b>1</b>          | <b>191</b>     | <b>20</b>                        |
| <b>Lighting Equipment .....</b>                | <b>487</b>   | <b>24</b>                               | <b>88</b>  | <b>18</b>            | <b>1</b>          | <b>344</b>     | <b>23</b>                        |

Note: •These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993).

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

The FBSS collected detailed data on the number, type, and age of motors in Federal commercial buildings in addition to information about how many were rewound and how many were considered energy efficient (Table 2.5)

- Most buildings reported between one to five motors that were 10 or more horsepower in their equipment.
- With the exception of buildings using motors for their heat pumps, most buildings reported having equipment with motors that were 10 years or older.

**Table 2.5. Motor Characteristics by Equipment Type, Number of FBSS Buildings, 1993**

| Motors Characteristics                                       | Type of Equipment with Motors 10 or More Horsepower (more than one may apply) |            |      |                 |             |           |            |               |
|--|---|------------|------|-----------------|-------------|-----------|------------|---------------|
|  | Chillers  | Heat Pumps | Fans | Air Compressors | Water Pumps | Elevators | Escalators | Refrigeration |
| <b>All Buildings</b> . . . . .                               | 381   | 23         | 461  | 294             | 374         | 411       | 35         | 86            |
| <b>Number of Motors</b>                                      |   |            |      |                 |             |           |            |               |
| One to Five . . . . .  | 320   | 18         | 201  | 221             | 194         | 280       | 21         | 44            |
| Six to Ten . . . . .   | 39  | 2          | 89   | 47              | 92          | 61        | 6          | 16            |
| Ten to 100 . . . . .   | 16  | 2          | 160  | 18              | 76          | 62        | 4          | 16            |
| Don't Know/Not Ascertained . . . . .                         | 6   | 1          | 11   | 8               | 12          | 8         | 4          | 10            |
| <b>Age of Motors</b>   |   |            |      |                 |             |           |            |               |
| Less Than Ten Years Old . . . . .                            | 127   | 12         | 119  | 109             | 96          | 79        | 6          | 23            |
| Ten Years or Older . . . . .                                 | 179   | 8          | 245  | 132             | 192         | 272       | 24         | 41            |
| Some Less Than Ten Years, Some More Than Ten Years . . . . . | 32  | 0          | 39   | 17              | 33          | 22        | 0          | 11            |
| Don't Know/Not Ascertained . . . . .                         | 43  | 3          | 58   | 36              | 53          | 38        | 5          | 11            |

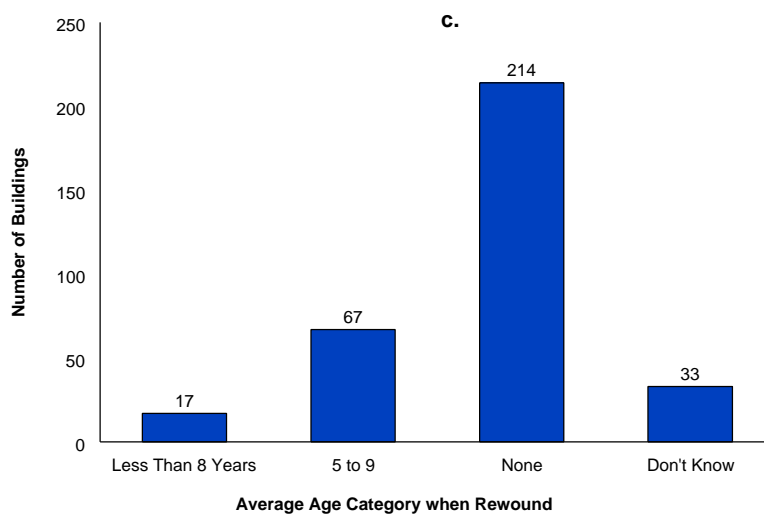
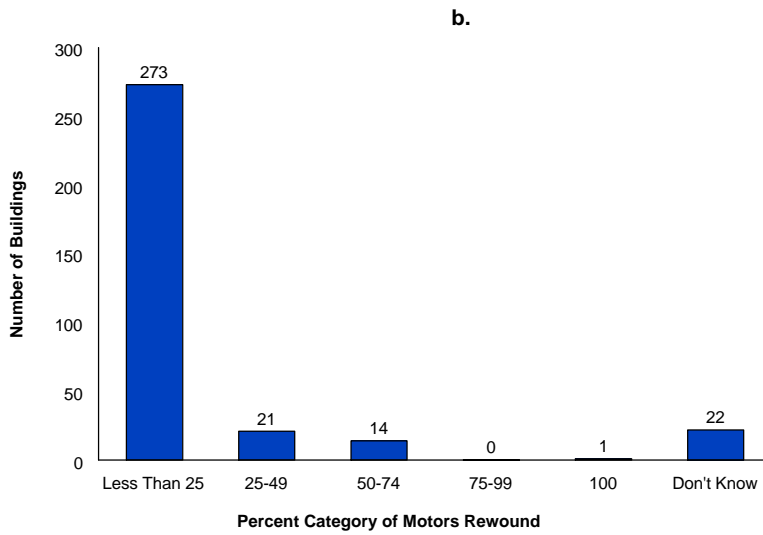
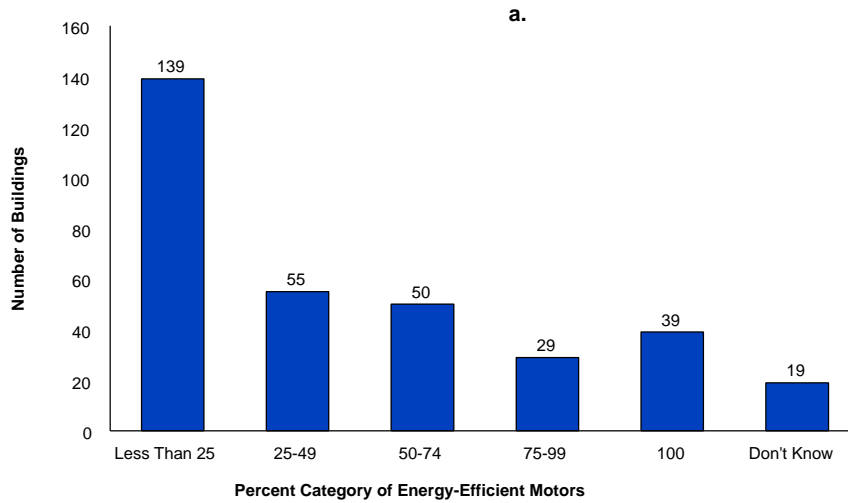
Notes: •These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Totals may not equal sum of components due to independent rounding. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993).

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

- Forty-two percent of 331 buildings that had equipment with motors less than 10 years old had fewer than 25 percent energy-efficient motors (Figure 2.1a).
- A higher percent (82 percent) of 331 buildings that had equipment with motors less than 10 years old had fewer than 25 percent of their motors rewound (Figure 2.1b). Sixty-five percent or 214 of the 331 building respondents said none of their motors were rewound (Figure 2.1c.) This suggests that Federal buildings could target the purchase of energy efficient motors for future conservation improvement.



**Figure 2.1 Selected Characteristics of Motors, 1993**



Note: These graphs are based on 331 buildings of the 881 responding buildings that had equipment with motors less than 10 years old.  
 Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

### 3. Detailed Tables

There were 881 completed interviews for the FBSS. The population consisted of all Federal buildings in Federal Regions 3, 6, and 9 in the commercial sector. Based upon the sample, the population of interest includes 11,032 buildings. Because the sample was not a simple random sample, descriptions of the sample do not correspond to descriptions of the population. Of particular importance, larger buildings were sampled at a higher rate than smaller buildings and non-Department of Defense (DOD) buildings were sampled at a higher rate than DOD buildings. Hence, the sample contains a higher proportion of large buildings and a higher proportion of non-DOD buildings than the population. Sampling weights are used to account for differences in the sampling rates. Estimates of population percentages and population means can be obtained from the sample data using the sampling weights. Table 3.1 below shows the differences between the sample frequencies and the weighted frequencies by size and type (DOD versus non-DOD) of building.

**Table 3.1. Sample and Weighted Totals in FBSS Buildings in Regions 3, 6, and 9, 1993**

| Federal Agency                                       | Sample Frequencies |        |         | Weighted Frequencies |         |         |
|--|--------------------|--------|---------|----------------------|---------|---------|
|  | Size of Building   |        |         | Size of Building     |         |         |
|  | Small              | Medium | Large   | Small                | Medium  | Large   |
| <b>Total Buildings</b> .....                         | 349                | 326    | 206     | 8,548                | 2,144   | 340     |
| <b>Department of Defense</b>                         |                    |        |         |                      |         |         |
| Number of Buildings .....                            | 67                 | 39     | 16      | 6,332                | 1,490   | 81      |
| Percent of Buildings .....                           | 19                 | 12     | 8       | 74                   | 69      | 24      |
| <b>Non-Department of Defense</b>                     |                    |        |         |                      |         |         |
| Number of Buildings .....                            | 282                | 287    | 190     | 2,217                | 654     | 258     |
| Percent of Buildings .....                           | 81                 | 88     | 92      | 26                   | 31      | 76      |
| <b>Total Floorspace</b> (thousand square feet) ..... | 9,014              | 35,395 | 130,604 | 188,150              | 186,186 | 201,663 |
| <b>Department of Defense</b>                         |                    |        |         |                      |         |         |
| Floorspace (thousand square feet) .....              | 1,819              | 3,732  | 18,595  | 141,667              | 122,874 | 53,274  |
| Percent of Floorspace .....                          | 20                 | 11     | 14      | 75                   | 66      | 26      |
| <b>Non-Department of Defense</b>                     |                    |        |         |                      |         |         |
| Floorspace (thousand square feet) .....              | 7,195              | 31,663 | 112,009 | 46,483               | 63,312  | 148,389 |
| Percent of Floorspace .....                          | 80                 | 89     | 86      | 25                   | 34      | 74      |

Notes: • Small = 10,000 to 50,000 square feet; Medium = 50,000 to 200,000 square feet; and Large = Over 200,000 square feet.  
 • These sample frequencies provide data from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. These weighted frequencies provide regional-level estimates. • Totals may not equal sum of components due to independent rounding. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993).

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

## Regional-level Estimates and Confidence Intervals

Per the request of the Office of Federal Energy Management Programs, the data presented in this service report represent the 881 specifically responding buildings and cannot be used to generalize for Federal buildings in each region. However, the FBSS sample design permits regional-level estimates to be obtained by weighting the building-level data. Tables 3.2 through 3.4 provide regional-level estimates (weighted building-level data) for selected building characteristics and consumption and expenditures. Because these regional-level estimates are based on the sample surveyed, they are subject to sampling error. To help the reader interpret the regional-level estimates, 95-percent confidence intervals have been constructed along with the estimates. A confidence interval is an interval around an

**Table 3.2. Regional-Level Estimates and Confidence Intervals for Selected Building Characteristics, Number of FBSS Buildings, 1993**

| Building Characteristics              | Federal Region 3                   |                 | Federal Region 6                   |                 | Federal Region 9                   |                 |
|---------------------------------------|------------------------------------|-----------------|------------------------------------|-----------------|------------------------------------|-----------------|
|                                       | Estimates and Confidence Intervals |                 | Estimates and Confidence Intervals |                 | Estimates and Confidence Intervals |                 |
| <b>Building Floorspace</b>            |                                    |                 |                                    |                 |                                    |                 |
| 10,000 to 50,000 .....                | 1,289                              | (547 - 2,030)   | 2,750                              | (2,487 - 3,014) | 4,510                              | (3,556 - 5,463) |
| 50,001 to 200,000 .....               | 909                                | (522 - 1,295)   | 454                                | (55 - 652)      | 782                                | (484 - 1,080)   |
| Over 200,000 .....                    | 165                                | (137 - 193)     | 62                                 | (44 - 79)       | 113                                | (73 - 153)      |
| <b>Principal Building Activity</b>    |                                    |                 |                                    |                 |                                    |                 |
| Education .....                       | 220                                | (*)             | 262                                | (*)             | 287                                | (80 - 495)      |
| Health Care .....                     | 122                                | (43 - 200)      | 135                                | (*)             | 311                                | (52 - 571)      |
| Laboratory .....                      | 112                                | (59 - 164)      | 202                                | (*)             | 180                                | (42 - 318)      |
| Lodging .....                         | 441                                | (250 - 632)     | 774                                | (319 - 1,229)   | 1,061                              | (927 - 1,195)   |
| Mercantile & Service .....            | 239                                | (176 - 302)     | 345                                | (264 - 426)     | 900                                | (577 - 1,223)   |
| Office .....                          | 391                                | (259 - 524)     | 1,095                              | (573 - 1,617)   | 964                                | (638 - 1,290)   |
| All Others .....                      | 837                                | (163 - 1,511)   | 453                                | (217 - 689)     | 1,701                              | (1,055 - 2,346) |
| <b>Year Constructed</b>               |                                    |                 |                                    |                 |                                    |                 |
| 1959 or Before .....                  | 1,504                              | (1,254 - 1,754) | 1,068                              | (635 - 1,501)   | 2,883                              | (2,656 - 3,109) |
| 1960 to 1969 .....                    | 381                                | (175 - 586)     | 234                                | (79 - 389)      | 709                                | (17 - 1,300)    |
| 1970 to 1979 .....                    | 214                                | (117 - 312)     | 431                                | (*)             | 1,125                              | (555 - 1,694)   |
| 1980 to 1989 .....                    | 226                                | (78 - 373)      | 1,244                              | (692 - 1,795)   | 598                                | (262 - 935)     |
| 1990 to 1993 .....                    | 38                                 | (23 - 54)       | 288                                | (*)             | 90                                 | (57 - 124)      |
| <b>Federal Agency</b>                 |                                    |                 |                                    |                 |                                    |                 |
| Department of Defense . . . .         | 1,466                              | (1,055 - 1,878) | 2,389                              | (2,048 - 2,730) | 4,048                              | (2,985 - 5,111) |
| General Services Administration ..... | 129                                | (105 - 153)     | 89                                 | (68 - 109)      | 161                                | (*)             |
| United States Postal Service .....    | 280                                | (220 - 340)     | 405                                | (381 - 430)     | 262                                | (219 - 321)     |
| Veteran's Administration ..           | 184                                | (153 - 216)     | 69                                 | (46 - 92)       | 190                                | (43 - 238)      |
| All Others .....                      | 3 02                               | (209 - 396)     | 314                                | (235 - 393)     | 744                                | (328 - 1160)    |
| <b>Energy Sources</b>                 |                                    |                 |                                    |                 |                                    |                 |
| Electricity .....                     | 2,355                              | (1,932 - 2,777) | 3,265                              | (2,922 - 3,609) | 5,378                              | (4,535 - 6,221) |
| Natural Gas .....                     | 711                                | (437 - 985)     | 2,772                              | (2,122 - 3,423) | 3,182                              | (9,553 - 3,811) |
| Fuel Oil .....                        | 841                                | (121 - 1,561)   | 57                                 | (3 - 110)       | 337                                | (118 - 555)     |
| District Heat .....                   | 1,154                              | (623 - 1,685)   | 580                                | (*)             | 1,154                              | (896 - 1,412)   |
| District Chilled Water .....          | 189                                | (115 - 264)     | 655                                | (278 - 1,032)   | 386                                | (27 - 746)      |
| Propane .....                         | 88                                 | (*)             | 141                                | (*)             | 642                                | (28 - 856)      |
| Any Other .....                       | 21                                 | (*)             | 19                                 | (*)             | 24                                 | (*)             |

\*Data withheld because variances are too large.

Notes: • These data are weighted to provide regional-level estimates. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993).

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

estimate, which by virtue of the way it is constructed, "contains" the true (but unknown) population value of interest for 95 percent of all possible samples. Confidence intervals have lower bounds and upper bounds that provide minimum and maximum values expected for the estimate. For example, Table 3.2 provides an estimate of 122 health care buildings in Federal Region 3 with a lower bound of 43 and an upper bound of 200. This means that for 95 percent of all possible samples, the estimate of the number of health care buildings in Federal Region 3 would be between 43 and 200 buildings. The confidence interval serves as a measure of the level of variability in the survey estimate. The wider the confidence interval, the higher the sampling variability of the survey estimate. For an estimate with high sampling variability, confidence intervals are not provided.

Selected estimates and their confidence intervals are provided as approximations and as such confidence intervals must also be regarded as only approximate.

**Table 3.3. Regional-Level Estimates and Confidence Intervals for Selected Building Characteristics, FBSS Building Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics              | Federal Region 3                   |                   | Federal Region 6                   |                  | Federal Region 9                   |                   |
|---------------------------------------|------------------------------------|-------------------|------------------------------------|------------------|------------------------------------|-------------------|
|                                       | Estimates and Confidence Intervals |                   | Estimates and Confidence Intervals |                  | Estimates and Confidence Intervals |                   |
| <b>Building Floorspace</b>            |                                    |                   |                                    |                  |                                    |                   |
| 10,000 to 50,000 .....                | 28,502                             | (16,526- 40,477)  | 59,272                             | (45,133- 73,411) | 100,376                            | (80,933-119,819)  |
| 50,001 to 200,000 .....               | 80,079                             | (61,678- 98,479)  | 38,844                             | (25,597- 52,092) | 67,263                             | (44,235- 90,291)  |
| Over 200,000 .....                    | 122,544                            | (95,549-149,540)  | 29,680                             | (19,326- 40,034) | 49,438                             | (34,706- 64,170)  |
| <b>Principal Building Activity</b>    |                                    |                   |                                    |                  |                                    |                   |
| Education .....                       | 14,602                             | (*)               | 6,589                              | (*)              | 14,527                             | (*)               |
| Health Care .....                     | 25,466                             | (16,072- 34,859)  | 24,073                             | (7,909- 40,238)  | 19,316                             | (14,164- 24,467)  |
| Laboratory .....                      | 9,328                              | (8,174- 10,481)   | 8,286                              | (1,341- 15,230)  | 8,064                              | (3,650- 12,477)   |
| Lodging .....                         | 33,012                             | (10,720- 55,305)  | 20,418                             | (13,111- 27,726) | 34,863                             | (24,637- 45,088)  |
| Mercantile & Service .....            | 20,142                             | (10,235- 30,049)  | 16,702                             | (11,881- 21,524) | 33,760                             | (18,231- 49,290)  |
| Office .....                          | 89,325                             | (65,588- 113,063) | 34,714                             | (22,574- 46,855) | 52,742                             | (38,734- 66,750)  |
| All Others .....                      | 39,250                             | (20,184- 58,315)  | 17,013                             | (6,606- 27,421)  | 53,806                             | (40,287- 67,324)  |
| <b>Year Constructed</b>               |                                    |                   |                                    |                  |                                    |                   |
| 1959 or Before .....                  | 107,102                            | (82,826-131,377)  | 43,362                             | (27,288- 59,437) | 99,013                             | (86,649-111,377)  |
| 1960 to 1969 .....                    | 47,026                             | (15,092- 78,960)  | 16,015                             | (6,342- 25,689)  | 33,064                             | (17,555- 48,574)  |
| 1970 to 1979 .....                    | 42,666                             | (17,911- 67,422)  | 23,146                             | (5,488- 40,805)  | 47,267                             | (29,343- 65,192)  |
| 1980 to 1989 .....                    | 27,056                             | (8,634- 45,478)   | 34,926                             | (14,483- 55,369) | 31,566                             | (18,265- 44,867)  |
| 1990 to 1993 .....                    | 7,275                              | (5,408- 9,141)    | 10,346                             | (*)              | 6,167                              | (1,399- 10,935)   |
| <b>Federal Agency</b>                 |                                    |                   |                                    |                  |                                    |                   |
| Department of Defense ..              | 99,413                             | (88,447-110,380)  | 73,132                             | (44,214-102,051) | 145,269                            | (131,017-159,520) |
| General Services Administration ..... | 65,382                             | (43,053-86,711)   | 10,277                             | (7,175- 13,379)  | 5,945                              | (10,433- 21,457)  |
| United States Postal Service .....    | 22,436                             | (13,100- 31,772)  | 17,094                             | (16,078- 18,109) | 16,187                             | (12,137- 20,137)  |
| Veterans Administration ...           | 22,664                             | (21,979- 23,348)  | 12,758                             | (11,665- 13,852) | 15,641                             | (15,010- 16,273)  |
| All Others .....                      | 21,229                             | (18,925- 23,532)  | 14,535                             | (10,906- 18,165) | 24,035                             | (17,112- 30,959)  |
| <b>Energy Sources</b>                 |                                    |                   |                                    |                  |                                    |                   |
| Electricity .....                     | 225,630                            | (202,611-248,650) | 127,797                            | (98,761-156,832) | 216,545                            | (202,386-230,703) |
| Natural Gas .....                     | 126,202                            | (97,906-154,498)  | 103,091                            | (74,463-131,719) | 128,406                            | (117,871-138,940) |
| Fuel Oil .....                        | 87,096                             | (58,257-115,935)  | 9,643                              | (2,270- 17,016)  | 24,784                             | (15,523- 34,045)  |
| District Heat .....                   | 133,203                            | (98,279-168,126)  | 29,739                             | (13,754- 45,724) | 57,104                             | (41,754- 72,455)  |
| District Chilled Water .....          | 40,202                             | (36,942- 3,461)   | 24,859                             | (16,964- 33,753) | 21,052                             | (8,917- 33,186)   |
| Propane .....                         | 6,125                              | (*)               | 3,853                              | (*)              | 13,776                             | (8,862- 18,690)   |
| Any Other .....                       | 5,549                              | (5,053- 6,045)    | 3,878                              | (2,087- 5,670)   | 3,766                              | (1,517- 6,016)    |

\*Data withheld because variances were too large.

Notes: • These data are weighted to provide regional-level estimates. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993).

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.4. Regional-Level Estimates and Confidence Intervals for Major Fuels, FBSS Consumption and Expenditures, 1993**

| Major Fuels                              | Federal Region 3 |                      | Federal Region 6 |                      | Federal Region 9 |                      |
|--|------------------|----------------------|------------------|----------------------|------------------|----------------------|
|  | Estimates        | Confidence Intervals | Estimates        | Confidence Intervals | Estimates        | Confidence Intervals |
| <b>Consumption</b> (billion Btu)         |                  |                      |                  |                      |                  |                      |
| <b>All Major Fuels</b> .....             | 33,322           | (25,233-39,410)      | 20,716           | (11,383-30,049)      | 24,424           | (20,523-28,324)      |
| Electricity .....                        | 16,033           | (13,068-18,998)      | 9,655            | (7,063-12,246)       | 14,469           | (10,854-18,085)      |
| Natural Gas .....                        | 5,594            | (3,164-18,024)       | 8,225            | (2,922-13,529)       | 5,594            | (4,531- 6,657)       |
| Fuel Oil .....                           | 1,517            | (437- 2,598)         | 20               | (1- 40)              | 233              | (9- 457)             |
| District Heat .....                      | 9,177            | (4,933-13,422)       | 2,815            | (694- 4,936)         | 4,127            | ( 3,707- 4,547)      |
| <b>Expenditures</b><br>(million dollars) |                  |                      |                  |                      |                  |                      |
| <b>All Major Fuels</b> .....             | 413              | (352- 475)           | 203              | (143- 264)           | 397              | (345- 448)           |
| Electricity .....                        | 273              | (3- 304)             | 146              | (117- 176)           | 322              | (269- 376)           |
| Natural Gas .....                        | 23               | (15- 30)             | 27               | (11- 43)             | 27               | (23- 32)             |
| Fuel Oil .....                           | 8                | (2- 13)              | 0                | (0- 0)               | 1                | (0- 3)               |
| District Heat .....                      | 110              | (63- 157)            | 30               | (5- 55)              | 45               | (37- 54)             |

Notes: • These data are weighted to provide regional-level estimates. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993).

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

## Table Organization

The following 48 detailed tables in this section present unweighted cross-tabulations of commercial buildings' characteristics and consumption and expenditure data for the 881 responding Federal buildings in Federal Regions 3, 6, and 9. This section provides assistance in reading the detailed tables by explaining some of the data categories and some of the headings for the data categories.

## Overall Organization

The detailed tables have been grouped to make it easier to find related information. Table 3.7 summarizes the total number of buildings, square footage, and workers and the average square footage per building for all the buildings interviewed in Federal Regions 3, 6, and 9 and the number of buildings and square footage for each of the three Federal regions in the FBSS. After Table 3.7, the tables are grouped by Federal region for building characteristics data (Tables 3.8 through 3.42) and consumption and expenditure data (Tables 3.43 through 3.54). Tables 3.8 through 3.33 contain data about the energy sources and equipment in Federal buildings. Tables 3.34 through 3.42 contain information about conservation measures and programs in the Federal buildings. Tables 3.43 through 3.54 contain consumption and expenditures data for electricity, natural gas, and district heat. There is a Quick Reference Guide to the tables on page 18 to help the reader quickly locate specific tables of interest.

Generally, for each Federal region there are two tables for each topic, one giving the number of buildings in each cross tabulation cell, the other giving the floorspace in those buildings. For example, for the topic "Heating Equipment," Tables 3.10 through 3.12 provide the number of buildings for Federal Regions 3, 6, and 9, respectively, while Tables 3.13 through 3.15 provide the floorspace for those regions for this same topic. For some smaller tables, the number of buildings and floorspace appear together in a single table.

Data in the tables are presented in column categories (at the top of each table) and row categories (in the far left column of each tables.)

## Core Categories

The following core set of categories appear in the same order in all basic tables: floorspace, principal building activity, year constructed, and Federal agency. Additional categories are included on the tables when they relate to specific overall topic areas. Table 3.7, the summary table, contains the core categories as well as most of the additional categories.

The "Sum of Major Fuels" is the sum of site electricity, natural gas, fuel oil, and district heat. Statistics in this category exclude data from "Primary Electricity." Although electricity is technically not a fuel, "Major Fuel" rather than "Major Energy Source," was retained as the title of this category to remain consistent with previous CBECS reports. Although fuel oil is considered a major fuel, Federal building respondents reported very little use of fuel oil; therefore, an individual consumption and expenditures table is not included.

## Exclusive/Nonexclusive Categories

There are two types of categories, those that indicate exclusive, nonoverlapping categories and those that indicate nonexclusive, overlapping subsets of categories. For example, "building floorspace" 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 included in more than one line under this category since the building may use more than one energy source. The phrase, "more than one may apply," 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.

**Nonexclusive Categories.** For the exclusive nonoverlapping categories, the response option "don't know" is included on the detailed tables whenever applicable. However, in the nonexclusive overlapping categories, each line had the possibility of being answered "don't know;" these were not included in the detailed tables. Tables 3.5 and 3.6 provide the number of buildings and floorspace, respectively, for respondents that answered "don't know" for each line in the nonexclusive overlapping categories.

**Table 3.5. Number of FBSS Buildings with "Don't Know" Responses, 1993**

| Building Characteristics                            | Regions 3, 6,<br>and 9 | Region 3 | Region 6 | Region 9 |
|---|------------------------|----------|----------|----------|
| <b>Heating Equipment</b>                            |                        |          |          |          |
| Heat Pumps .....                                    | 6                      | 0        | 1        | 5        |
| Furnaces .....                                      | 5                      | 0        | 0        | 5        |
| Individual Space Heaters .....                      | 6                      | 1        | 1        | 4        |
| District Heat .....                                 | 5                      | 0        | 1        | 4        |
| Boilers .....                                       | 4                      | 0        | 0        | 4        |
| Packaged Heating Units .....                        | 8                      | 1        | 2        | 5        |
| <b>Cooling Equipment</b>                            |                        |          |          |          |
| Residential-Type Central A/C .....                  | 2                      | 0        | 1        | 1        |
| Heat Pumps .....                                    | 4                      | 0        | 2        | 2        |
| Individual A/C .....                                | 2                      | 0        | 0        | 2        |
| District Chilled Water .....                        | 3                      | 1        | 1        | 1        |
| Central Chillers .....                              | 1                      | 0        | 0        | 1        |
| Packaged A/C Units .....                            | 3                      | 0        | 1        | 2        |
| Swamp Coolers .....                                 | 3                      | 1        | 0        | 2        |
| <b>Lighting Equipment</b>                           |                        |          |          |          |
| Incandescent .....                                  | 6                      | 2        | 1        | 3        |
| Standard Fluorescent .....                          | 3                      | 0        | 0        | 3        |
| Compact Fluorescent .....                           | 50                     | 3        | 39       | 8        |
| High-Intensity Discharge .....                      | 30                     | 3        | 13       | 14       |
| Electronic Ballast .....                            | 58                     | 7        | 41       | 10       |
| <b>Building Shell Conservation Features</b>         |                        |          |          |          |
| Roof or Ceiling Insulation .....                    | 37                     | 4        | 8        | 25       |
| Wall Insulation .....                               | 65                     | 12       | 21       | 32       |
| Storm or Multiple Glazing .....                     | 39                     | 3        | 8        | 28       |
| Tinted or Reflective Glass or<br>Shading Film ..... | 38                     | 0        | 8        | 30       |
| Exterior or Interior Shading or<br>Awnings .....    | 37                     | 1        | 11       | 25       |
| <b>HVAC Conservation Features</b>                   |                        |          |          |          |
| VAV System .....                                    | 25                     | 9        | 2        | 14       |
| Economizer Cycle .....                              | 22                     | 5        | 5        | 12       |
| HVAC Maintenance .....                              | 3                      | 2        | 0        | 1        |
| <b>Lighting Conservation Features</b>               |                        |          |          |          |
| Specular Reflectors .....                           | 7                      | 0        | 2        | 5        |
| Natural Lighting Control Sensors .....              | 4                      | 0        | 0        | 4        |
| Occupancy Sensors .....                             | 6                      | 0        | 1        | 5        |
| Time Clock .....                                    | 5                      | 0        | 1        | 4        |
| Manual Dimmer Switches .....                        | 20                     | 2        | 14       | 4        |
| <b>Energy Management Practices</b>                  |                        |          |          |          |
| Energy Management and Control<br>System .....       | 42                     | 7        | 12       | 23       |
| Energy Conservation Programs .....                  | 29                     | 11       | 7        | 11       |
| Energy Audit .....                                  | 57                     | 16       | 11       | 30       |
| HVAC Maintenance Staff .....                        | 32                     | 2        | 27       | 3        |
| <b>Off-Hours Reduction in Equipment</b>             |                        |          |          |          |
| Heating .....                                       | 32                     | 2        | 25       | 5        |
| Cooling .....                                       | 32                     | 1        | 25       | 6        |
| Hot Water .....                                     | 45                     | 8        | 27       | 10       |
| Lighting .....                                      | 28                     | 1        | 23       | 4        |

Notes: •These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993).

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.6. Floorspace of FBSS Buildings with "Don't Know" Responses, 1993**  
(Thousand Square Feet)

| Building Characteristics                            | Regions 3, 6,<br>and 9 | Region 3 | Region 6 | Region 9 |
|---|------------------------|----------|----------|----------|
| <b>Heating Equipment</b>                            |                        |          |          |          |
| Heat Pumps .....                                    | 305                    | 0        | 11       | 294      |
| Furnaces .....                                      | 286                    | 0        | 0        | 286      |
| Individual Space Heaters .....                      | 345                    | 60       | 11       | 274      |
| District Heat .....                                 | 285                    | 0        | 11       | 274      |
| Boilers .....                                       | 274                    | 0        | 0        | 274      |
| Packaged Heating Units .....                        | 574                    | 245      | 35       | 294      |
| <b>Cooling Equipment</b>                            |                        |          |          |          |
| Residential-Type Central A/C .....                  | 251                    | 0        | 20       | 231      |
| Heat Pumps .....                                    | 648                    | 0        | 44       | 604      |
| Individual A/C .....                                | 260                    | 0        | 0        | 260      |
| District Chilled Water .....                        | 551                    | 300      | 20       | 260      |
| Central Chillers .....                              | 231                    | 0        | 0        | 231      |
| Packaged A/C Units .....                            | 309                    | 0        | 20       | 289      |
| Swamp Coolers .....                                 | 729                    | 300      | 0        | 429      |
| <b>Lighting Equipment</b>                           |                        |          |          |          |
| Incandescent .....                                  | 1,010                  | 727      | 20       | 263      |
| Standard Fluorescent .....                          | 263                    | 0        | 0        | 263      |
| Compact Fluorescent .....                           | 6,918                  | 792      | 4,522    | 1,604    |
| High-Intensity Discharge .....                      | 6,023                  | 2,301    | 1,632    | 2,090    |
| Electronic Ballast .....                            | 5,299                  | 500      | 4,454    | 345      |
| <b>Building Shell Conservation Features</b>         |                        |          |          |          |
| Roof or Ceiling Insulation .....                    | 5,305                  | 1,473    | 1,462    | 2,370    |
| Wall Insulation .....                               | 9,071                  | 3,291    | 2,744    | 3,036    |
| Storm or Multiple Glazing .....                     | 5,182                  | 1,579    | 668      | 2,934    |
| Tinted or Reflective Glass or<br>Shading Film ..... | 4,189                  | 0        | 1,151    | 2,370    |
| Exterior or Interior Shading<br>or Awnings .....    | 3,743                  | 54       | 1,404    | 2,285    |
| <b>HVAC Conservation Features</b>                   |                        |          |          |          |
| VAV System .....                                    | 3,129                  | 1,377    | 67       | 1,685    |
| Economizer Cycle .....                              | 2,137                  | 683      | 170      | 1,284    |
| HVAC Maintenance .....                              | 186                    | 73       | 0        | 113      |
| <b>Lighting Conservation Features</b>               |                        |          |          |          |
| Specular Reflectors .....                           | 1,161                  | 0        | 43       | 1,118    |
| Natural Lighting Control Sensors .....              | 1,088                  | 0        | 632      | 1,088    |
| Occupancy Sensors .....                             | 2,313                  | 0        | 632      | 1,681    |
| Time Clock .....                                    | 96                     | 0        | 18       | 77       |
| Manual Dimmer Switches .....                        | 3,491                  | 727      | 1,676    | 1,088    |
| <b>Energy Management Practices</b>                  |                        |          |          |          |
| Energy Management and Control<br>System .....       | 4,490                  | 933      | 1,596    | 1,961    |
| Energy Conservation Programs .....                  | 5,045                  | 3,110    | 1,239    | 696      |
| Energy Audit .....                                  | 13,232                 | 6,539    | 2,460    | 4,233    |
| HVAC Maintenance Staff .....                        | 4,403                  | 87       | 4,163    | 152      |
| <b>Off-Hours Reduction in Equipment</b>             |                        |          |          |          |
| Heating .....                                       | 3,501                  | 226      | 2,651    | 624      |
| Cooling .....                                       | 3,509                  | 169      | 2,651    | 689      |
| Hot Water .....                                     | 7,455                  | 3,415    | 2,687    | 1,343    |
| Lighting .....                                      | 2,974                  | 169      | 2,552    | 251      |

Notes: • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993).

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental 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 find a particular two-way breakdown of interest, the tables featuring both topics should be consulted.

| <b>Quick-Reference Guide</b>                          |                            |      |      |                       |      |      |
|---|----------------------------|------|------|-----------------------|------|------|
| <b>Data Item/Category</b>                             | <b>Table Numbers</b>       |      |      |                       |      |      |
|   | <b>Number of Buildings</b> |      |      | <b>Floorspace</b>     |      |      |
|   | <b>Federal Region</b>      |      |      | <b>Federal Region</b> |      |      |
|   | 3                          | 6    | 9    | 3                     | 6    | 9    |
| <b>Energy Sources</b>                                 | 3.8                        | 3.8  | 3.8  | 3.9                   | 3.9  | 3.9  |
| <b>Equipment</b>                                      |                            |      |      |                       |      |      |
| Heating Equipment                                     | 3.10                       | 3.11 | 3.12 | 3.13                  | 3.14 | 3.15 |
| Cooling Equipment                                     | 3.16                       | 3.17 | 3.18 | 3.19                  | 3.20 | 3.21 |
| Refrigeration Equipment                               | 3.22                       | 3.23 | 3.24 | 3.22                  | 3.23 | 3.24 |
| Water-Heating Equipment                               | 3.25                       | 3.26 | 3.27 | 3.25                  | 3.26 | 3.27 |
| Lighting Equipment                                    | 3.28                       | 3.29 | 3.30 | 3.31                  | 3.32 | 3.33 |
| <b>Conservation/Energy Management Features</b>        |                            |      |      |                       |      |      |
| Energy Conservation Features                          | 3.34                       | 3.35 | 3.36 | 3.34                  | 3.35 | 3.36 |
| Energy Management Practices                           | 3.37                       | 3.38 | 3.39 | 3.40                  | 3.41 | 3.42 |
|   | <b>Consumption</b>         |      |      | <b>Expenditures</b>   |      |      |
|   | <b>Federal Region</b>      |      |      | <b>Federal Region</b> |      |      |
|   | 3                          | 6    | 9    | 3                     | 6    | 9    |
| <b>Consumption and Expenditures</b>                   |                            |      |      |                       |      |      |
| Sum of Major Fuels, Electricity, Natural Gas          | 3.43                       | 3.44 | 3.45 | 3.43                  | 3.44 | 3.45 |
| Electricity Consumption and Expenditure Intensities   | 3.46                       | 3.47 | 3.48 | 3.46                  | 3.47 | 3.48 |
| Natural Gas Consumption and Expenditure Intensities   | 3.49                       | 3.50 | 3.51 | 3.49                  | 3.50 | 3.51 |
| District Heat Consumption and Expenditure Intensities | 3.52                       | 3.53 | 3.54 | 3.52                  | 3.53 | 3.54 |

## Electronic Data Sets

All the tables in this report are also available on diskette. The electronic files on the diskette are flat ASCII files. The diskette containing the files also contains a READ.ME ASCII text file with a table of contents. In addition, FBSS data are available on Public-Use Diskettes either in ASCII or dBase format (for details on obtaining the diskettes, see "Public-Use Data Preparation" section in Appendix A, "How the Survey Was Conducted," Public-Use Diskettes).

**Table 3.7. Summary of FBSS Buildings and Floorspace in Federal Regions 3, 6, and 9, 1993**

| Building Characteristics                         | Total Number of Buildings | Total Floorspace (thousand square feet) | Total Workers (thousand) | Floorspace per Building (thousand square feet) | Number of Buildings per Federal Region |            |            | Floorspace per Federal Region (thousand square feet) |               |               |
|--|---------------------------|---|--------------------------|--|--|------------|------------|--|---------------|---------------|
|  |                           |   |                          |  | 3                                      | 6          | 9          | 3  | 6             | 9             |
| <b>All Buildings</b>                             | <b>881</b>                | <b>175,012</b>                          | <b>492</b>               | <b>198.7</b>                                   | <b>312</b>                             | <b>243</b> | <b>326</b> | <b>94,880</b>  | <b>35,816</b> | <b>44,316</b> |
| <b>Building Floorspace (square feet)</b>         |                           |   |                          |  |  |            |            |  |               |               |
| 10,000 to 50,000                                 | 349                       | 9,013                                   | 21                       | 25.8   | 94                                     | 107        | 148        | 2,564  | 2,591         | 3,858         |
| 50,001 to 200,000                                | 326                       | 35,395                                  | 74                       | 108.6  | 117                                    | 86         | 123        | 13,166   | 9,548         | 12,680        |
| Over 200,000                                     | 206                       | 130,604                                 | 397                      | 634.0  | 101                                    | 50         | 55         | 79,149   | 23,677        | 27,778        |
| <b>Principal Building Activity</b>               |                           |   |                          |  |  |            |            |  |               |               |
| Education  | 26                        | 1,394                                   | 2                        | 53.6   | 8                                      | 6          | 12         | 598  | 168           | 628           |
| Health Care                                      | 124                       | 36,555                                  | 66                       | 294.8  | 41                                     | 35         | 48         | 14,559   | 12,094        | 9,903         |
| Laboratory                                       | 97                        | 11,097                                  | 18                       | 114.4  | 37                                     | 29         | 31         | 5,165  | 3,331         | 2,601         |
| Lodging  | 51                        | 4,720                                   | 2                        | 92.6   | 13                                     | 16         | 22         | 2,558  | 942           | 1,220         |
| Mercantile and Service                           | 158                       | 22,397                                  | 99                       | 141.8  | 46                                     | 49         | 63         | 7,966  | 6,236         | 8,194         |
| Office   | 292                       | 84,060                                  | 277                      | 287.9  | 124                                    | 76         | 92         | 56,881   | 10,799        | 16,380        |
| All Others                                       | 133                       | 14,789                                  | 28                       | 111.2  | 43                                     | 32         | 58         | 7,152  | 2,247         | 5,390         |
| <b>Year Constructed</b>                          |                           |   |                          |  |  |            |            |  |               |               |
| 1959 or Before                                   | 375                       | 70,640                                  | 240                      | 188.4  | 142                                    | 103        | 130        | 43,829   | 13,258        | 13,553        |
| 1960 to 1969                                     | 163                       | 35,033                                  | 89                       | 214.9  | 70                                     | 38         | 55         | 19,564   | 6,386         | 9,082         |
| 1970 to 1979                                     | 143                       | 35,953                                  | 90                       | 251.4  | 47                                     | 34         | 62         | 17,737   | 6,175         | 12,041        |
| 1980 to 1989                                     | 160                       | 23,833                                  | 59                       | 149.0  | 38                                     | 57         | 65         | 8,975  | 6,903         | 7,955         |
| 1990 to 1993                                     | 40                        | 9,553                                   | 14                       | 238.8  | 15                                     | 11         | 14         | 4,774  | 3,095         | 1,684         |
| <b>Federal Agency</b>                            |                           |   |                          |  |  |            |            |  |               |               |
| Department of Defense                            | 122                       | 24,145                                  | 61                       | 197.9  | 22                                     | 22         | 78         | 13,988   | 1,668         | 8,489         |
| General Services Administration                  | 157                       | 66,598                                  | 220                      | 424.2  | 83                                     | 35         | 39         | 46,205   | 7,888         | 12,505        |
| United States Postal Service                     | 181                       | 24,806                                  | 103                      | 137.0  | 57                                     | 61         | 63         | 9,392  | 7,027         | 8,387         |
| Veterans Administration                          | 148                       | 33,504                                  | 58                       | 226.4  | 56                                     | 36         | 56         | 13,306   | 11,375        | 8,824         |
| All Others                                       | 273                       | 25,958                                  | 50                       | 95.1   | 94                                     | 89         | 90         | 11,989   | 7,858         | 6,111         |
| <b>Energy Sources (more than one may apply)</b>  |                           |   |                          |  |  |            |            |  |               |               |
| Electricity                                      | 879                       | 174,273                                 | 490                      | 198.3  | 311                                    | 243        | 325        | 94,161   | 35,816        | 44,296        |
| Natural Gas                                      | 532                       | 118,204                                 | 363                      | 222.2  | 139                                    | 168        | 225        | 58,674   | 24,827        | 34,703        |
| Fuel Oil   | 161                       | 55,167                                  | 135                      | 342.7  | 89                                     | 18         | 54         | 39,300   | 4,740         | 11,127        |
| District Heat                                    | 296                       | 89,185                                  | 289                      | 301.3  | 154                                    | 68         | 74         | 63,991   | 13,437        | 11,757        |
| District Chilled Water                           | 114                       | 37,263                                  | 95                       | 326.9  | 57                                     | 30         | 27         | 22,922   | 7,980         | 6,362         |
| Propane  | 20                        | 2,259                                   | 4                        | 113.0  | 5                                      | 5          | 10         | 941  | 200           | 1,117         |
| Any Other  | 21                        | 9,927                                   | 23                       | 472.7  | 8                                      | 8          | 5          | 4,470  | 2,850         | 2,606         |
| <b>Energy End Uses (more than one may apply)</b> |                           |   |                          |  |  |            |            |  |               |               |
| Heating  | 853                       | 171,718                                 | 483                      | 201.3  | 307                                    | 242        | 304        | 94,063   | 35,734        | 41,921        |
| Air Conditioning                                 | 838                       | 170,634                                 | 485                      | 203.6  | 305                                    | 241        | 292        | 93,454   | 35,273        | 41,907        |
| Water Heating                                    | 856                       | 171,343                                 | 485                      | 200.2  | 303                                    | 238        | 315        | 93,138   | 35,221        | 42,984        |
| Cooking  | 241                       | 109,205                                 | 347                      | 453.1  | 108                                    | 63         | 70         | 69,947   | 19,213        | 20,045        |
| Manufacturing                                    | 108                       | 40,070                                  | 134                      | 371.0  | 50                                     | 28         | 30         | 27,041   | 5,335         | 7,693         |
| <b>Workers (main shift)</b>                      |                           |   |                          |  |  |            |            |  |               |               |
| Less than 50                                     | 234                       | 10,335                                  | 5                        | 44.2   | 71                                     | 70         | 93         | 4,102  | 2,548         | 3,684         |
| 50 to 99   | 132                       | 6,090                                   | 10                       | 46.1   | 39                                     | 44         | 49         | 1,903  | 2,026         | 2,161         |
| 100 to 499                                       | 321                       | 36,678                                  | 69                       | 114.3  | 107                                    | 80         | 134        | 13,632   | 9,029         | 14,017        |
| 500 or More                                      | 194                       | 121,910                                 | 409                      | 628.4  | 95                                     | 49         | 50         | 75,243   | 22,213        | 24,454        |
| <b>Weekly Operating Hours</b>                    |                           |   |                          |  |  |            |            |  |               |               |
| 48 or Fewer                                      | 170                       | 17,257                                  | 33                       | 101.5  | 51                                     | 39         | 80         | 9,694  | 2,740         | 4,822         |
| 49 to 60   | 187                       | 45,424                                  | 114                      | 242.9  | 76                                     | 46         | 65         | 25,540   | 6,460         | 13,424        |
| 61 to 167  | 206                       | 25,749                                  | 58                       | 125.0  | 60                                     | 78         | 68         | 11,993   | 8,051         | 5,706         |
| Open Continuously                                | 318                       | 86,582                                  | 288                      | 272.3  | 125                                    | 80         | 113        | 47,653   | 18,565        | 20,364        |
| <b>Predominant Exterior Wall Material</b>        |                           |   |                          |  |  |            |            |  |               |               |
| Masonry  | 658                       | 117,869                                 | 343                      | 179.1  | 236                                    | 203        | 219        | 65,621   | 26,577        | 25,671        |
| Other  | 220                       | 57,039                                  | 149                      | 259.3  | 76                                     | 39         | 105        | 29,259   | 9,219         | 18,562        |
| Don't Know                                       | 3                         | 104                                     | (*)                      | 34.6   | NC                                     | 1          | 2          | NC   | 20            | 84            |

See footnotes at end of table.

**Table 3.7. Summary of FBSS Buildings and Floorspace in Federal Regions 3, 6, and 9, 1993 (Continued)**

| Building Characteristics                                      | Total Number of Buildings | Total Floorspace (thousand square feet) | Total Workers (thousand) | Floorspace per Building (thousand square feet) | Number of Buildings per Federal Region |     |     | Floorspace per Federal Region (thousand square feet) |        |        |
|---|---------------------------|---|--------------------------|--|--|-----|-----|--|--------|--------|
|   |                           |   |                          |  | 3                                      | 6   | 9   | 3  | 6      | 9      |
| <b>Predominant Roof Material</b>                              |                           |   |                          |  |  |     |     |  |        |        |
| Built-Up .....  | 499                       | 102,996                                 | 249                      | 206.4  | 156                                    | 143 | 200 | 47,882   | 24,341 | 30,773 |
| Synthetic or Rubber .....                                     | 121                       | 32,530                                  | 101                      | 268.8  | 58                                     | 33  | 30  | 23,371   | 4,377  | 4,782  |
| Other .....   | 251                       | 38,450                                  | 139                      | 153.2  | 96                                     | 64  | 91  | 23,532   | 7,029  | 7,888  |
| Don't Know .....  | 10                        | 1,036                                   | 3                        | 103.6  | 2                                      | 3   | 5   | 95   | 69     | 872    |
| <b>Floors</b>   |                           |   |                          |  |  |     |     |  |        |        |
| One .....   | 233                       | 14,045                                  | 32                       | 60.3   | 56                                     | 74  | 103 | 4,414  | 4,504  | 5,127  |
| Two .....   | 159                       | 17,213                                  | 44                       | 108.3  | 51                                     | 30  | 78  | 6,307  | 2,622  | 8,284  |
| Three .....   | 162                       | 18,239                                  | 45                       | 112.6  | 60                                     | 40  | 62  | 7,440  | 3,598  | 7,201  |
| Four to Nine .....  | 236                       | 80,032                                  | 239                      | 339.1  | 108                                    | 60  | 68  | 48,067   | 15,186 | 16,779 |
| Ten to Twenty-five .....                                      | 59                        | 40,731                                  | 124                      | 690.4  | 34                                     | 15  | 10  | 27,430   | 6,722  | 6,579  |
| Don't Know .....  | 32                        | 4,751                                   | 9                        | 148.5  | 3                                      | 24  | 5   | 1,222  | 3,184  | 345    |
| <b>Percent Window Glass</b>                                   |                           |   |                          |  |  |     |     |  |        |        |
| 50 or Less .....  | 771                       | 146,270                                 | 428                      | 189.7  | 269                                    | 204 | 298 | 79,002   | 29,836 | 37,432 |
| 51 to 100 .....   | 84                        | 25,107                                  | 59                       | 298.9  | 42                                     | 16  | 26  | 14,878   | 3,429  | 6,800  |
| Don't Know .....  | 26                        | 3,635                                   | 6                        | 139.8  | 1                                      | 23  | 2   | 1,000  | 2,552  | 84     |
| <b>Multibuilding Facility</b>                                 |                           |   |                          |  |  |     |     |  |        |        |
| Yes .....   | 524                       | 95,123                                  | 233                      | 181.5  | 176                                    | 148 | 200 | 43,861   | 24,441 | 26,821 |
| No .....  | 357                       | 79,889                                  | 259                      | 223.8  | 136                                    | 95  | 126 | 51,018   | 11,375 | 17,495 |
| <b>Space-Heating Energy Sources (more than one may apply)</b> |                           |   |                          |  |  |     |     |  |        |        |
| Electricity .....   | 211                       | 37,748                                  | 100                      | 178.9  | 70                                     | 66  | 75  | 18,459   | 9,859  | 9,430  |
| Natural Gas .....   | 445                       | 70,763                                  | 161                      | 159.0  | 96                                     | 153 | 196 | 22,134   | 19,800 | 28,829 |
| Fuel Oil .....  | 80                        | 13,832                                  | 35                       | 172.9  | 53                                     | 6   | 21  | 9,156  | 1,288  | 3,387  |
| District Heat .....   | 284                       | 86,885                                  | 282                      | 305.9  | 151                                    | 65  | 68  | 62,321   | 13,244 | 11,319 |
| Propane .....   | 11                        | 322                                     | 1                        | 29.3   | NC                                     | 4   | 7   | NC   | 65     | 257    |
| Wood .....  | NC                        | NC                                      | NC                       | NC   | NC                                     | NC  | NC  | NC   | NC     | NC     |
| Any Other .....   | 6                         | 926                                     | 2                        | 154.4  | 3                                      | 2   | 1   | 289  | 234    | 403    |
| <b>Main Space-Heating Energy Source</b>                       |                           |   |                          |  |  |     |     |  |        |        |
| Electricity .....   | 111                       | 15,763                                  | 46                       | 142.0  | 36                                     | 31  | 44  | 6,798  | 4,639  | 4,326  |
| Natural Gas .....   | 419                       | 65,303                                  | 147                      | 155.9  | 90                                     | 144 | 185 | 20,113   | 18,021 | 27,169 |
| Fuel Oil .....  | 44                        | 5,885                                   | 13                       | 133.7  | 34                                     | 1   | 9   | 5,083  | 11     | 790    |
| District Heat .....   | 270                       | 84,544                                  | 277                      | 313.1  | 147                                    | 63  | 60  | 62,068   | 13,008 | 9,467  |
| Propane .....   | 9                         | 223                                     | (*)                      | 24.8   | NC                                     | 3   | 6   | NC   | 54     | 169    |
| Wood .....  | NC                        | NC                                      | NC                       | NC   | NC                                     | NC  | NC  | NC   | NC     | NC     |
| Any Other .....   | NC                        | NC                                      | NC                       | NC   | NC                                     | NC  | NC  | NC   | NC     | NC     |
| <b>Replacement Energy Source for Main Heating</b>             |                           |   |                          |  |  |     |     |  |        |        |
| Electricity Only .....  | 15                        | 1,862                                   | 3                        | 124.1  | 4                                      | 7   | 4   | 1,284  | 145    | 433    |
| Natural Gas Only .....  | 21                        | 2,768                                   | 5                        | 131.8  | 12                                     | 3   | 6   | 2,253  | 356    | 159    |
| Fuel Oil Only .....   | 170                       | 38,875                                  | 88                       | 228.7  | 66                                     | 37  | 67  | 14,166   | 8,544  | 16,165 |
| Propane Only .....  | 25                        | 2,354                                   | 4                        | 94.2   | NC                                     | 3   | 22  | NC   | 184    | 2,170  |
| Any Other Single Energy Source .....                          | 9                         | 2,028                                   | 5                        | 225.4  | 2                                      | 1   | 6   | 1,016  | 11     | 1,001  |
| More than One Energy Source .....                             | 9                         | 540                                     | 1                        | 60.0   | 7                                      | 1   | 1   | 479  | 28     | 32     |
| No Replacement Energy Source .....                            | 541                       | 114,410                                 | 359                      | 211.5  | 206                                    | 158 | 177 | 70,765   | 23,310 | 20,335 |
| Building Not Heated .....                                     | 28                        | 3,294                                   | 9                        | 117.6  | 5                                      | 1   | 22  | 817  | 82     | 2,394  |
| Don't Know/Not Ascertained .....                              | 63                        | 8,881                                   | 19                       | 141.0  | 10                                     | 32  | 21  | 4,100  | 3,157  | 1,625  |
| <b>Cooling Energy Sources (more than one may apply)</b>       |                           |   |                          |  |  |     |     |  |        |        |
| Electricity .....   | 740                       | 145,491                                 | 431                      | 196.6  | 256                                    | 219 | 265 | 80,870   | 28,061 | 36,560 |
| Natural Gas .....   | 8                         | 263                                     | 1                        | 32.8   | 1                                      | 1   | 6   | 22   | 47     | 193    |
| District Chilled Water .....                                  | 109                       | 29,667                                  | 67                       | 272.2  | 55                                     | 29  | 25  | 15,695   | 7,742  | 6,230  |
| <b>Water-Heating Energy Sources (more than one may apply)</b> |                           |   |                          |  |  |     |     |  |        |        |
| Electricity .....   | 221                       | 38,467                                  | 94                       | 174.1  | 94                                     | 62  | 65  | 18,972   | 12,268 | 7,227  |
| Natural Gas .....   | 381                       | 60,841                                  | 147                      | 159.7  | 78                                     | 125 | 178 | 18,101   | 15,655 | 27,085 |
| Fuel Oil .....  | 30                        | 6,364                                   | 18                       | 212.1  | 19                                     | 1   | 10  | 4,679  | 760    | 925    |
| District Heat .....   | 239                       | 74,265                                  | 255                      | 310.7  | 122                                    | 52  | 65  | 57,122   | 8,576  | 8,566  |
| Propane .....   | 9                         | 224                                     | (*)                      | 24.8   | NC                                     | 4   | 5   | NC   | 65     | 158    |

See footnotes at end of table.

**Table 3.7. Summary of FBSS Buildings and Floorspace in Federal Regions 3, 6, and 9, 1993 (Continued)**

| Building Characteristics                                      | Total Number of Buildings | Total Floorspace (thousand square feet) | Total Workers (thousand) | Floorspace per Building (thousand square feet) | Number of Buildings per Federal Region |     |     | Floorspace per Federal Region (thousand square feet) |        |        |
|---|---------------------------|---|--------------------------|--|--|-----|-----|--|--------|--------|
|   |                           |   |                          |  | 3                                      | 6   | 9   | 3  | 6      | 9      |
| <b>Cooking Energy Sources (more than one may apply)</b>       |                           |   |                          |  |  |     |     |  |        |        |
| Electricity .....   | 148                       | 65,202                                  | 235                      | 440.6  | 68                                     | 37  | 43  | 41,432   | 10,177 | 13,594 |
| Natural Gas .....   | 111                       | 59,944                                  | 229                      | 540.0  | 46                                     | 31  | 34  | 39,084   | 11,004 | 9,857  |
| Propane .....   | 7                         | 332                                     | (*)                      | 47.4   | 2                                      | NC  | 5   | 53   | NC     | 279    |
| <b>Manufacturing Energy Sources (more than one may apply)</b> |                           |   |                          |  |  |     |     |  |        |        |
| Electricity .....   | 94                        | 31,563                                  | 118                      | 335.8  | 43                                     | 26  | 25  | 20,521   | 4,838  | 6,205  |
| Natural Gas .....   | 14                        | 7,192                                   | 17                       | 513.7  | 5                                      | 1   | 8   | 5,319  | 37     | 1,836  |
| Other .....   | 9                         | 5,984                                   | 9                        | 664.8  | 5                                      | 1   | 3   | 4,140  | 461    | 1,383  |
| <b>Percent of Floorspace Heated</b>                           |                           |   |                          |  |  |     |     |  |        |        |
| Not Heated .....  | 28                        | 3,294                                   | 9                        | 117.6  | 5                                      | 1   | 22  | 817  | 82     | 2,394  |
| 1 to 50 .....   | 51                        | 10,826                                  | 15                       | 212.3  | 12                                     | 11  | 28  | 5,787  | 1,288  | 3,751  |
| 51 to 100 .....   | 802                       | 160,892                                 | 468                      | 200.6  | 295                                    | 231 | 276 | 88,275   | 34,446 | 38,170 |
| <b>Percent of Floorspace Cooled</b>                           |                           |   |                          |  |  |     |     |  |        |        |
| Not Cooled .....  | 56                        | 7,091                                   | 9                        | 126.6  | 13                                     | 3   | 40  | 3,582  | 554    | 2,956  |
| 1 to 50 .....   | 111                       | 19,129                                  | 34                       | 172.3  | 30                                     | 26  | 55  | 9,874  | 1,951  | 7,304  |
| 51 to 100 .....   | 714                       | 148,792                                 | 449                      | 208.4  | 269                                    | 214 | 231 | 81,424   | 33,312 | 34,056 |
| <b>Percent Lit When Open</b>                                  |                           |   |                          |  |  |     |     |  |        |        |
| 1 to 50 .....   | 46                        | 3,572                                   | 4                        | 77.6   | 11                                     | 15  | 20  | 663  | 1,062  | 1,847  |
| 51 to 100 .....   | 831                       | 171,118                                 | 488                      | 205.9  | 300                                    | 227 | 304 | 94,070   | 34,672 | 42,375 |
| No Operating Hours .....                                      | 3                         | 258                                     | (*)                      | 86.0   | 1                                      | 1   | 1   | 147  | 82     | 29     |
| Don't Know .....  | 1                         | 64                                      | (*)                      | 64.4   | NC                                     | NC  | 1   | NC   | NC     | 64     |
| <b>Percent Lit When Closed</b>                                |                           |   |                          |  |  |     |     |  |        |        |
| Not Lit .....   | 107                       | 9,504                                   | 50                       | 88.8   | 39                                     | 33  | 35  | 5,149  | 2,691  | 1,664  |
| 1 to 50 .....   | 564                       | 103,736                                 | 289                      | 183.9  | 194                                    | 165 | 205 | 57,953   | 20,495 | 25,288 |
| 51 to 100 .....   | 111                       | 33,550                                  | 88                       | 302.3  | 42                                     | 25  | 44  | 17,412   | 8,029  | 8,109  |
| No Off Hours .....  | 98                        | 28,157                                  | 65                       | 287.3  | 37                                     | 20  | 41  | 14,366   | 4,601  | 9,190  |
| Don't Know .....  | 1                         | 64                                      | (*)                      | 64.4   | NC                                     | NC  | 1   | NC   | NC     | 64     |
| <b>Heating Equipment (more than one may apply)</b>            |                           |   |                          |  |  |     |     |  |        |        |
| Heat Pumps .....  | 84                        | 14,968                                  | 39                       | 178.2  | 34                                     | 10  | 40  | 10,922   | 964    | 3,081  |
| Furnaces .....  | 59                        | 3,689                                   | 6                        | 62.5   | 16                                     | 18  | 25  | 1,694  | 791    | 1,204  |
| Individual Space Heaters .....                                | 138                       | 45,264                                  | 128                      | 328.0  | 75                                     | 30  | 33  | 34,923   | 5,408  | 4,933  |
| District Heat .....   | 320                       | 95,621                                  | 299                      | 298.8  | 167                                    | 82  | 71  | 67,704   | 15,205 | 12,712 |
| Boilers .....   | 341                       | 60,810                                  | 148                      | 178.3  | 93                                     | 102 | 146 | 20,082   | 16,718 | 24,010 |
| Packaged-Heating Units .....                                  | 151                       | 19,576                                  | 50                       | 129.6  | 25                                     | 59  | 67  | 6,006  | 7,574  | 5,997  |
| <b>Cooling Equipment (more than one may apply)</b>            |                           |   |                          |  |  |     |     |  |        |        |
| Residential-Type Central A/C .....                            | 83                        | 25,679                                  | 149                      | 309.4  | 30                                     | 29  | 24  | 19,073   | 4,706  | 1,900  |
| Heat Pumps .....  | 80                        | 15,662                                  | 39                       | 195.8  | 37                                     | 11  | 32  | 11,388   | 1,549  | 2,724  |
| Individual A/C .....  | 182                       | 40,755                                  | 170                      | 223.9  | 80                                     | 50  | 52  | 28,082   | 6,950  | 5,723  |
| District Chilled Water .....                                  | 147                       | 46,698                                  | 116                      | 317.7  | 72                                     | 44  | 31  | 28,194   | 10,856 | 7,647  |
| Central Chillers .....  | 419                       | 113,233                                 | 361                      | 270.2  | 158                                    | 122 | 139 | 63,914   | 21,596 | 27,723 |
| Packaged-A/C Units .....                                      | 375                       | 94,757                                  | 322                      | 252.7  | 127                                    | 97  | 151 | 56,664   | 14,104 | 23,989 |
| Swamp Coolers .....   | 45                        | 5,558                                   | 13                       | 123.5  | 3                                      | 12  | 30  | 378  | 2,015  | 3,165  |
| <b>Lighting Equipment (more than one may apply)</b>           |                           |   |                          |  |  |     |     |  |        |        |
| Incandescent .....  | 480                       | 105,704                                 | 303                      | 220.2  | 184                                    | 135 | 161 | 64,981   | 20,248 | 20,475 |
| Standard Fluorescent .....                                    | 844                       | 169,893                                 | 457                      | 201.3  | 300                                    | 235 | 309 | 91,986   | 35,057 | 42,850 |
| Compact Fluorescent .....                                     | 182                       | 74,735                                  | 237                      | 410.6  | 80                                     | 29  | 73  | 49,455   | 7,942  | 17,339 |
| High-Intensity Discharge .....                                | 250                       | 87,517                                  | 303                      | 350.1  | 111                                    | 64  | 75  | 52,593   | 16,188 | 18,736 |
| Electronic Ballast .....                                      | 299                       | 104,727                                 | 315                      | 350.3  | 135                                    | 59  | 105 | 65,560   | 15,861 | 23,307 |
| <b>Water-Heating Equipment (more than one may apply)</b>      |                           |   |                          |  |  |     |     |  |        |        |
| Centralized System .....                                      | 611                       | 117,752                                 | 347                      | 192.7  | 223                                    | 163 | 225 | 63,477   | 23,206 | 31,069 |
| Distributed System .....                                      | 222                       | 47,272                                  | 124                      | 212.9  | 71                                     | 71  | 80  | 24,696   | 11,827 | 10,750 |
| Don't Know/   |                           |   |                          |  |  |     |     |  |        |        |
| Not Ascertained .....   | 23                        | 6,319                                   | 14                       | 274.7  | 9                                      | 4   | 10  | 4,965  | 188    | 1,165  |

See footnotes at end of table.

**Table 3.7. Summary of FBSS Buildings and Floorspace in Federal Regions 3, 6, and 9, 1993 (Continued)**

| Building Characteristics   | Total Number of Buildings | Total Floorspace (thousand square feet) | Total Workers (thousand) | Floorspace per Building (thousand square feet) | Number of Buildings per Federal Region |     |     | Floorspace per Federal Region (thousand square feet) |        |        |
|--|---------------------------|---|--------------------------|--|--|-----|-----|--|--------|--------|
|  |                           |   |                          |  | 3                                      | 6   | 9   | 3  | 6      | 9      |
| <b>Commercial Refrigeration Equipment (more than one may apply)</b>                          |                           |   |                          |  |  |     |     |  |        |        |
| Any Equipment .....  | 242                       | 98,429                                  | 322                      | 406.7  | 109                                    | 70  | 63  | 61,731   | 17,917 | 18,781 |
| Walk-in Units .....  | 162                       | 79,141                                  | 269                      | 488.5  | 78                                     | 40  | 44  | 54,223   | 12,381 | 12,536 |
| Cases and Cabinets .....   | 181                       | 82,507                                  | 204                      | 455.8  | 87                                     | 44  | 50  | 53,454   | 14,125 | 14,928 |
| None .....   | 639                       | 76,583                                  | 170                      | 119.8  | 203                                    | 173 | 263 | 33,149   | 17,899 | 25,535 |
| <b>Retrofit or Purchase of any Equipment Within Last Ten Years (more than one may apply)</b> |                           |   |                          |  |  |     |     |  |        |        |
| Retrofit and/or Purchase .....   | 604                       | 144,849                                 | 437                      | 239.8  | 229                                    | 162 | 213 | 81,286   | 29,015 | 34,547 |
| Retrofit .....   | 245                       | 80,767                                  | 214                      | 329.7  | 79                                     | 63  | 103 | 43,128   | 15,029 | 22,610 |
| Purchase .....   | 462                       | 104,046                                 | 332                      | 225.2  | 188                                    | 126 | 148 | 62,995   | 21,409 | 19,642 |
| No Retrofit or Purchase .....  | 277                       | 30,163                                  | 55                       | 108.9  | 83                                     | 81  | 113 | 13,594   | 6,801  | 9,769  |
| <b>Energy Conservation Features (more than one may apply)</b>                                |                           |   |                          |  |  |     |     |  |        |        |
| Any Conservation Feature .....   | 870                       | 174,119                                 | 492                      | 200.1  | 309                                    | 242 | 319 | 94,361   | 35,734 | 44,023 |
| Building Shell .....   | 766                       | 152,607                                 | 446                      | 199.2  | 290                                    | 228 | 248 | 84,557   | 33,946 | 34,105 |
| HVAC .....   | 846                       | 172,084                                 | 489                      | 203.4  | 303                                    | 236 | 307 | 93,543   | 35,425 | 43,116 |
| Lighting .....   | 563                       | 141,432                                 | 401                      | 251.2  | 210                                    | 136 | 217 | 80,953   | 25,654 | 34,825 |
| <b>Building Shell Conservation Features (more than one may apply)</b>                        |                           |   |                          |  |  |     |     |  |        |        |
| Roof or Ceiling Insulation .....   | 621                       | 125,137                                 | 354                      | 201.5  | 240                                    | 196 | 185 | 69,654   | 28,249 | 27,234 |
| Wall Insulation .....  | 352                       | 69,887                                  | 154                      | 198.5  | 117                                    | 122 | 113 | 31,876   | 20,550 | 17,462 |
| Storm or Multiple Glazing .....  | 326                       | 74,340                                  | 227                      | 228.0  | 173                                    | 96  | 57  | 46,141   | 17,939 | 10,260 |
| Tinted or Reflective Glass or Shading Film .....   | 418                       | 93,977                                  | 292                      | 224.8  | 158                                    | 127 | 133 | 46,829   | 24,768 | 22,381 |
| Exterior or Interior Shading or Awnings .....  | 503                       | 107,620                                 | 301                      | 214.0  | 197                                    | 142 | 164 | 57,183   | 26,067 | 24,370 |
| <b>HVAC Conservation Features (more than one may apply)</b>                                  |                           |   |                          |  |  |     |     |  |        |        |
| VAV System .....   | 224                       | 71,706                                  | 211                      | 320.1  | 84                                     | 65  | 75  | 37,611   | 18,518 | 15,577 |
| Economizer Cycle .....   | 419                       | 110,998                                 | 353                      | 264.9  | 156                                    | 123 | 140 | 61,089   | 23,542 | 26,367 |
| HVAC Maintenance .....   | 841                       | 171,841                                 | 489                      | 204.3  | 301                                    | 234 | 306 | 93,402   | 35,341 | 43,098 |
| <b>Lighting Conservation Features (more than one may apply)</b>                              |                           |   |                          |  |  |     |     |  |        |        |
| Specular Reflectors .....  | 340                       | 84,607                                  | 261                      | 248.8  | 124                                    | 92  | 124 | 44,741   | 18,017 | 21,850 |
| Natural Lighting Control Sensors .....   | 114                       | 38,243                                  | 95                       | 335.5  | 29                                     | 27  | 58  | 17,743   | 6,740  | 13,760 |
| Occupancy Sensors .....  | 262                       | 103,941                                 | 314                      | 396.7  | 95                                     | 58  | 109 | 62,261   | 16,435 | 25,245 |
| Time Clock .....   | 151                       | 66,131                                  | 210                      | 438.0  | 74                                     | 36  | 41  | 46,555   | 9,037  | 10,539 |
| Manual Dimmer Switches .....   | 215                       | 77,732                                  | 239                      | 361.5  | 93                                     | 44  | 78  | 49,824   | 13,454 | 14,455 |
| <b>Energy Management Practices (more than one may apply)</b>                                 |                           |   |                          |  |  |     |     |  |        |        |
| Energy Management and Control System .....   | 299                       | 103,220                                 | 328                      | 345.2  | 132                                    | 96  | 71  | 61,891   | 23,099 | 18,231 |
| Energy Conservation Programs <sup>1</sup> .....  | 271                       | 97,497                                  | 304                      | 359.8  | 99                                     | 48  | 124 | 59,284   | 13,513 | 24,699 |
| Energy Audit .....   | 262                       | 66,755                                  | 165                      | 254.8  | 99                                     | 64  | 99  | 37,621   | 11,690 | 17,444 |
| HVAC Maintenance Staff <sup>2</sup> .....  | 206                       | 83,032                                  | 287                      | 403.1  | 97                                     | 57  | 52  | 52,924   | 15,538 | 14,570 |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>                            |                           |   |                          |  |  |     |     |  |        |        |
| Heating .....  | 418                       | 76,622                                  | 182                      | 183.3  | 144                                    | 123 | 151 | 43,828   | 13,162 | 19,631 |
| Cooling .....  | 426                       | 76,840                                  | 184                      | 180.4  | 145                                    | 124 | 157 | 43,757   | 13,864 | 19,219 |
| Hot Water .....  | 178                       | 44,187                                  | 105                      | 248.2  | 77                                     | 33  | 68  | 26,018   | 4,554  | 13,614 |
| Lighting .....   | 454                       | 78,719                                  | 185                      | 173.4  | 162                                    | 120 | 172 | 44,717   | 12,847 | 21,155 |

See footnotes at end of table.

**Table 3.7. Summary of FBSS Buildings and Floorspace in Federal Regions 3, 6, and 9, 1993 (Continued)**

| Building Characteristics                                 | Total Number of Buildings | Total Floorspace (thousand square feet) | Total Workers (thousand) | Floorspace per Building (thousand square feet) | Number of Buildings per Federal Region |     |     | Floorspace per Federal Region (thousand square feet) |        |        |
|--|---------------------------|---|--------------------------|--|--|-----|-----|--|--------|--------|
|  |                           |   |                          |  | 3                                      | 6   | 9   | 3  | 6      | 9      |
| <b>Building Generates Electricity</b>                    |                           |   |                          |  |  |     |     |  |        |        |
| Yes .....  | 139                       | 56,563                                  | 175                      | 406.9  | 55                                     | 32  | 52  | 31,984   | 10,295 | 14,283 |
| No .....   | 742                       | 118,449                                 | 318                      | 159.6  | 257                                    | 211 | 274 | 62,896   | 25,521 | 30,032 |
| <b>Natural Gas Transported for the Account of Others</b> |                           |   |                          |  |  |     |     |  |        |        |
| Used in Building .....                                   | 40                        | 10,103                                  | 22                       | 252.6  | 11                                     | 5   | 24  | 4,270  | 631    | 5,201  |
| Not Used in Building .....                               | 438                       | 101,624                                 | 326                      | 232.0  | 124                                    | 140 | 174 | 52,636   | 22,202 | 26,787 |
| Don't Know/  |                           |   |                          |  |  |     |     |  |        |        |
| Not Ascertained .....                                    | 52                        | 6,393                                   | 15                       | 122.9  | 4                                      | 23  | 25  | 1,768  | 1,994  | 2,631  |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

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

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.8. Energy Sources in FBSS Buildings in Federal Regions 3, 6, and 9,  
Number of Buildings, 1993**

| Building Characteristics                         | Number of Buildings in Region 3 |   |                | Number of Buildings in Region 6 |   |                | Number of Buildings in Region 9 |   |                |
|--|---------------------------------|---|----------------|---------------------------------|---|----------------|---------------------------------|---|----------------|
|  | All Buildings                   | Energy Sources Used in Region 3 (more than one may apply) |                | All Buildings                   | Energy Sources Used in Region 6 (more than one may apply) |                | All Buildings                   | Energy Sources Used in Region 9 (more than one may apply) |                |
|  |                                 | Elec-<br>tricity  | Natural<br>Gas |                                 | Elec-<br>tricity  | Natural<br>Gas |                                 | Elec-<br>tricity  | Natural<br>Gas |
| <b>All Buildings</b> .....                       | <b>312</b>                      | <b>311</b>  | <b>139</b>     | <b>243</b>                      | <b>243</b>  | <b>168</b>     | <b>326</b>                      | <b>325</b>  | <b>225</b>     |
| <b>Building Floorspace (square feet)</b>         |                                 |   |                |                                 |   |                |                                 |   |                |
| 10,000 to 50,000 .....                           | 94                              | 94  | 37             | 107                             | 107   | 77             | 148                             | 147   | 93             |
| 50,001 to 200,000 .....                          | 117                             | 117   | 46             | 86                              | 86  | 57             | 123                             | 123   | 87             |
| Over 200,000 .....                               | 101                             | 100   | 56             | 50                              | 50  | 34             | 55                              | 55  | 45             |
| <b>Principal Building Activity</b>               |                                 |   |                |                                 |   |                |                                 |   |                |
| Education .....                                  | 8                               | 8   | 3              | 6                               | 6   | 4              | 12                              | 12  | 7              |
| Health Care .....                                | 41                              | 41  | 25             | 35                              | 35  | 25             | 48                              | 48  | 26             |
| Laboratory .....                                 | 37                              | 37  | 8              | 29                              | 29  | 14             | 31                              | 31  | 29             |
| Lodging .....                                    | 13                              | 13  | 9              | 16                              | 16  | 11             | 22                              | 22  | 9              |
| Mercantile and Service .....                     | 46                              | 45  | 27             | 49                              | 49  | 39             | 63                              | 63  | 47             |
| Office .....                                     | 124                             | 124   | 56             | 76                              | 76  | 54             | 92                              | 92  | 71             |
| All Others .....                                 | 43                              | 43  | 11             | 32                              | 32  | 21             | 58                              | 57  | 36             |
| <b>Year Constructed</b>                          |                                 |   |                |                                 |   |                |                                 |   |                |
| 1959 or Before .....                             | 142                             | 142   | 63             | 103                             | 103   | 63             | 130                             | 129   | 78             |
| 1960 to 1969 .....                               | 70                              | 70  | 24             | 38                              | 38  | 30             | 55                              | 55  | 48             |
| 1970 to 1979 .....                               | 47                              | 46  | 26             | 34                              | 34  | 26             | 62                              | 62  | 45             |
| 1980 to 1989 .....                               | 38                              | 38  | 18             | 57                              | 57  | 41             | 65                              | 65  | 42             |
| 1990 to 1993 .....                               | 15                              | 15  | 8              | 11                              | 11  | 8              | 14                              | 14  | 12             |
| <b>Federal Agency</b>                            |                                 |   |                |                                 |   |                |                                 |   |                |
| Department of Defense .....                      | 22                              | 22  | 9              | 22                              | 22  | 18             | 78                              | 77  | 37             |
| General Services Administration ...              | 83                              | 83  | 40             | 35                              | 35  | 29             | 39                              | 39  | 38             |
| United States Postal Service .....               | 57                              | 56  | 35             | 61                              | 61  | 49             | 63                              | 63  | 53             |
| Veterans Administration .....                    | 56                              | 56  | 31             | 36                              | 36  | 24             | 56                              | 56  | 29             |
| All Others .....                                 | 94                              | 94  | 24             | 89                              | 89  | 48             | 90                              | 90  | 68             |
| <b>Energy End Uses (more than one may apply)</b> |                                 |   |                |                                 |   |                |                                 |   |                |
| Heating .....                                    | 307                             | 306   | 139            | 242                             | 242   | 168            | 304                             | 303   | 223            |
| Air Conditioning .....                           | 305                             | 305   | 137            | 241                             | 241   | 168            | 292                             | 292   | 209            |
| Water Heating .....                              | 303                             | 302   | 137            | 238                             | 238   | 166            | 315                             | 314   | 223            |
| Cooking .....                                    | 108                             | 108   | 62             | 63                              | 63  | 48             | 70                              | 70  | 51             |
| Manufacturing .....                              | 50                              | 50  | 28             | 28                              | 28  | 22             | 30                              | 30  | 21             |
| <b>Workers (main shift)</b>                      |                                 |   |                |                                 |   |                |                                 |   |                |
| Less than 50 .....                               | 71                              | 71  | 23             | 70                              | 70  | 46             | 93                              | 92  | 55             |
| 50 to 99 .....                                   | 39                              | 39  | 14             | 44                              | 44  | 35             | 49                              | 49  | 36             |
| 100 to 499 .....                                 | 107                             | 107   | 46             | 80                              | 80  | 56             | 134                             | 134   | 94             |
| 500 or More .....                                | 95                              | 94  | 56             | 49                              | 49  | 31             | 50                              | 50  | 40             |
| <b>Weekly Operating Hours</b>                    |                                 |   |                |                                 |   |                |                                 |   |                |
| 48 or Fewer .....                                | 51                              | 51  | 13             | 39                              | 39  | 30             | 80                              | 80  | 43             |
| 49 to 60 .....                                   | 76                              | 76  | 28             | 46                              | 46  | 26             | 65                              | 65  | 56             |
| 61 to 167 .....                                  | 60                              | 60  | 28             | 78                              | 78  | 54             | 68                              | 68  | 57             |
| Open Continuously .....                          | 125                             | 124   | 70             | 80                              | 80  | 58             | 113                             | 112   | 69             |

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey.

• Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.9. Energy Sources in FBSS Buildings in Federal Regions 3, 6, and 9, Floorspace, 1993**

| Building Characteristics                         | Floorspace in Region 3<br>(thousand square feet) |   |                | Floorspace in Region 6<br>(thousand square feet) |   |                | Floorspace in Region 9<br>(thousand square feet) |   |                |
|--|--|---|----------------|--|---|----------------|--|---|----------------|
|  | All Buildings                                    | Energy Sources Used in Region 3 (more than one may apply) |                | All Buildings                                    | Energy Sources Used in Region 6 (more than one may apply) |                | All Buildings                                    | Energy Sources Used in Region 9 (more than one may apply) |                |
|  |  | Elec-<br>tricity  | Natural<br>Gas |  | Elec-<br>tricity  | Natural<br>Gas |  | Elec-<br>tricity  | Natural<br>Gas |
| <b>All Buildings</b> .....                       | <b>94,880</b>                                    | <b>94,161</b>   | <b>58,674</b>  | <b>35,816</b>                                    | <b>35,816</b>   | <b>24,827</b>  | <b>44,316</b>                                    | <b>44,296</b>   | <b>34,703</b>  |
| <b>Building Floorspace (square feet)</b>         |  |   |                |  |   |                |  |   |                |
| 10,000 to 50,000 .....                           | 2,564  | 2,564   | 1,024          | 2,591  | 2,591   | 1,848          | 3,858  | 3,838   | 2,304          |
| 50,001 to 200,000 .....                          | 13,166   | 13,166  | 5,388          | 9,548  | 9,548   | 6,079          | 12,680   | 12,680  | 9,219          |
| Over 200,000 .....                               | 79,149   | 78,430  | 52,262         | 23,677   | 23,677  | 16,900         | 27,778   | 27,778  | 23,180         |
| <b>Principal Building Activity</b>               |  |   |                |  |   |                |  |   |                |
| Education .....                                  | 598  | 598   | 212            | 168  | 168   | 133            | 628  | 628   | 272            |
| Health Care .....                                | 14,559   | 14,559  | 11,682         | 12,094   | 12,094  | 9,552          | 9,903  | 9,903   | 6,836          |
| Laboratory .....                                 | 5,165  | 5,165   | 2,305          | 3,331  | 3,331   | 1,467          | 2,601  | 2,601   | 2,547          |
| Lodging .....                                    | 2,558  | 2,558   | 2,034          | 942  | 942   | 665            | 1,220  | 1,220   | 520            |
| Mercantile and Service .....                     | 7,966  | 7,247   | 6,152          | 6,236  | 6,236   | 4,279          | 8,194  | 8,194   | 6,630          |
| Office .....                                     | 56,881   | 56,881  | 32,242         | 10,799   | 10,799  | 7,594          | 16,380   | 16,380  | 14,578         |
| All Others .....                                 | 7,152  | 7,152   | 4,047          | 2,247  | 2,247   | 1,136          | 5,390  | 5,370   | 3,320          |
| <b>Year Constructed</b>                          |  |   |                |  |   |                |  |   |                |
| 1959 or Before .....                             | 43,829   | 43,829  | 24,528         | 13,258   | 13,258  | 8,424          | 13,553   | 13,534  | 9,153          |
| 1960 to 1969 .....                               | 19,564   | 19,564  | 13,000         | 6,386  | 6,386   | 4,889          | 9,082  | 9,082   | 8,212          |
| 1970 to 1979 .....                               | 17,737   | 17,018  | 12,961         | 6,175  | 6,175   | 4,840          | 12,041   | 12,041  | 9,847          |
| 1980 to 1989 .....                               | 8,975  | 8,975   | 5,512          | 6,903  | 6,903   | 3,688          | 7,955  | 7,955   | 5,967          |
| 1990 to 1993 .....                               | 4,774  | 4,774   | 2,673          | 3,095  | 3,095   | 2,985          | 1,684  | 1,684   | 1,524          |
| <b>Federal Agency</b>                            |  |   |                |  |   |                |  |   |                |
| Department of Defense .....                      | 13,988   | 13,988  | 12,480         | 1,668  | 1,668   | 1,417          | 8,489  | 8,469   | 4,763          |
| General Services Administration ...              | 46,205   | 46,205  | 24,708         | 7,888  | 7,888   | 6,293          | 12,505   | 12,505  | 12,232         |
| United States Postal Service .....               | 9,392  | 8,673   | 7,197          | 7,027  | 7,027   | 5,026          | 8,387  | 8,387   | 7,070          |
| Veterans Administration .....                    | 13,306   | 13,306  | 10,096         | 11,375   | 11,375  | 8,716          | 8,824  | 8,824   | 5,378          |
| All Others .....                                 | 11,989   | 11,989  | 4,192          | 7,858  | 7,858   | 3,375          | 6,111  | 6,111   | 5,260          |
| <b>Energy End Uses (more than one may apply)</b> |  |   |                |  |   |                |  |   |                |
| Heating .....                                    | 94,063   | 93,343  | 58,674         | 35,734   | 35,734  | 24,827         | 41,921   | 41,902  | 34,045         |
| Air Conditioning .....                           | 93,454   | 93,454  | 57,926         | 35,273   | 35,273  | 24,827         | 41,907   | 41,907  | 33,562         |
| Water Heating .....                              | 93,138   | 92,419  | 58,560         | 35,221   | 35,221  | 24,787         | 42,984   | 42,964  | 34,379         |
| Cooking .....                                    | 69,947   | 69,947  | 49,082         | 19,213   | 19,213  | 15,802         | 20,045   | 20,045  | 15,826         |
| Manufacturing .....                              | 27,041   | 27,041  | 21,235         | 5,335  | 5,335   | 4,318          | 7,693  | 7,693   | 5,438          |
| <b>Workers (main shift)</b>                      |  |   |                |  |   |                |  |   |                |
| Less than 50 .....                               | 4,102  | 4,102   | 872            | 2,548  | 2,548   | 1,557          | 3,684  | 3,665   | 2,025          |
| 50 to 99 .....                                   | 1,903  | 1,903   | 647            | 2,026  | 2,026   | 1,743          | 2,161  | 2,161   | 1,575          |
| 100 to 499 .....                                 | 13,632   | 13,632  | 5,674          | 9,029  | 9,029   | 5,755          | 14,017   | 14,017  | 10,930         |
| 500 or More .....                                | 75,243   | 74,524  | 51,481         | 22,213   | 22,213  | 15,771         | 24,454   | 24,454  | 20,174         |
| <b>Weekly Operating Hours</b>                    |  |   |                |  |   |                |  |   |                |
| 48 or Fewer .....                                | 9,694  | 9,694   | 2,996          | 2,740  | 2,740   | 1,540          | 4,822  | 4,822   | 3,003          |
| 49 to 60 .....                                   | 25,540   | 25,540  | 11,652         | 6,460  | 6,460   | 3,824          | 13,424   | 13,424  | 12,675         |
| 61 to 167 .....                                  | 11,993   | 11,993  | 7,186          | 8,051  | 8,051   | 4,718          | 5,706  | 5,706   | 5,329          |
| Open Continuously .....                          | 47,653   | 46,934  | 36,841         | 18,565   | 18,565  | 14,746         | 20,364   | 20,344  | 13,696         |

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey.

• Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.



**Table 3.10. Heating Equipment in FBSS Buildings in Federal Region 3,  
Number of Buildings, 1993**

| Building Characteristics  | All Buildings | All Heated Buildings | Heating Equipment<br>(more than one may apply) |           |                          |               |           |                        |
|---|---------------|----------------------|--|-----------|--------------------------|---------------|-----------|------------------------|
|   |               |                      | Heat Pumps                                     | Furnaces  | Individual Space Heaters | District Heat | Boilers   | Packaged-Heating Units |
| <b>All Buildings</b> .....  | <b>312</b>    | <b>307</b>           | <b>34</b>                                      | <b>16</b> | <b>75</b>                | <b>167</b>    | <b>93</b> | <b>25</b>              |
| <b>Building Floorspace (square feet)</b>                          |               |                      |  |           |                          |               |           |                        |
| 10,000 to 50,000 .....  | 94            | 94                   | 16   | 8         | 17                       | 34            | 32        | 6                      |
| 50,001 to 200,000 .....   | 117           | 113                  | 2  | 7         | 23                       | 68            | 35        | 9                      |
| Over 200,000 .....  | 101           | 100                  | 16   | 1         | 35                       | 65            | 26        | 10                     |
| <b>Principal Building Activity</b>                                |               |                      |  |           |                          |               |           |                        |
| Education .....   | 8             | 8                    | NC   | NC        | 2                        | 4             | 3         | NC                     |
| Health Care .....   | 41            | 40                   | 1  | NC        | 6                        | 31            | 8         | 3                      |
| Laboratory .....  | 37            | 37                   | 1  | NC        | 7                        | 28            | 4         | 3                      |
| Lodging .....   | 13            | 13                   | 2  | NC        | 2                        | 9             | 2         | 1                      |
| Mercantile and Service .....                                      | 46            | 46                   | 6  | 8         | 14                       | 2             | 28        | 6                      |
| Office .....  | 124           | 122                  | 20   | 4         | 32                       | 71            | 38        | 9                      |
| All Others .....  | 43            | 41                   | 4  | 4         | 12                       | 22            | 10        | 3                      |
| <b>Year Constructed</b>   |               |                      |  |           |                          |               |           |                        |
| 1959 or Before .....  | 142           | 139                  | 15   | 6         | 35                       | 90            | 37        | 12                     |
| 1960 to 1969 .....  | 70            | 69                   | 3  | 3         | 12                       | 47            | 14        | 5                      |
| 1970 to 1979 .....  | 47            | 47                   | 7  | 3         | 16                       | 11            | 27        | 3                      |
| 1980 to 1989 .....  | 38            | 37                   | 7  | 3         | 9                        | 11            | 14        | 4                      |
| 1990 to 1993 .....  | 15            | 15                   | 2  | 1         | 3                        | 8             | 1         | 1                      |
| <b>Federal Agency</b>   |               |                      |  |           |                          |               |           |                        |
| Department of Defense .....                                       | 22            | 22                   | NC   | NC        | 5                        | 16            | 4         | NC                     |
| General Services Administration .....                             | 83            | 81                   | 16   | 1         | 21                       | 48            | 27        | 7                      |
| United States Postal Service .....                                | 57            | 56                   | 7  | 8         | 18                       | 1             | 37        | 8                      |
| Veterans Administration .....                                     | 56            | 54                   | 3  | NC        | 7                        | 39            | 10        | 3                      |
| All Others .....  | 94            | 94                   | 8  | 7         | 24                       | 63            | 15        | 7                      |
| <b>Workers (main shift)</b>                                       |               |                      |  |           |                          |               |           |                        |
| Less than 50 .....  | 71            | 67                   | 9  | 4         | 9                        | 34            | 18        | 4                      |
| 50 to 99 .....  | 39            | 39                   | 6  | 4         | 8                        | 19            | 12        | 3                      |
| 100 to 499 .....  | 107           | 106                  | 7  | 8         | 23                       | 53            | 37        | 8                      |
| 500 or More .....   | 95            | 95                   | 12   | NC        | 35                       | 61            | 26        | 10                     |
| <b>Weekly Operating Hours</b>                                     |               |                      |  |           |                          |               |           |                        |
| 48 or Fewer .....   | 51            | 48                   | 9  | 3         | 12                       | 32            | 11        | 4                      |
| 49 to 60 .....  | 76            | 76                   | 7  | 3         | 21                       | 44            | 21        | 4                      |
| 61 to 167 .....   | 60            | 60                   | 9  | 6         | 14                       | 17            | 23        | 5                      |
| Open Continuously .....   | 125           | 123                  | 9  | 4         | 28                       | 74            | 38        | 12                     |
| <b>Multibuilding Facility</b>                                     |               |                      |  |           |                          |               |           |                        |
| Yes .....   | 176           | 173                  | 13   | 4         | 44                       | 115           | 37        | 10                     |
| No .....  | 136           | 134                  | 21   | 12        | 31                       | 52            | 56        | 15                     |
| <b>Percent of Floorspace Heated</b>                               |               |                      |  |           |                          |               |           |                        |
| Not Heated .....  | 5             | NC                   | NC   | NC        | NC                       | NC            | NC        | NC                     |
| 1 to 50 .....   | 12            | 12                   | 5  | 2         | 5                        | 6             | 1         | 2                      |
| 51 to 100 .....   | 295           | 295                  | 29   | 14        | 70                       | 161           | 92        | 23                     |
| <b>Energy Conservation Features<br/>(more than one may apply)</b> |               |                      |  |           |                          |               |           |                        |
| Any Conservation Feature .....                                    | 309           | 306                  | 34   | 16        | 75                       | 166           | 93        | 25                     |
| Building Shell .....  | 290           | 287                  | 34   | 15        | 69                       | 152           | 89        | 25                     |
| HVAC .....  | 303           | 300                  | 32   | 15        | 73                       | 164           | 91        | 24                     |
| Lighting .....  | 210           | 207                  | 28   | 8         | 56                       | 107           | 69        | 17                     |

See footnotes at end of table.

**Table 3.10. Heating Equipment in FBSS Buildings in Federal Region 3,  
Number of Buildings, 1993 (Continued)**

| Building Characteristics  | All Buildings | All Heated Buildings | Heating Equipment<br>(more than one may apply) |          |                          |               |         |                        |
|---|---------------|----------------------|--|----------|--------------------------|---------------|---------|------------------------|
|   |               |                      | Heat Pumps                                     | Furnaces | Individual Space Heaters | District Heat | Boilers | Packaged-Heating Units |
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                      |  |          |                          |               |         |                        |
| Roof or Ceiling Insulation .....                                      | 240           | 239                  | 31   | 13       | 61                       | 126           | 72      | 22                     |
| Wall Insulation .....   | 117           | 117                  | 20   | 6        | 31                       | 56            | 36      | 7                      |
| Storm or Multiple Glazing .....                                       | 173           | 172                  | 23   | 12       | 37                       | 82            | 56      | 17                     |
| Tinted or Reflective Glass or Shading Film .....                      | 158           | 157                  | 15   | 8        | 38                       | 76            | 60      | 16                     |
| Exterior or Interior Shading or Awnings .....                         | 197           | 195                  | 23   | 8        | 48                       | 106           | 65      | 20                     |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                      |  |          |                          |               |         |                        |
| VAV System .....  | 84            | 83                   | 11   | 1        | 22                       | 45            | 25      | 10                     |
| Economizer Cycle .....  | 156           | 154                  | 14   | 4        | 40                       | 83            | 51      | 18                     |
| HVAC Maintenance .....  | 301           | 299                  | 32   | 15       | 73                       | 164           | 90      | 24                     |
| <b>Energy Management Practices (more than one may apply)</b>          |               |                      |  |          |                          |               |         |                        |
| Energy Management and Control System .....                            | 132           | 132                  | 19   | 1        | 39                       | 80            | 40      | 11                     |
| Energy Conservation Programs <sup>1</sup> .....                       | 99            | 98                   | 13   | 1        | 29                       | 58            | 28      | 7                      |
| Energy Audit .....  | 99            | 98                   | 14   | 5        | 31                       | 60            | 27      | 10                     |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 97            | 96                   | 6  | 2        | 27                       | 64            | 24      | 8                      |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>     |               |                      |  |          |                          |               |         |                        |
| Heating .....   | 144           | 144                  | 21   | 9        | 41                       | 73            | 47      | 12                     |
| Cooling .....   | 145           | 144                  | 20   | 7        | 39                       | 73            | 47      | 12                     |
| Hot Water .....   | 77            | 77                   | 13   | 2        | 20                       | 38            | 30      | 2                      |
| Lighting .....  | 162           | 159                  | 22   | 11       | 41                       | 78            | 49      | 11                     |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.11. Heating Equipment in FBSS Buildings in Federal Region 6,  
Number of Buildings, 1993**

| Building Characteristics  | All Buildings | All Heated Buildings | Heating Equipment<br>(more than one may apply) |           |                          |               |            |                        |
|---|---------------|----------------------|--|-----------|--------------------------|---------------|------------|------------------------|
|   |               |                      | Heat Pumps                                     | Furnaces  | Individual Space Heaters | District Heat | Boilers    | Packaged-Heating Units |
| <b>All Buildings</b> .....  | <b>243</b>    | <b>242</b>           | <b>10</b>                                      | <b>18</b> | <b>30</b>                | <b>82</b>     | <b>102</b> | <b>59</b>              |
| <b>Building Floorspace (square feet)</b>                          |               |                      |  |           |                          |               |            |                        |
| 10,000 to 50,000 .....  | 107           | 107                  | 6  | 13        | 9                        | 26            | 36         | 34                     |
| 50,001 to 200,000 .....   | 86            | 85                   | 3  | 5         | 13                       | 36            | 40         | 15                     |
| Over 200,000 .....  | 50            | 50                   | 1  | NC        | 8                        | 20            | 26         | 10                     |
| <b>Principal Building Activity</b>                                |               |                      |  |           |                          |               |            |                        |
| Education .....   | 6             | 6                    | NC   | 1         | 2                        | 2             | 2          | 1                      |
| Health Care .....   | 35            | 35                   | 1  | NC        | 5                        | 22            | 12         | 9                      |
| Laboratory .....  | 29            | 29                   | NC   | NC        | 1                        | 18            | 12         | 3                      |
| Lodging .....   | 16            | 16                   | NC   | 3         | 1                        | 8             | 3          | 2                      |
| Mercantile and Service .....                                      | 49            | 49                   | 3  | 6         | 7                        | NC            | 19         | 27                     |
| Office .....  | 76            | 76                   | 4  | 3         | 11                       | 21            | 42         | 10                     |
| All Others .....  | 32            | 31                   | 2  | 5         | 3                        | 11            | 12         | 7                      |
| <b>Year Constructed</b>   |               |                      |  |           |                          |               |            |                        |
| 1959 or Before .....  | 103           | 102                  | 3  | 7         | 11                       | 55            | 38         | 13                     |
| 1960 to 1969 .....  | 38            | 38                   | 2  | 3         | 6                        | 9             | 23         | 10                     |
| 1970 to 1979 .....  | 34            | 34                   | 1  | 2         | 5                        | 4             | 23         | 10                     |
| 1980 to 1989 .....  | 57            | 57                   | 3  | 4         | 6                        | 12            | 15         | 24                     |
| 1990 to 1993 .....  | 11            | 11                   | 1  | 2         | 2                        | 2             | 3          | 2                      |
| <b>Federal Agency</b>   |               |                      |  |           |                          |               |            |                        |
| Department of Defense .....                                       | 22            | 22                   | 2  | 2         | 1                        | 4             | 12         | 7                      |
| General Services Administration .....                             | 35            | 35                   | 1  | 1         | 5                        | 7             | 26         | 2                      |
| United States Postal Service .....                                | 61            | 61                   | 3  | 7         | 8                        | NC            | 27         | 29                     |
| Veterans Administration .....                                     | 36            | 36                   | 1  | NC        | 5                        | 29            | 5          | 6                      |
| All Others .....  | 89            | 88                   | 3  | 8         | 11                       | 42            | 32         | 15                     |
| <b>Workers (main shift)</b>                                       |               |                      |  |           |                          |               |            |                        |
| Less than 50 .....  | 70            | 69                   | 2  | 8         | 7                        | 24            | 21         | 23                     |
| 50 to 99 .....  | 44            | 44                   | 4  | 7         | 3                        | 11            | 18         | 7                      |
| 100 to 499 .....  | 80            | 80                   | 3  | 3         | 10                       | 29            | 37         | 19                     |
| 500 or More .....   | 49            | 49                   | 1  | NC        | 10                       | 18            | 26         | 10                     |
| <b>Weekly Operating Hours</b>                                     |               |                      |  |           |                          |               |            |                        |
| 48 or Fewer .....   | 39            | 38                   | 2  | 4         | 5                        | 13            | 16         | 6                      |
| 49 to 60 .....  | 46            | 46                   | 2  | 3         | 5                        | 22            | 17         | 9                      |
| 61 to 167 .....   | 78            | 78                   | 3  | 7         | 9                        | 18            | 32         | 25                     |
| Open Continuously .....   | 80            | 80                   | 3  | 4         | 11                       | 29            | 37         | 19                     |
| <b>Multibuilding Facility</b>                                     |               |                      |  |           |                          |               |            |                        |
| Yes .....   | 148           | 147                  | 5  | 5         | 17                       | 80            | 51         | 20                     |
| No .....  | 95            | 95                   | 5  | 13        | 13                       | 2             | 51         | 39                     |
| <b>Percent of Floorspace Heated</b>                               |               |                      |  |           |                          |               |            |                        |
| Not Heated .....  | 1             | NC                   | NC   | NC        | NC                       | NC            | NC         | NC                     |
| 1 to 50 .....   | 11            | 11                   | NC   | 2         | 1                        | 2             | 4          | 2                      |
| 51 to 100 .....   | 231           | 231                  | 10   | 16        | 29                       | 80            | 98         | 57                     |
| <b>Energy Conservation Features<br/>(more than one may apply)</b> |               |                      |  |           |                          |               |            |                        |
| Any Conservation Feature .....                                    | 242           | 242                  | 10   | 18        | 30                       | 82            | 102        | 59                     |
| Building Shell .....  | 228           | 228                  | 10   | 18        | 30                       | 73            | 99         | 57                     |
| HVAC .....  | 236           | 236                  | 9  | 16        | 28                       | 82            | 101        | 58                     |
| Lighting .....  | 136           | 136                  | 7  | 11        | 20                       | 42            | 57         | 39                     |

See footnotes at end of table.

**Table 3.11. Heating Equipment in FBSS Buildings in Federal Region 6,  
Number of Buildings, 1993 (Continued)**

| Building Characteristics  | All Buildings | All Heated Buildings | Heating Equipment<br>(more than one may apply) |          |                          |               |         |                        |
|---|---------------|----------------------|--|----------|--------------------------|---------------|---------|------------------------|
|   |               |                      | Heat Pumps                                     | Furnaces | Individual Space Heaters | District Heat | Boilers | Packaged-Heating Units |
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                      |  |          |                          |               |         |                        |
| Roof or Ceiling Insulation .....                                      | 196           | 196                  | 9  | 15       | 22                       | 61            | 89      | 47                     |
| Wall Insulation .....   | 122           | 122                  | 7  | 7        | 11                       | 34            | 51      | 34                     |
| Storm or Multiple Glazing .....                                       | 96            | 96                   | 7  | 6        | 9                        | 30            | 42      | 27                     |
| Tinted or Reflective Glass or Shading Film .....                      | 127           | 127                  | 6  | 10       | 17                       | 32            | 62      | 35                     |
| Exterior or Interior Shading or Awnings .....                         | 142           | 142                  | 8  | 12       | 21                       | 39            | 64      | 41                     |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                      |  |          |                          |               |         |                        |
| VAV System .....  | 65            | 65                   | 2  | 1        | 7                        | 26            | 31      | 13                     |
| Economizer Cycle .....  | 123           | 123                  | 6  | 4        | 14                       | 44            | 58      | 30                     |
| HVAC Maintenance .....  | 234           | 234                  | 8  | 16       | 28                       | 81            | 101     | 57                     |
| <b>Energy Management Practices (more than one may apply)</b>          |               |                      |  |          |                          |               |         |                        |
| Energy Management and Control System .....                            | 96            | 96                   | 3  | 3        | 14                       | 47            | 35      | 17                     |
| Energy Conservation Programs <sup>1</sup> .....                       | 48            | 48                   | 3  | 3        | 9                        | 13            | 22      | 18                     |
| Energy Audit .....  | 64            | 64                   | 4  | 4        | 6                        | 12            | 28      | 21                     |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 57            | 57                   | 1  | 2        | 9                        | 14            | 36      | 15                     |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>     |               |                      |  |          |                          |               |         |                        |
| Heating .....   | 123           | 123                  | 6  | 14       | 19                       | 34            | 48      | 39                     |
| Cooling .....   | 124           | 124                  | 6  | 14       | 19                       | 35            | 47      | 39                     |
| Hot Water .....   | 33            | 33                   | 3  | 1        | 7                        | 9             | 15      | 10                     |
| Lighting .....  | 120           | 120                  | 5  | 12       | 17                       | 34            | 47      | 35                     |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.12. Heating Equipment in FBSS Buildings in Federal Region 9,  
Number of Buildings, 1993**

| Building Characteristics  | All Buildings | All Heated Buildings | Heating Equipment<br>(more than one may apply) |           |                          |               |            |                        |
|---|---------------|----------------------|--|-----------|--------------------------|---------------|------------|------------------------|
|   |               |                      | Heat Pumps                                     | Furnaces  | Individual Space Heaters | District Heat | Boilers    | Packaged-Heating Units |
| <b>All Buildings</b> .....  | <b>326</b>    | <b>304</b>           | <b>40</b>                                      | <b>25</b> | <b>33</b>                | <b>71</b>     | <b>146</b> | <b>67</b>              |
| <b>Building Floorspace (square feet)</b>                          |               |                      |  |           |                          |               |            |                        |
| 10,000 to 50,000 .....  | 148           | 137                  | 23   | 21        | 18                       | 26            | 49         | 38                     |
| 50,001 to 200,000 .....   | 123           | 116                  | 14   | 3         | 9                        | 30            | 67         | 23                     |
| Over 200,000 .....  | 55            | 51                   | 3  | 1         | 6                        | 15            | 30         | 6                      |
| <b>Principal Building Activity</b>                                |               |                      |  |           |                          |               |            |                        |
| Education .....   | 12            | 12                   | 2  | NC        | NC                       | 3             | 4          | 3                      |
| Health Care .....   | 48            | 47                   | 1  | NC        | 1                        | 37            | 9          | 7                      |
| Laboratory .....  | 31            | 31                   | 8  | 1         | 1                        | 3             | 23         | 5                      |
| Lodging .....   | 22            | 19                   | 2  | 1         | 1                        | 9             | 6          | 1                      |
| Mercantile and Service .....                                      | 63            | 55                   | 10   | 11        | 12                       | 2             | 24         | 18                     |
| Office .....  | 92            | 87                   | 12   | 8         | 8                        | 6             | 57         | 20                     |
| All Others .....  | 58            | 53                   | 5  | 4         | 10                       | 11            | 23         | 13                     |
| <b>Year Constructed</b>   |               |                      |  |           |                          |               |            |                        |
| 1959 or Before .....  | 130           | 118                  | 15   | 10        | 16                       | 33            | 54         | 24                     |
| 1960 to 1969 .....  | 55            | 55                   | 7  | 3         | 6                        | 10            | 40         | 9                      |
| 1970 to 1979 .....  | 62            | 59                   | 6  | 4         | 4                        | 17            | 25         | 15                     |
| 1980 to 1989 .....  | 65            | 59                   | 9  | 5         | 6                        | 11            | 21         | 14                     |
| 1990 to 1993 .....  | 14            | 13                   | 3  | 3         | 1                        | NC            | 6          | 5                      |
| <b>Federal Agency</b>   |               |                      |  |           |                          |               |            |                        |
| Department of Defense .....                                       | 78            | 66                   | 7  | 7         | 6                        | 20            | 22         | 11                     |
| General Services Administration .....                             | 39            | 39                   | NC   | 3         | 3                        | 4             | 32         | 2                      |
| United States Postal Service .....                                | 63            | 56                   | 9  | 10        | 9                        | NC            | 26         | 21                     |
| Veterans Administration .....                                     | 56            | 55                   | 2  | NC        | 1                        | 43            | 8          | 7                      |
| All Others .....  | 90            | 88                   | 22   | 5         | 14                       | 4             | 58         | 26                     |
| <b>Workers (main shift)</b>                                       |               |                      |  |           |                          |               |            |                        |
| Less than 50 .....  | 93            | 84                   | 12   | 11        | 11                       | 16            | 28         | 15                     |
| 50 to 99 .....  | 49            | 47                   | 6  | 5         | 4                        | 4             | 25         | 13                     |
| 100 to 499 .....  | 134           | 127                  | 19   | 8         | 12                       | 39            | 63         | 33                     |
| 500 or More .....   | 50            | 46                   | 3  | 1         | 6                        | 12            | 30         | 6                      |
| <b>Weekly Operating Hours</b>                                     |               |                      |  |           |                          |               |            |                        |
| 48 or Fewer .....   | 80            | 74                   | 7  | 5         | 9                        | 17            | 36         | 27                     |
| 49 to 60 .....  | 65            | 63                   | 7  | 7         | 6                        | 13            | 37         | 5                      |
| 61 to 167 .....   | 68            | 63                   | 8  | 9         | 9                        | 3             | 28         | 20                     |
| Open Continuously .....   | 113           | 104                  | 18   | 4         | 9                        | 38            | 45         | 15                     |
| <b>Multibuilding Facility</b>                                     |               |                      |  |           |                          |               |            |                        |
| Yes .....   | 200           | 186                  | 28   | 12        | 17                       | 63            | 77         | 29                     |
| No .....  | 126           | 118                  | 12   | 13        | 16                       | 8             | 69         | 38                     |
| <b>Percent of Floorspace Heated</b>                               |               |                      |  |           |                          |               |            |                        |
| Not Heated .....  | 22            | NC                   | NC   | NC        | NC                       | NC            | NC         | NC                     |
| 1 to 50 .....   | 28            | 28                   | 3  | 2         | 4                        | 3             | 8          | 6                      |
| 51 to 100 .....   | 276           | 276                  | 37   | 23        | 29                       | 68            | 138        | 61                     |
| <b>Energy Conservation Features<br/>(more than one may apply)</b> |               |                      |  |           |                          |               |            |                        |
| Any Conservation Feature .....                                    | 319           | 299                  | 40   | 25        | 33                       | 69            | 145        | 67                     |
| Building Shell .....  | 248           | 234                  | 31   | 20        | 31                       | 59            | 107        | 65                     |
| HVAC .....  | 307           | 290                  | 39   | 22        | 32                       | 69            | 143        | 65                     |
| Lighting .....  | 217           | 207                  | 29   | 15        | 23                       | 41            | 113        | 52                     |

See footnotes at end of table.

**Table 3.12. Heating Equipment in FBSS Buildings in Federal Region 9,  
Number of Buildings, 1993 (Continued)**

| Building Characteristics  | All Buildings | All Heated Buildings | Heating Equipment<br>(more than one may apply) |          |                          |               |         |                        |
|---|---------------|----------------------|--|----------|--------------------------|---------------|---------|------------------------|
|   |               |                      | Heat Pumps                                     | Furnaces | Individual Space Heaters | District Heat | Boilers | Packaged-Heating Units |
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                      |  |          |                          |               |         |                        |
| Roof or Ceiling Insulation .....                                      | 185           | 175                  | 27   | 12       | 23                       | 48            | 80      | 51                     |
| Wall Insulation .....   | 113           | 111                  | 13   | 13       | 12                       | 32            | 41      | 27                     |
| Storm or Multiple Glazing .....                                       | 57            | 52                   | 11   | 5        | 10                       | 14            | 19      | 17                     |
| Tinted or Reflective Glass or Shading Film .....                      | 133           | 125                  | 21   | 10       | 14                       | 22            | 62      | 37                     |
| Exterior or Interior Shading or Awnings .....                         | 164           | 156                  | 22   | 14       | 22                       | 35            | 79      | 48                     |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                      |  |          |                          |               |         |                        |
| VAV System .....  | 75            | 74                   | 9  | 1        | 11                       | 15            | 48      | 23                     |
| Economizer Cycle .....  | 140           | 138                  | 15   | 7        | 15                       | 28            | 80      | 40                     |
| HVAC Maintenance .....  | 306           | 289                  | 39   | 22       | 32                       | 69            | 143     | 64                     |
| <b>Energy Management Practices (more than one may apply)</b>          |               |                      |  |          |                          |               |         |                        |
| Energy Management and Control System .....                            | 71            | 67                   | 12   | 2        | 8                        | 15            | 40      | 13                     |
| Energy Conservation Programs <sup>1</sup> .....                       | 124           | 122                  | 23   | 9        | 17                       | 24            | 67      | 34                     |
| Energy Audit .....  | 99            | 92                   | 15   | 10       | 13                       | 20            | 47      | 13                     |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 52            | 48                   | 3  | 2        | 3                        | 14            | 25      | 8                      |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>     |               |                      |  |          |                          |               |         |                        |
| Heating .....   | 151           | 151                  | 19   | 15       | 22                       | 16            | 85      | 47                     |
| Cooling .....   | 157           | 147                  | 18   | 11       | 17                       | 20            | 84      | 45                     |
| Hot Water .....   | 68            | 66                   | 2  | 7        | 5                        | 5             | 48      | 21                     |
| Lighting .....  | 172           | 161                  | 19   | 18       | 24                       | 23            | 85      | 45                     |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.13. Heating Equipment in FBSS Buildings in Federal Region 3,  
Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | All Heated Buildings | Heating Equipment<br>(more than one may apply) |              |                          |               |               |                        |
|---|---------------|----------------------|--|--------------|--------------------------|---------------|---------------|------------------------|
|   |               |                      | Heat Pumps                                     | Furnaces     | Individual Space Heaters | District Heat | Boilers       | Packaged-Heating Units |
| <b>All Buildings</b> .....  | <b>94,880</b> | <b>94,063</b>        | <b>10,922</b>                                  | <b>1,694</b> | <b>34,923</b>            | <b>67,704</b> | <b>20,082</b> | <b>6,006</b>           |
| <b>Building Floorspace (square feet)</b>                          |               |                      |  |              |                          |               |               |                        |
| 10,000 to 50,000 .....  | 2,564         | 2,564                | 419  | 171          | 447                      | 1,074         | 821           | 150                    |
| 50,001 to 200,000 .....   | 13,166        | 12,608               | 115  | 523          | 2,297                    | 7,612         | 3,981         | 991                    |
| Over 200,000 .....  | 79,149        | 78,891               | 10,388   | 1,000        | 32,179                   | 59,018        | 15,279        | 4,865                  |
| <b>Principal Building Activity</b>                                |               |                      |  |              |                          |               |               |                        |
| Education .....   | 598           | 598                  | NC   | NC           | 277                      | 264           | 279           | NC                     |
| Health Care .....   | 14,559        | 14,450               | 60   | NC           | 3,453                    | 10,624        | 3,725         | 1,583                  |
| Laboratory .....  | 5,165         | 5,165                | 20   | NC           | 602                      | 3,745         | 1,198         | 409                    |
| Lodging .....   | 2,558         | 2,558                | 406  | NC           | 441                      | 2,020         | 132           | 31                     |
| Mercantile and Service .....                                      | 7,966         | 7,966                | 832  | 480          | 2,762                    | 1,391         | 4,995         | 1,080                  |
| Office .....  | 56,881        | 56,631               | 9,478  | 1,107        | 24,674                   | 44,635        | 9,182         | 2,354                  |
| All Others .....  | 7,152         | 6,693                | 127  | 106          | 2,713                    | 5,025         | 570           | 549                    |
| <b>Year Constructed</b>   |               |                      |  |              |                          |               |               |                        |
| 1959 or Before .....  | 43,829        | 43,299               | 3,474  | 1,211        | 21,328                   | 35,819        | 5,862         | 2,857                  |
| 1960 to 1969 .....  | 19,564        | 19,477               | 2,427  | 155          | 3,759                    | 16,687        | 2,512         | 1,311                  |
| 1970 to 1979 .....  | 17,737        | 17,737               | 4,196  | 152          | 5,817                    | 9,022         | 6,626         | 741                    |
| 1980 to 1989 .....  | 8,975         | 8,775                | 755  | 163          | 1,895                    | 2,571         | 4,975         | 1,067                  |
| 1990 to 1993 .....  | 4,774         | 4,774                | 70   | 14           | 2,124                    | 3,605         | 106           | 30                     |
| <b>Federal Agency</b>   |               |                      |  |              |                          |               |               |                        |
| Department of Defense .....                                       | 13,988        | 13,988               | NC   | NC           | 7,840                    | 13,339        | 380           | NC                     |
| General Services Administration ...                               | 46,205        | 45,859               | 8,384  | 1,000        | 14,011                   | 35,209        | 8,682         | 1,621                  |
| United States Postal Service .....                                | 9,392         | 9,229                | 1,862  | 480          | 4,508                    | 1,091         | 6,503         | 1,591                  |
| Veterans Administration .....                                     | 13,306        | 12,998               | 98   | NC           | 3,317                    | 8,259         | 3,858         | 1,583                  |
| All Others .....  | 11,989        | 11,989               | 578  | 214          | 5,248                    | 9,806         | 657           | 1,210                  |
| <b>Workers (main shift)</b>                                       |               |                      |  |              |                          |               |               |                        |
| Less than 50 .....  | 4,102         | 3,448                | 645  | 108          | 618                      | 2,160         | 605           | 492                    |
| 50 to 99 .....  | 1,903         | 1,903                | 174  | 234          | 654                      | 1,034         | 540           | 142                    |
| 100 to 499 .....  | 13,632        | 13,469               | 1,729  | 1,352        | 1,940                    | 7,233         | 4,105         | 768                    |
| 500 or More .....   | 75,243        | 75,243               | 8,375  | NC           | 31,710                   | 57,277        | 14,832        | 4,604                  |
| <b>Weekly Operating Hours</b>                                     |               |                      |  |              |                          |               |               |                        |
| 48 or Fewer .....   | 9,694         | 9,336                | 2,219  | 1,086        | 3,325                    | 6,728         | 1,456         | 546                    |
| 49 to 60 .....  | 25,540        | 25,540               | 3,533  | 51           | 10,806                   | 20,047        | 3,961         | 1,051                  |
| 61 to 167 .....   | 11,993        | 11,993               | 2,841  | 314          | 4,072                    | 6,816         | 3,842         | 851                    |
| Open Continuously .....   | 47,653        | 47,194               | 2,330  | 242          | 16,720                   | 34,114        | 10,822        | 3,558                  |
| <b>Multibuilding Facility</b>                                     |               |                      |  |              |                          |               |               |                        |
| Yes .....   | 43,861        | 43,466               | 7,487  | 1,107        | 17,213                   | 30,922        | 9,023         | 2,804                  |
| No .....  | 51,018        | 50,597               | 3,435  | 587          | 17,711                   | 36,782        | 11,059        | 3,201                  |
| <b>Percent of Floorspace Heated</b>                               |               |                      |  |              |                          |               |               |                        |
| Not Heated .....  | 817           | NC                   | NC   | NC           | NC                       | NC            | NC            | NC                     |
| 1 to 50 .....   | 5,787         | 5,787                | 540  | 126          | 2,151                    | 5,224         | 55            | 482                    |
| 51 to 100 .....   | 88,275        | 88,275               | 10,382   | 1,569        | 32,773                   | 62,481        | 20,027        | 5,524                  |
| <b>Energy Conservation Features<br/>(more than one may apply)</b> |               |                      |  |              |                          |               |               |                        |
| Any Conservation Feature .....                                    | 94,361        | 94,003               | 10,922   | 1,694        | 34,923                   | 67,644        | 20,082        | 6,006                  |
| Building Shell .....  | 84,557        | 84,198               | 10,922   | 1,636        | 32,183                   | 59,221        | 18,726        | 6,006                  |
| HVAC .....  | 93,543        | 93,184               | 10,485   | 1,635        | 34,717                   | 67,055        | 20,009        | 5,579                  |
| Lighting .....  | 80,953        | 80,595               | 10,724   | 1,332        | 31,690                   | 57,181        | 18,347        | 4,321                  |

See footnotes at end of table.

**Table 3.13. Heating Equipment in FBSS Buildings in Federal Region 3,  
Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | All Heated Buildings | Heating Equipment<br>(more than one may apply) |          |                          |               |         |                        |
|---|---------------|----------------------|--|----------|--------------------------|---------------|---------|------------------------|
|   |               |                      | Heat Pumps                                     | Furnaces | Individual Space Heaters | District Heat | Boilers | Packaged-Heating Units |
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                      |  |          |                          |               |         |                        |
| Roof or Ceiling Insulation .....                                      | 69,654        | 69,567               | 9,240  | 512      | 28,784                   | 51,320        | 13,283  | 5,321                  |
| Wall Insulation .....   | 31,876        | 31,876               | 6,084  | 174      | 11,695                   | 20,857        | 8,687   | 1,433                  |
| Storm or Multiple Glazing .....                                       | 46,141        | 46,032               | 5,371  | 511      | 18,186                   | 30,197        | 11,784  | 3,114                  |
| Tinted or Reflective Glass or Shading Film .....                      | 46,829        | 46,666               | 6,339  | 276      | 15,553                   | 29,742        | 15,263  | 3,286                  |
| Exterior or Interior Shading or Awnings .....                         | 57,183        | 56,933               | 8,397  | 1,378    | 21,325                   | 39,971        | 12,991  | 4,317                  |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                      |  |          |                          |               |         |                        |
| VAV System .....  | 37,611        | 37,502               | 4,125  | 21       | 13,828                   | 23,372        | 11,640  | 3,308                  |
| Economizer Cycle .....  | 61,089        | 60,894               | 4,105  | 176      | 27,241                   | 44,513        | 13,844  | 4,651                  |
| HVAC Maintenance .....  | 93,402        | 93,130               | 10,485   | 1,635    | 34,717                   | 67,055        | 19,955  | 5,579                  |
| <b>Energy Management Practices (more than one may apply)</b>          |               |                      |  |          |                          |               |         |                        |
| Energy Management and Control System .....                            | 61,891        | 61,891               | 8,197  | 107      | 26,031                   | 45,017        | 14,594  | 3,994                  |
| Energy Conservation Programs <sup>1</sup> .....                       | 59,284        | 59,084               | 6,244  | 24       | 25,674                   | 46,194        | 8,858   | 2,747                  |
| Energy Audit .....  | 37,621        | 37,421               | 7,066  | 1,233    | 20,648                   | 27,770        | 7,222   | 1,745                  |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 52,924        | 52,665               | 4,762  | 69       | 22,670                   | 40,970        | 9,644   | 3,129                  |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>     |               |                      |  |          |                          |               |         |                        |
| Heating .....   | 43,828        | 43,828               | 8,477  | 1,292    | 17,564                   | 31,731        | 8,745   | 2,396                  |
| Cooling .....   | 43,757        | 43,594               | 8,247  | 1,247    | 17,266                   | 31,731        | 8,531   | 2,396                  |
| Hot Water .....   | 26,018        | 26,018               | 6,649  | 1,050    | 9,995                    | 17,684        | 5,680   | 716                    |
| Lighting .....  | 44,717        | 44,358               | 8,294  | 1,394    | 17,141                   | 31,814        | 8,813   | 2,255                  |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.



**Table 3.14. Heating Equipment in FBSS Buildings in Federal Region 6,  
Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | All Heated Buildings | Heating Equipment<br>(more than one may apply) |            |                          |               |               |                        |
|---|---------------|----------------------|--|------------|--------------------------|---------------|---------------|------------------------|
|   |               |                      | Heat Pumps                                     | Furnaces   | Individual Space Heaters | District Heat | Boilers       | Packaged-Heating Units |
| <b>All Buildings</b> .....  | <b>35,816</b> | <b>35,734</b>        | <b>964</b>                                     | <b>791</b> | <b>5,408</b>             | <b>15,205</b> | <b>16,718</b> | <b>7,574</b>           |
| <b>Building Floorspace (square feet)</b>                          |               |                      |  |            |                          |               |               |                        |
| 10,000 to 50,000 .....  | 2,591         | 2,591                | 140  | 265        | 195                      | 713           | 922           | 719                    |
| 50,001 to 200,000 .....   | 9,548         | 9,466                | 307  | 526        | 1,694                    | 4,114         | 4,359         | 1,448                  |
| Over 200,000 .....  | 23,677        | 23,677               | 517  | NC         | 3,519                    | 10,378        | 11,437        | 5,407                  |
| <b>Principal Building Activity</b>                                |               |                      |  |            |                          |               |               |                        |
| Education .....   | 168           | 168                  | NC   | 28         | 53                       | 35            | 79            | 28                     |
| Health Care .....   | 12,094        | 12,094               | 142  | NC         | 1,467                    | 7,733         | 4,388         | 3,148                  |
| Laboratory .....  | 3,331         | 3,331                | NC   | NC         | 141                      | 2,621         | 807           | 152                    |
| Lodging .....   | 942           | 942                  | NC   | 56         | 75                       | 512           | 160           | 88                     |
| Mercantile and Service .....                                      | 6,236         | 6,236                | 593  | 429        | 704                      | NC            | 3,571         | 2,402                  |
| Office .....  | 10,799        | 10,799               | 99   | 42         | 2,753                    | 3,263         | 6,815         | 1,404                  |
| All Others .....  | 2,247         | 2,165                | 130  | 236        | 214                      | 1,041         | 896           | 351                    |
| <b>Year Constructed</b>   |               |                      |  |            |                          |               |               |                        |
| 1959 or Before .....  | 13,258        | 13,176               | 199  | 323        | 1,947                    | 7,006         | 6,178         | 2,841                  |
| 1960 to 1969 .....  | 6,386         | 6,386                | 529  | 109        | 2,266                    | 1,539         | 3,893         | 1,349                  |
| 1970 to 1979 .....  | 6,175         | 6,175                | 102  | 202        | 391                      | 976           | 4,189         | 2,062                  |
| 1980 to 1989 .....  | 6,903         | 6,903                | 109  | 115        | 644                      | 2,926         | 2,382         | 1,254                  |
| 1990 to 1993 .....  | 3,095         | 3,095                | 25   | 42         | 159                      | 2,758         | 75            | 67                     |
| <b>Federal Agency</b>   |               |                      |  |            |                          |               |               |                        |
| Department of Defense .....                                       | 1,668         | 1,668                | 88   | 105        | 20                       | 285           | 1,218         | 895                    |
| General Services Administration ...                               | 7,888         | 7,888                | 12   | 12         | 1,978                    | 1,643         | 5,738         | 491                    |
| United States Postal Service .....                                | 7,027         | 7,027                | 563  | 448        | 854                      | NC            | 4,335         | 2,637                  |
| Veterans Administration .....                                     | 11,375        | 11,375               | 142  | NC         | 1,467                    | 8,140         | 3,242         | 2,400                  |
| All Others .....  | 7,858         | 7,776                | 159  | 225        | 1,088                    | 5,137         | 2,184         | 1,151                  |
| <b>Workers (main shift)</b>                                       |               |                      |  |            |                          |               |               |                        |
| Less than 50 .....  | 2,548         | 2,466                | 170  | 143        | 251                      | 1,092         | 951           | 566                    |
| 50 to 99 .....  | 2,026         | 2,026                | 87   | 274        | 152                      | 680           | 800           | 259                    |
| 100 to 499 .....  | 9,029         | 9,029                | 190  | 374        | 1,103                    | 4,321         | 3,911         | 1,342                  |
| 500 or More .....   | 22,213        | 22,213               | 517  | NC         | 3,901                    | 9,112         | 11,057        | 5,407                  |
| <b>Weekly Operating Hours</b>                                     |               |                      |  |            |                          |               |               |                        |
| 48 or Fewer .....   | 2,740         | 2,658                | 154  | 65         | 226                      | 1,135         | 1,052         | 233                    |
| 49 to 60 .....  | 6,460         | 6,460                | 57   | 81         | 467                      | 3,330         | 3,174         | 518                    |
| 61 to 167 .....   | 8,051         | 8,051                | 101  | 488        | 2,206                    | 3,041         | 3,859         | 1,312                  |
| Open Continuously .....   | 18,565        | 18,565               | 652  | 158        | 2,509                    | 7,699         | 8,633         | 5,511                  |
| <b>Multibuilding Facility</b>                                     |               |                      |  |            |                          |               |               |                        |
| Yes .....   | 24,441        | 24,359               | 364  | 159        | 3,672                    | 15,000        | 8,520         | 2,691                  |
| No .....  | 11,375        | 11,375               | 600  | 632        | 1,736                    | 205           | 8,197         | 4,883                  |
| <b>Percent of Floorspace Heated</b>                               |               |                      |  |            |                          |               |               |                        |
| Not Heated .....  | 82            | NC                   | NC   | NC         | NC                       | NC            | NC            | NC                     |
| 1 to 50 .....   | 1,288         | 1,288                | NC   | 66         | 19                       | 278           | 674           | 325                    |
| 51 to 100 .....   | 34,446        | 34,446               | 964  | 725        | 5,388                    | 14,927        | 16,043        | 7,249                  |
| <b>Energy Conservation Features<br/>(more than one may apply)</b> |               |                      |  |            |                          |               |               |                        |
| Any Conservation Feature .....                                    | 35,734        | 35,734               | 964  | 791        | 5,408                    | 15,205        | 16,718        | 7,574                  |
| Building Shell .....  | 33,946        | 33,946               | 964  | 791        | 5,408                    | 14,057        | 16,100        | 7,550                  |
| HVAC .....  | 35,425        | 35,425               | 939  | 680        | 5,377                    | 15,205        | 16,576        | 7,563                  |
| Lighting .....  | 25,654        | 25,654               | 910  | 429        | 4,370                    | 10,979        | 11,447        | 5,574                  |

See footnotes at end of table.

**Table 3.14. Heating Equipment in FBSS Buildings in Federal Region 6,  
Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | All Heated Buildings | Heating Equipment<br>(more than one may apply) |          |                          |               |         |                        |
|---|---------------|----------------------|--|----------|--------------------------|---------------|---------|------------------------|
|   |               |                      | Heat Pumps                                     | Furnaces | Individual Space Heaters | District Heat | Boilers | Packaged-Heating Units |
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                      |  |          |                          |               |         |                        |
| Roof or Ceiling Insulation .....                                      | 28,249        | 28,249               | 932  | 629      | 3,936                    | 11,866        | 13,412  | 5,269                  |
| Wall Insulation .....   | 20,550        | 20,550               | 782  | 248      | 2,303                    | 8,820         | 9,161   | 4,508                  |
| Storm or Multiple Glazing .....                                       | 17,939        | 17,939               | 422  | 261      | 1,029                    | 8,950         | 8,045   | 3,968                  |
| Tinted or Reflective Glass or Shading Film .....                      | 24,768        | 24,768               | 732  | 463      | 4,758                    | 10,361        | 11,373  | 5,597                  |
| Exterior or Interior Shading or Awnings .....                         | 26,067        | 26,067               | 434  | 592      | 4,282                    | 9,915         | 13,567  | 6,807                  |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                      |  |          |                          |               |         |                        |
| VAV System .....  | 18,518        | 18,518               | 170  | 82       | 1,713                    | 8,353         | 9,135   | 4,408                  |
| Economizer Cycle .....  | 23,542        | 23,542               | 376  | 189      | 3,509                    | 10,756        | 11,332  | 5,842                  |
| HVAC Maintenance .....  | 35,341        | 35,341               | 876  | 680      | 5,377                    | 15,183        | 16,576  | 7,500                  |
| <b>Energy Management Practices (more than one may apply)</b>          |               |                      |  |          |                          |               |         |                        |
| Energy Management and Control System .....                            | 23,099        | 23,099               | 199  | 87       | 3,592                    | 11,254        | 10,580  | 4,982                  |
| Energy Conservation Programs <sup>1</sup> .....                       | 13,513        | 13,513               | 100  | 45       | 2,576                    | 5,546         | 7,178   | 4,016                  |
| Energy Audit .....  | 11,690        | 11,690               | 618  | 69       | 1,610                    | 2,221         | 7,806   | 3,421                  |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 15,538        | 15,538               | 12   | 202      | 1,881                    | 5,867         | 8,854   | 4,743                  |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>     |               |                      |  |          |                          |               |         |                        |
| Heating .....   | 13,162        | 13,162               | 299  | 633      | 2,898                    | 5,002         | 6,937   | 2,044                  |
| Cooling .....   | 13,864        | 13,864               | 299  | 633      | 2,898                    | 5,405         | 6,913   | 2,044                  |
| Hot Water .....   | 4,554         | 4,554                | 117  | 190      | 1,379                    | 1,471         | 2,408   | 1,058                  |
| Lighting .....  | 12,847        | 12,847               | 255  | 585      | 2,859                    | 4,444         | 6,949   | 1,981                  |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.15. Heating Equipment in FBSS Buildings in Federal Region 9,  
Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | All Heated Buildings | Heating Equipment<br>(more than one may apply) |              |                          |               |               |                        |
|---|---------------|----------------------|--|--------------|--------------------------|---------------|---------------|------------------------|
|   |               |                      | Heat Pumps                                     | Furnaces     | Individual Space Heaters | District Heat | Boilers       | Packaged-Heating Units |
| <b>All Buildings</b> .....  | <b>44,316</b> | <b>41,921</b>        | <b>3,081</b>                                   | <b>1,204</b> | <b>4,933</b>             | <b>12,712</b> | <b>24,010</b> | <b>5,997</b>           |
| <b>Building Floorspace (square feet)</b>                          |               |                      |  |              |                          |               |               |                        |
| 10,000 to 50,000 .....  | 3,858         | 3,626                | 566  | 496          | 511                      | 810           | 1,321         | 1,040                  |
| 50,001 to 200,000 .....   | 12,680        | 12,016               | 1,346  | 242          | 879                      | 3,191         | 6,911         | 2,439                  |
| Over 200,000 .....  | 27,778        | 26,279               | 1,169  | 466          | 3,542                    | 8,711         | 15,778        | 2,518                  |
| <b>Principal Building Activity</b>                                |               |                      |  |              |                          |               |               |                        |
| Education .....   | 628           | 628                  | 96   | NC           | NC                       | 188           | 220           | 124                    |
| Health Care .....   | 9,903         | 9,888                | 431  | NC           | 107                      | 7,842         | 1,904         | 1,306                  |
| Laboratory .....  | 2,601         | 2,601                | 535  | 12           | 41                       | 363           | 1,987         | 259                    |
| Lodging .....   | 1,220         | 1,146                | 79   | 15           | 15                       | 422           | 593           | 48                     |
| Mercantile and Service .....                                      | 8,194         | 6,567                | 1,186  | 836          | 2,051                    | 58            | 4,430         | 1,220                  |
| Office .....  | 16,380        | 16,141               | 581  | 228          | 2,282                    | 1,960         | 13,175        | 1,573                  |
| All Others .....  | 5,390         | 4,950                | 174  | 113          | 437                      | 1,878         | 1,702         | 1,468                  |
| <b>Year Constructed</b>   |               |                      |  |              |                          |               |               |                        |
| 1959 or Before .....  | 13,553        | 12,957               | 1,324  | 422          | 1,598                    | 3,924         | 5,689         | 2,409                  |
| 1960 to 1969 .....  | 9,082         | 9,082                | 639  | 107          | 2,019                    | 1,437         | 7,535         | 591                    |
| 1970 to 1979 .....  | 12,041        | 11,355               | 623  | 77           | 514                      | 4,765         | 6,326         | 1,590                  |
| 1980 to 1989 .....  | 7,955         | 6,986                | 449  | 94           | 335                      | 2,586         | 3,291         | 740                    |
| 1990 to 1993 .....  | 1,684         | 1,541                | 46   | 503          | 466                      | NC            | 1,169         | 667                    |
| <b>Federal Agency</b>   |               |                      |  |              |                          |               |               |                        |
| Department of Defense .....                                       | 8,489         | 7,815                | 260  | 322          | 551                      | 3,963         | 1,701         | 949                    |
| General Services Administration ...                               | 12,505        | 12,505               | NC   | 82           | 1,453                    | 1,500         | 11,218        | 605                    |
| United States Postal Service .....                                | 8,387         | 6,844                | 1,171  | 710          | 2,023                    | NC            | 4,675         | 1,502                  |
| Veterans Administration .....                                     | 8,824         | 8,681                | 490  | NC           | 28                       | 6,803         | 1,598         | 1,186                  |
| All Others .....  | 6,111         | 6,077                | 1,160  | 90           | 877                      | 447           | 4,819         | 1,755                  |
| <b>Workers (main shift)</b>                                       |               |                      |  |              |                          |               |               |                        |
| Less than 50 .....  | 3,684         | 3,272                | 225  | 239          | 327                      | 805           | 996           | 347                    |
| 50 to 99 .....  | 2,161         | 2,122                | 231  | 99           | 227                      | 247           | 1,349         | 424                    |
| 100 to 499 .....  | 14,017        | 13,572               | 1,657  | 400          | 1,038                    | 4,322         | 6,816         | 3,622                  |
| 500 or More .....   | 24,454        | 22,956               | 967  | 466          | 3,340                    | 7,338         | 14,850        | 1,604                  |
| <b>Weekly Operating Hours</b>                                     |               |                      |  |              |                          |               |               |                        |
| 48 or Fewer .....   | 4,822         | 4,498                | 659  | 159          | 732                      | 1,045         | 2,513         | 1,304                  |
| 49 to 60 .....  | 13,424        | 13,278               | 482  | 275          | 1,943                    | 2,207         | 10,496        | 779                    |
| 61 to 167 .....   | 5,706         | 5,513                | 331  | 265          | 525                      | 477           | 2,917         | 1,772                  |
| Open Continuously .....   | 20,364        | 18,634               | 1,610  | 505          | 1,732                    | 8,984         | 8,085         | 2,142                  |
| <b>Multibuilding Facility</b>                                     |               |                      |  |              |                          |               |               |                        |
| Yes .....   | 26,821        | 25,713               | 1,859  | 896          | 1,606                    | 10,888        | 11,611        | 3,000                  |
| No .....  | 17,495        | 16,208               | 1,223  | 308          | 3,327                    | 1,824         | 12,399        | 2,997                  |
| <b>Percent of Floorspace Heated</b>                               |               |                      |  |              |                          |               |               |                        |
| Not Heated .....  | 2,394         | NC                   | NC   | NC           | NC                       | NC            | NC            | NC                     |
| 1 to 50 .....   | 3,751         | 3,751                | 132  | 30           | 116                      | 1,471         | 499           | 741                    |
| 51 to 100 .....   | 38,170        | 38,170               | 2,949  | 1,174        | 4,817                    | 11,241        | 23,511        | 5,256                  |
| <b>Energy Conservation Features<br/>(more than one may apply)</b> |               |                      |  |              |                          |               |               |                        |
| Any Conservation Feature .....                                    | 44,023        | 41,775               | 3,081  | 1,204        | 4,933                    | 12,659        | 23,976        | 5,997                  |
| Building Shell .....  | 34,105        | 32,838               | 2,731  | 1,037        | 4,907                    | 10,381        | 17,304        | 5,848                  |
| HVAC .....  | 43,116        | 41,197               | 3,060  | 1,026        | 4,894                    | 12,659        | 23,697        | 5,939                  |
| Lighting .....  | 34,825        | 32,968               | 2,684  | 816          | 3,962                    | 8,815         | 20,724        | 4,692                  |

See footnotes at end of table.

**Table 3.15. Heating Equipment in FBSS Buildings in Federal Region 9,  
Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | All Heated Buildings | Heating Equipment<br>(more than one may apply) |          |                          |               |         |                        |
|---|---------------|----------------------|--|----------|--------------------------|---------------|---------|------------------------|
|   |               |                      | Heat Pumps                                     | Furnaces | Individual Space Heaters | District Heat | Boilers | Packaged-Heating Units |
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                      |  |          |                          |               |         |                        |
| Roof or Ceiling Insulation .....                                      | 27,234        | 26,350               | 2,512  | 805      | 4,165                    | 9,869         | 13,175  | 4,603                  |
| Wall Insulation .....   | 17,462        | 17,416               | 935  | 851      | 2,800                    | 6,865         | 8,136   | 2,761                  |
| Storm or Multiple Glazing .....                                       | 10,260        | 9,556                | 844  | 527      | 2,810                    | 4,366         | 4,204   | 1,963                  |
| Tinted or Reflective Glass or Shading Film .....                      | 22,381        | 21,601               | 2,395  | 803      | 4,082                    | 5,227         | 12,523  | 3,980                  |
| Exterior or Interior Shading or Awnings .....                         | 24,370        | 24,142               | 2,259  | 894      | 4,405                    | 7,330         | 13,447  | 4,161                  |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                      |  |          |                          |               |         |                        |
| VAV System .....  | 15,577        | 15,562               | 746  | 466      | 3,221                    | 4,948         | 9,605   | 1,824                  |
| Economizer Cycle .....  | 26,367        | 26,050               | 2,040  | 654      | 3,750                    | 5,461         | 18,047  | 4,160                  |
| HVAC Maintenance .....  | 43,098        | 41,179               | 3,060  | 1,026    | 4,894                    | 12,659        | 23,697  | 5,921                  |
| <b>Energy Management Practices (more than one may apply)</b>          |               |                      |  |          |                          |               |         |                        |
| Energy Management and Control System .....                            | 18,231        | 16,963               | 1,477  | 507      | 1,634                    | 6,515         | 9,045   | 1,712                  |
| Energy Conservation Programs <sup>1</sup> .....                       | 24,699        | 24,668               | 2,456  | 722      | 3,373                    | 6,866         | 15,566  | 4,294                  |
| Energy Audit .....  | 17,444        | 16,711               | 894  | 763      | 2,609                    | 4,926         | 11,129  | 863                    |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 14,570        | 13,679               | 412  | 510      | 1,923                    | 3,981         | 8,573   | 1,504                  |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>     |               |                      |  |          |                          |               |         |                        |
| Heating .....   | 19,631        | 19,631               | 1,285  | 481      | 3,076                    | 2,449         | 14,670  | 3,697                  |
| Cooling .....   | 19,219        | 18,834               | 1,086  | 337      | 2,577                    | 2,595         | 13,976  | 3,608                  |
| Hot Water .....   | 13,614        | 13,574               | 162  | 218      | 1,664                    | 1,641         | 11,615  | 1,887                  |
| Lighting .....  | 21,155        | 20,626               | 1,154  | 558      | 3,201                    | 2,839         | 14,778  | 3,685                  |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.16. Cooling Equipment in FBSS Buildings in Federal Region 3,  
Number of Buildings, 1993**

| Building Characteristics  | All Buildings | All Cooled Buildings | Cooling Equipment<br>(more than one may apply) |            |                             |                        |                  |                                 |
|---|---------------|----------------------|--|------------|-----------------------------|------------------------|------------------|---------------------------------|
|   |               |                      | Residential-Type Central Air Conditioners      | Heat Pumps | Individual Air Conditioners | District Chilled Water | Central Chillers | Packaged-Air-Conditioning Units |
| <b>All Buildings</b> .....  | <b>312</b>    | <b>305</b>           | <b>30</b>                                      | <b>37</b>  | <b>80</b>                   | <b>72</b>              | <b>158</b>       | <b>127</b>                      |
| <b>Building Floorspace (square feet)</b>                          |               |                      |  |            |                             |                        |                  |                                 |
| 10,000 to 50,000 .....  | 94            | 92                   | 8  | 20         | 20                          | 10                     | 25               | 37                              |
| 50,001 to 200,000 .....   | 117           | 114                  | 6  | 1          | 23                          | 38                     | 61               | 34                              |
| Over 200,000 .....  | 101           | 99                   | 16   | 16         | 37                          | 24                     | 72               | 56                              |
| <b>Principal Building Activity</b>                                |               |                      |  |            |                             |                        |                  |                                 |
| Education .....   | 8             | 8                    | NC   | NC         | 2                           | NC                     | 4                | 3                               |
| Health Care .....   | 41            | 40                   | 3  | 1          | 10                          | 22                     | 15               | 16                              |
| Laboratory .....  | 37            | 37                   | 2  | 1          | 5                           | 14                     | 16               | 7                               |
| Lodging .....   | 13            | 12                   | 1  | 1          | 3                           | 1                      | 5                | 6                               |
| Mercantile and Service .....                                      | 46            | 44                   | 4  | 6          | 9                           | NC                     | 22               | 20                              |
| Office .....  | 124           | 123                  | 16   | 24         | 39                          | 25                     | 82               | 61                              |
| All Others .....  | 43            | 41                   | 4  | 4          | 12                          | 10                     | 14               | 14                              |
| <b>Year Constructed</b>   |               |                      |  |            |                             |                        |                  |                                 |
| 1959 or Before .....  | 142           | 140                  | 19   | 20         | 61                          | 30                     | 69               | 66                              |
| 1960 to 1969 .....  | 70            | 69                   | 6  | 2          | 5                           | 28                     | 31               | 17                              |
| 1970 to 1979 .....  | 47            | 44                   | 3  | 5          | 9                           | 3                      | 30               | 22                              |
| 1980 to 1989 .....  | 38            | 37                   | 2  | 8          | 4                           | 6                      | 21               | 17                              |
| 1990 to 1993 .....  | 15            | 15                   | NC   | 2          | 1                           | 5                      | 7                | 5                               |
| <b>Federal Agency</b>   |               |                      |  |            |                             |                        |                  |                                 |
| Department of Defense .....                                       | 22            | 22                   | 2  | NC         | 6                           | 9                      | 5                | 5                               |
| General Services Administration .....                             | 83            | 81                   | 12   | 18         | 29                          | 9                      | 69               | 42                              |
| United States Postal Service .....                                | 57            | 55                   | 6  | 8          | 13                          | NC                     | 30               | 28                              |
| Veterans Administration .....                                     | 56            | 54                   | 3  | 3          | 12                          | 24                     | 19               | 20                              |
| All Others .....  | 94            | 93                   | 7  | 8          | 20                          | 30                     | 35               | 32                              |
| <b>Workers (main shift)</b>                                       |               |                      |  |            |                             |                        |                  |                                 |
| Less than 50 .....  | 71            | 66                   | 7  | 11         | 18                          | 12                     | 17               | 21                              |
| 50 to 99 .....  | 39            | 39                   | 2  | 8          | 9                           | 7                      | 10               | 14                              |
| 100 to 499 .....  | 107           | 106                  | 5  | 5          | 18                          | 30                     | 58               | 38                              |
| 500 or More .....   | 95            | 94                   | 16   | 13         | 35                          | 23                     | 73               | 54                              |
| <b>Weekly Operating Hours</b>                                     |               |                      |  |            |                             |                        |                  |                                 |
| 48 or Fewer .....   | 51            | 49                   | 9  | 11         | 15                          | 8                      | 22               | 23                              |
| 49 to 60 .....  | 76            | 76                   | 5  | 8          | 23                          | 15                     | 47               | 31                              |
| 61 to 167 .....   | 60            | 59                   | 7  | 12         | 11                          | 8                      | 27               | 23                              |
| Open Continuously .....   | 125           | 121                  | 9  | 6          | 31                          | 41                     | 62               | 50                              |
| <b>Multibuilding Facility</b>                                     |               |                      |  |            |                             |                        |                  |                                 |
| Yes .....   | 176           | 171                  | 10   | 14         | 40                          | 63                     | 74               | 64                              |
| No .....  | 136           | 134                  | 20   | 23         | 40                          | 9                      | 84               | 63                              |
| <b>Percent of Floorspace Cooled</b>                               |               |                      |  |            |                             |                        |                  |                                 |
| Not Cooled .....  | 13            | 6                    | NC   | NC         | NC                          | NC                     | NC               | NC                              |
| 1 to 50 .....   | 30            | 30                   | 2  | 5          | 16                          | 4                      | 11               | 17                              |
| 51 to 100 .....   | 269           | 269                  | 28   | 32         | 64                          | 68                     | 147              | 110                             |
| <b>Energy Conservation Features<br/>(more than one may apply)</b> |               |                      |  |            |                             |                        |                  |                                 |
| Any Conservation Feature .....                                    | 309           | 304                  | 30   | 37         | 80                          | 72                     | 158              | 127                             |
| Building Shell .....  | 290           | 285                  | 25   | 34         | 72                          | 71                     | 146              | 117                             |
| HVAC .....  | 303           | 298                  | 29   | 35         | 79                          | 72                     | 155              | 125                             |
| Lighting .....  | 210           | 207                  | 19   | 29         | 60                          | 45                     | 120              | 94                              |

See footnotes at end of table.

**Table 3.16. Cooling Equipment in FBSS Buildings in Federal Region 3,  
Number of Buildings, 1993 (Continued)**

| Building Characteristics  | All Buildings | All Cooled Buildings | Cooling Equipment<br>(more than one may apply) |            |                             |                        |                  |                                 |  |
|---|---------------|----------------------|--|------------|-----------------------------|------------------------|------------------|---------------------------------|--|
|   |               |                      | Residential-Type Central Air Conditioners      | Heat Pumps | Individual Air Conditioners | District Chilled Water | Central Chillers | Packaged-Air-Conditioning Units |  |
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                      |  |            |                             |                        |                  |                                 |  |
| Roof or Ceiling Insulation .....                                      | 240           | 236                  | 21   | 32         | 61                          | 64                     | 117              | 93                              |  |
| Wall Insulation .....   | 117           | 116                  | 9  | 20         | 29                          | 26                     | 58               | 51                              |  |
| Storm or Multiple Glazing .....                                       | 173           | 170                  | 16   | 23         | 40                          | 38                     | 89               | 68                              |  |
| Tinted or Reflective Glass or Shading Film .....                      | 158           | 156                  | 12   | 14         | 32                          | 42                     | 84               | 66                              |  |
| Exterior or Interior Shading or Awnings .....                         | 197           | 196                  | 18   | 25         | 55                          | 55                     | 102              | 86                              |  |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                      |  |            |                             |                        |                  |                                 |  |
| VAV System .....  | 84            | 82                   | 9  | 8          | 23                          | 23                     | 54               | 40                              |  |
| Economizer Cycle .....  | 156           | 154                  | 16   | 19         | 41                          | 35                     | 99               | 78                              |  |
| HVAC Maintenance .....  | 301           | 297                  | 29   | 35         | 79                          | 72                     | 154              | 125                             |  |
| <b>Energy Management Practices (more than one may apply)</b>          |               |                      |  |            |                             |                        |                  |                                 |  |
| Energy Management and Control System .....                            | 132           | 131                  | 13   | 19         | 36                          | 38                     | 80               | 65                              |  |
| Energy Conservation Programs <sup>1</sup> .....                       | 99            | 95                   | 8  | 15         | 28                          | 20                     | 70               | 50                              |  |
| Energy Audit .....  | 99            | 97                   | 10   | 14         | 32                          | 17                     | 61               | 43                              |  |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 97            | 96                   | 13   | 9          | 28                          | 26                     | 70               | 44                              |  |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>     |               |                      |  |            |                             |                        |                  |                                 |  |
| Heating .....   | 144           | 143                  | 19   | 24         | 39                          | 22                     | 82               | 66                              |  |
| Cooling .....   | 145           | 145                  | 19   | 24         | 42                          | 22                     | 83               | 66                              |  |
| Hot Water .....   | 77            | 77                   | 8  | 11         | 23                          | 7                      | 51               | 35                              |  |
| Lighting .....  | 162           | 159                  | 18   | 28         | 44                          | 23                     | 91               | 69                              |  |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.17. Cooling Equipment in FBSS Buildings in Federal Region 6,  
Number of Buildings, 1993**

| Building Characteristics  | All Buildings | All Cooled Buildings | Cooling Equipment<br>(more than one may apply) |            |                             |                        |                  |                                 |
|---|---------------|----------------------|--|------------|-----------------------------|------------------------|------------------|---------------------------------|
|   |               |                      | Residential-Type Central Air Conditioners      | Heat Pumps | Individual Air Conditioners | District Chilled Water | Central Chillers | Packaged-Air-Conditioning Units |
| <b>All Buildings</b> .....  | <b>243</b>    | <b>241</b>           | <b>29</b>                                      | <b>11</b>  | <b>50</b>                   | <b>44</b>              | <b>122</b>       | <b>97</b>                       |
| <b>Building Floorspace (square feet)</b>                          |               |                      |  |            |                             |                        |                  |                                 |
| 10,000 to 50,000 .....  | 107           | 107                  | 10   | 4          | 19                          | 12                     | 31               | 54                              |
| 50,001 to 200,000 .....   | 86            | 85                   | 12   | 5          | 23                          | 16                     | 58               | 21                              |
| Over 200,000 .....  | 50            | 49                   | 7  | 2          | 8                           | 16                     | 33               | 22                              |
| <b>Principal Building Activity</b>                                |               |                      |  |            |                             |                        |                  |                                 |
| Education .....   | 6             | 6                    | 1  | NC         | NC                          | NC                     | 3                | 3                               |
| Health Care .....   | 35            | 35                   | 3  | 2          | 10                          | 16                     | 18               | 15                              |
| Laboratory .....  | 29            | 29                   | NC   | NC         | 7                           | 5                      | 17               | 7                               |
| Lodging .....   | 16            | 16                   | 2  | NC         | 5                           | 4                      | 4                | 5                               |
| Mercantile and Service .....                                      | 49            | 48                   | 8  | 4          | 5                           | NC                     | 22               | 31                              |
| Office .....  | 76            | 76                   | 11   | 3          | 15                          | 13                     | 47               | 24                              |
| All Others .....  | 32            | 31                   | 4  | 2          | 8                           | 6                      | 11               | 12                              |
| <b>Year Constructed</b>   |               |                      |  |            |                             |                        |                  |                                 |
| 1959 or Before .....  | 103           | 102                  | 15   | 3          | 30                          | 26                     | 47               | 34                              |
| 1960 to 1969 .....  | 38            | 38                   | 6  | 2          | 11                          | 6                      | 27               | 15                              |
| 1970 to 1979 .....  | 34            | 33                   | 5  | 2          | 6                           | 5                      | 22               | 14                              |
| 1980 to 1989 .....  | 57            | 57                   | 3  | 3          | 2                           | 6                      | 22               | 30                              |
| 1990 to 1993 .....  | 11            | 11                   | NC   | 1          | 1                           | 1                      | 4                | 4                               |
| <b>Federal Agency</b>   |               |                      |  |            |                             |                        |                  |                                 |
| Department of Defense .....                                       | 22            | 22                   | 1  | 2          | 3                           | 3                      | 8                | 8                               |
| General Services Administration ...                               | 35            | 35                   | 5  | 1          | 4                           | 8                      | 27               | 10                              |
| United States Postal Service .....                                | 61            | 60                   | 11   | 3          | 6                           | NC                     | 29               | 35                              |
| Veterans Administration .....                                     | 36            | 36                   | 4  | 1          | 10                          | 18                     | 16               | 14                              |
| All Others .....  | 89            | 88                   | 8  | 4          | 27                          | 15                     | 42               | 30                              |
| <b>Workers (main shift)</b>                                       |               |                      |  |            |                             |                        |                  |                                 |
| Less than 50 .....  | 70            | 69                   | 12   | 2          | 17                          | 10                     | 19               | 33                              |
| 50 to 99 .....  | 44            | 44                   | 5  | 2          | 7                           | 3                      | 21               | 16                              |
| 100 to 499 .....  | 80            | 80                   | 5  | 5          | 15                          | 16                     | 48               | 26                              |
| 500 or More .....   | 49            | 48                   | 7  | 2          | 11                          | 15                     | 34               | 22                              |
| <b>Weekly Operating Hours</b>                                     |               |                      |  |            |                             |                        |                  |                                 |
| 48 or Fewer .....   | 39            | 38                   | 6  | 2          | 9                           | 4                      | 20               | 11                              |
| 49 to 60 .....  | 46            | 46                   | 3  | 2          | 7                           | 14                     | 22               | 19                              |
| 61 to 167 .....   | 78            | 78                   | 10   | 3          | 16                          | 7                      | 30               | 35                              |
| Open Continuously .....   | 80            | 79                   | 10   | 4          | 18                          | 19                     | 50               | 32                              |
| <b>Multibuilding Facility</b>                                     |               |                      |  |            |                             |                        |                  |                                 |
| Yes .....   | 148           | 147                  | 15   | 7          | 39                          | 44                     | 73               | 47                              |
| No .....  | 95            | 94                   | 14   | 4          | 11                          | NC                     | 49               | 50                              |
| <b>Percent of Floorspace Cooled</b>                               |               |                      |  |            |                             |                        |                  |                                 |
| Not Cooled .....  | 3             | 1                    | NC   | NC         | NC                          | NC                     | NC               | NC                              |
| 1 to 50 .....   | 26            | 26                   | 1  | 1          | 13                          | 2                      | 4                | 13                              |
| 51 to 100 .....   | 214           | 214                  | 28   | 10         | 37                          | 42                     | 118              | 84                              |
| <b>Energy Conservation Features<br/>(more than one may apply)</b> |               |                      |  |            |                             |                        |                  |                                 |
| Any Conservation Feature .....                                    | 242           | 241                  | 29   | 11         | 50                          | 44                     | 122              | 97                              |
| Building Shell .....  | 228           | 227                  | 28   | 11         | 46                          | 40                     | 116              | 93                              |
| HVAC .....  | 236           | 235                  | 27   | 10         | 48                          | 44                     | 121              | 96                              |
| Lighting .....  | 136           | 135                  | 19   | 9          | 23                          | 24                     | 72               | 59                              |

See footnotes at end of table.

**Table 3.17. Cooling Equipment in FBSS Buildings in Federal Region 6,  
Number of Buildings, 1993 (Continued)**

| Building Characteristics  | All Buildings | All Cooled Buildings | Cooling Equipment<br>(more than one may apply) |            |                             |                        |                  |                                 |
|---|---------------|----------------------|--|------------|-----------------------------|------------------------|------------------|---------------------------------|
|   |               |                      | Residential-Type Central Air Conditioners      | Heat Pumps | Individual Air Conditioners | District Chilled Water | Central Chillers | Packaged-Air-Conditioning Units |
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                      |  |            |                             |                        |                  |                                 |
| Roof or Ceiling Insulation .....                                      | 196           | 195                  | 23   | 11         | 39                          | 29                     | 101              | 77                              |
| Wall Insulation .....   | 122           | 121                  | 9  | 8          | 22                          | 13                     | 63               | 51                              |
| Storm or Multiple Glazing .....                                       | 96            | 96                   | 10   | 8          | 16                          | 20                     | 48               | 43                              |
| Tinted or Reflective Glass or Shading Film .....                      | 127           | 126                  | 16   | 8          | 23                          | 22                     | 73               | 59                              |
| Exterior or Interior Shading or Awnings .....                         | 142           | 141                  | 20   | 9          | 29                          | 25                     | 74               | 65                              |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                      |  |            |                             |                        |                  |                                 |
| VAV System .....  | 65            | 65                   | 6  | 3          | 8                           | 18                     | 41               | 22                              |
| Economizer Cycle .....  | 123           | 122                  | 13   | 8          | 26                          | 27                     | 67               | 51                              |
| HVAC Maintenance .....  | 234           | 233                  | 27   | 9          | 48                          | 43                     | 121              | 95                              |
| <b>Energy Management Practices (more than one may apply)</b>          |               |                      |  |            |                             |                        |                  |                                 |
| Energy Management and Control System .....                            | 96            | 95                   | 10   | 6          | 17                          | 31                     | 54               | 37                              |
| Energy Conservation Programs <sup>1</sup> .....                       | 48            | 47                   | 7  | 2          | 6                           | 12                     | 23               | 28                              |
| Energy Audit .....  | 64            | 64                   | 8  | 4          | 10                          | 8                      | 32               | 29                              |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 57            | 57                   | 3  | 1          | 9                           | 13                     | 40               | 21                              |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>     |               |                      |  |            |                             |                        |                  |                                 |
| Heating .....   | 123           | 123                  | 18   | 6          | 17                          | 17                     | 53               | 54                              |
| Cooling .....   | 124           | 124                  | 17   | 6          | 17                          | 18                     | 54               | 54                              |
| Hot Water .....   | 33            | 33                   | 2  | 3          | 1                           | 8                      | 17               | 14                              |
| Lighting .....  | 120           | 120                  | 13   | 5          | 20                          | 17                     | 56               | 53                              |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.



**Table 3.18. Cooling Equipment in FBSS Buildings in Federal Region 9,  
Number of Buildings, 1993**

| Building Characteristics  | All Buildings | All Cooled Buildings | Cooling Equipment<br>(more than one may apply) |            |                             |                        |                  |                                 |
|---|---------------|----------------------|--|------------|-----------------------------|------------------------|------------------|---------------------------------|
|   |               |                      | Residential-Type Central Air Conditioners      | Heat Pumps | Individual Air Conditioners | District Chilled Water | Central Chillers | Packaged-Air-Conditioning Units |
| <b>All Buildings</b> .....  | <b>326</b>    | <b>292</b>           | <b>24</b>                                      | <b>32</b>  | <b>52</b>                   | <b>31</b>              | <b>139</b>       | <b>151</b>                      |
| <b>Building Floorspace (square feet)</b>                          |               |                      |  |            |                             |                        |                  |                                 |
| 10,000 to 50,000 .....  | 148           | 126                  | 17   | 15         | 25                          | 7                      | 40               | 59                              |
| 50,001 to 200,000 .....   | 123           | 114                  | 5  | 15         | 18                          | 15                     | 61               | 63                              |
| Over 200,000 .....  | 55            | 52                   | 2  | 2          | 9                           | 9                      | 38               | 29                              |
| <b>Principal Building Activity</b>                                |               |                      |  |            |                             |                        |                  |                                 |
| Education .....   | 12            | 8                    | NC   | 1          | NC                          | NC                     | 2                | 3                               |
| Health Care .....   | 48            | 45                   | 3  | 2          | 9                           | 17                     | 15               | 22                              |
| Laboratory .....  | 31            | 29                   | 3  | 7          | 5                           | 1                      | 24               | 17                              |
| Lodging .....   | 22            | 16                   | 1  | 1          | 4                           | 5                      | 3                | 5                               |
| Mercantile and Service .....                                      | 63            | 60                   | 7  | 8          | 11                          | 1                      | 30               | 30                              |
| Office .....  | 92            | 88                   | 8  | 9          | 16                          | 5                      | 45               | 54                              |
| All Others .....  | 58            | 46                   | 2  | 4          | 7                           | 2                      | 20               | 20                              |
| <b>Year Constructed</b>   |               |                      |  |            |                             |                        |                  |                                 |
| 1959 or Before .....  | 130           | 112                  | 10   | 14         | 35                          | 12                     | 49               | 55                              |
| 1960 to 1969 .....  | 55            | 50                   | 3  | 5          | 9                           | 2                      | 32               | 29                              |
| 1970 to 1979 .....  | 62            | 58                   | 5  | 5          | 7                           | 5                      | 28               | 35                              |
| 1980 to 1989 .....  | 65            | 59                   | 4  | 5          | 1                           | 11                     | 27               | 25                              |
| 1990 to 1993 .....  | 14            | 13                   | 2  | 3          | NC                          | 1                      | 3                | 7                               |
| <b>Federal Agency</b>   |               |                      |  |            |                             |                        |                  |                                 |
| Department of Defense .....                                       | 78            | 64                   | 6  | 4          | 18                          | 6                      | 25               | 22                              |
| General Services Administration .....                             | 39            | 38                   | 2  | NC         | 7                           | NC                     | 26               | 25                              |
| United States Postal Service .....                                | 63            | 62                   | 8  | 7          | 7                           | 2                      | 29               | 32                              |
| Veterans Administration .....                                     | 56            | 51                   | 3  | 3          | 10                          | 18                     | 12               | 26                              |
| All Others .....  | 90            | 77                   | 5  | 18         | 10                          | 5                      | 47               | 46                              |
| <b>Workers (main shift)</b>                                       |               |                      |  |            |                             |                        |                  |                                 |
| Less than 50 .....  | 93            | 70                   | 9  | 7          | 16                          | 5                      | 17               | 24                              |
| 50 to 99 .....  | 49            | 47                   | 6  | 6          | 4                           | 1                      | 21               | 30                              |
| 100 to 499 .....  | 134           | 128                  | 7  | 17         | 25                          | 17                     | 62               | 69                              |
| 500 or More .....   | 50            | 47                   | 2  | 2          | 7                           | 8                      | 39               | 28                              |
| <b>Weekly Operating Hours</b>                                     |               |                      |  |            |                             |                        |                  |                                 |
| 48 or Fewer .....   | 80            | 68                   | 6  | 5          | 16                          | 4                      | 26               | 38                              |
| 49 to 60 .....  | 65            | 61                   | 3  | 5          | 14                          | 4                      | 36               | 37                              |
| 61 to 167 .....   | 68            | 61                   | 8  | 7          | 7                           | 2                      | 26               | 30                              |
| Open Continuously .....   | 113           | 102                  | 7  | 15         | 15                          | 21                     | 51               | 46                              |
| <b>Multibuilding Facility</b>                                     |               |                      |  |            |                             |                        |                  |                                 |
| Yes .....   | 200           | 171                  | 14   | 24         | 34                          | 30                     | 73               | 85                              |
| No .....  | 126           | 121                  | 10   | 8          | 18                          | 1                      | 66               | 66                              |
| <b>Percent of Floorspace Cooled</b>                               |               |                      |  |            |                             |                        |                  |                                 |
| Not Cooled .....  | 40            | 6                    | NC   | NC         | NC                          | NC                     | NC               | NC                              |
| 1 to 50 .....   | 55            | 55                   | 6  | 5          | 27                          | 3                      | 15               | 25                              |
| 51 to 100 .....   | 231           | 231                  | 18   | 27         | 25                          | 28                     | 124              | 126                             |
| <b>Energy Conservation Features<br/>(more than one may apply)</b> |               |                      |  |            |                             |                        |                  |                                 |
| Any Conservation Feature .....                                    | 319           | 291                  | 24   | 32         | 52                          | 31                     | 139              | 151                             |
| Building Shell .....  | 248           | 228                  | 21   | 26         | 38                          | 27                     | 106              | 120                             |
| HVAC .....  | 307           | 282                  | 22   | 32         | 49                          | 31                     | 136              | 147                             |
| Lighting .....  | 217           | 205                  | 15   | 25         | 32                          | 21                     | 114              | 121                             |

See footnotes at end of table.

**Table 3.18. Cooling Equipment in FBSS Buildings in Federal Region 9,  
Number of Buildings, 1993 (Continued)**

| Building Characteristics  | All Buildings | All Cooled Buildings | Cooling Equipment<br>(more than one may apply) |            |                             |                        |                  |                                 |  |
|---|---------------|----------------------|--|------------|-----------------------------|------------------------|------------------|---------------------------------|--|
|   |               |                      | Residential-Type Central Air Conditioners      | Heat Pumps | Individual Air Conditioners | District Chilled Water | Central Chillers | Packaged-Air-Conditioning Units |  |
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                      |  |            |                             |                        |                  |                                 |  |
| Roof or Ceiling Insulation .....                                      | 185           | 169                  | 16   | 22         | 23                          | 22                     | 84               | 85                              |  |
| Wall Insulation .....   | 113           | 105                  | 9  | 14         | 13                          | 17                     | 50               | 49                              |  |
| Storm or Multiple Glazing .....                                       | 57            | 55                   | 6  | 10         | 7                           | 14                     | 26               | 31                              |  |
| Tinted or Reflective Glass or Shading Film .....                      | 133           | 130                  | 10   | 19         | 19                          | 19                     | 63               | 76                              |  |
| Exterior or Interior Shading or Awnings .....                         | 164           | 152                  | 15   | 20         | 24                          | 22                     | 72               | 85                              |  |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                      |  |            |                             |                        |                  |                                 |  |
| VAV System .....  | 75            | 74                   | 5  | 6          | 7                           | 12                     | 52               | 43                              |  |
| Economizer Cycle .....  | 140           | 135                  | 9  | 12         | 17                          | 11                     | 86               | 79                              |  |
| HVAC Maintenance .....  | 306           | 281                  | 22   | 32         | 49                          | 31                     | 135              | 146                             |  |
| <b>Energy Management Practices (more than one may apply)</b>          |               |                      |  |            |                             |                        |                  |                                 |  |
| Energy Management and Control System .....                            | 71            | 71                   | 4  | 11         | 7                           | 13                     | 51               | 34                              |  |
| Energy Conservation Programs <sup>1</sup> .....                       | 124           | 115                  | 9  | 16         | 18                          | 15                     | 68               | 65                              |  |
| Energy Audit .....  | 99            | 92                   | 10   | 11         | 13                          | 12                     | 47               | 44                              |  |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 52            | 50                   | 3  | 3          | 4                           | 10                     | 25               | 27                              |  |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>     |               |                      |  |            |                             |                        |                  |                                 |  |
| Heating .....   | 151           | 141                  | 9  | 13         | 22                          | 4                      | 73               | 86                              |  |
| Cooling .....   | 157           | 157                  | 13   | 12         | 29                          | 3                      | 74               | 88                              |  |
| Hot Water .....   | 68            | 64                   | 3  | 1          | 9                           | NC                     | 35               | 50                              |  |
| Lighting .....  | 172           | 158                  | 15   | 15         | 32                          | 6                      | 73               | 87                              |  |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.19. Cooling Equipment in FBSS Buildings in Federal Region 3,  
Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | All Cooled Buildings | Cooling Equipment<br>(more than one may apply) |               |                             |                        |                  |                                 |
|---|---------------|----------------------|--|---------------|-----------------------------|------------------------|------------------|---------------------------------|
|   |               |                      | Residential-Type Central Air Conditioners      | Heat Pumps    | Individual Air Conditioners | District Chilled Water | Central Chillers | Packaged-Air-Conditioning Units |
| <b>All Buildings</b> .....  | <b>94,880</b> | <b>93,454</b>        | <b>19,073</b>                                  | <b>11,388</b> | <b>28,082</b>               | <b>28,194</b>          | <b>63,914</b>    | <b>56,664</b>                   |
| <b>Building Floorspace (square feet)</b>                          |               |                      |  |               |                             |                        |                  |                                 |
| 10,000 to 50,000 .....  | 2,564         | 2,512                | 222  | 514           | 561                         | 320                    | 750              | 1,005                           |
| 50,001 to 200,000 .....   | 13,166        | 12,771               | 691  | 60            | 2,589                       | 4,169                  | 7,591            | 4,096                           |
| Over 200,000 .....  | 79,149        | 78,171               | 18,161   | 10,814        | 24,932                      | 23,706                 | 55,573           | 51,562                          |
| <b>Principal Building Activity</b>                                |               |                      |  |               |                             |                        |                  |                                 |
| Education .....   | 598           | 598                  | NC   | NC            | 258                         | NC                     | 210              | 317                             |
| Health Care .....   | 14,559        | 14,450               | 1,702  | 60            | 4,115                       | 7,721                  | 7,471            | 9,246                           |
| Laboratory .....  | 5,165         | 5,165                | 569  | 20            | 501                         | 2,081                  | 2,873            | 506                             |
| Lodging .....   | 2,558         | 2,529                | 36   | 31            | 442                         | 66                     | 816              | 541                             |
| Mercantile and Service .....                                      | 7,966         | 7,224                | 1,311  | 124           | 2,482                       | NC                     | 5,759            | 4,086                           |
| Office .....  | 56,881        | 56,794               | 15,310   | 11,053        | 19,255                      | 17,649                 | 41,892           | 37,522                          |
| All Others .....  | 7,152         | 6,693                | 145  | 101           | 1,029                       | 677                    | 4,893            | 4,446                           |
| <b>Year Constructed</b>   |               |                      |  |               |                             |                        |                  |                                 |
| 1959 or Before .....  | 43,829        | 43,462               | 15,136   | 5,577         | 19,969                      | 16,274                 | 26,489           | 30,974                          |
| 1960 to 1969 .....  | 19,564        | 19,477               | 1,286  | 2,182         | 1,608                       | 5,296                  | 13,536           | 6,958                           |
| 1970 to 1979 .....  | 17,737        | 16,966               | 1,652  | 3,102         | 3,857                       | 3,593                  | 13,559           | 11,450                          |
| 1980 to 1989 .....  | 8,975         | 8,775                | 999  | 458           | 1,011                       | 1,787                  | 6,735            | 4,831                           |
| 1990 to 1993 .....  | 4,774         | 4,774                | NC   | 70            | 1,638                       | 1,243                  | 3,595            | 2,451                           |
| <b>Federal Agency</b>   |               |                      |  |               |                             |                        |                  |                                 |
| Department of Defense .....                                       | 13,988        | 13,988               | 6,836  | NC            | 390                         | 11,568                 | 454              | 9,681                           |
| General Services Administration .....                             | 46,205        | 45,859               | 8,083  | 9,904         | 15,376                      | 8,147                  | 41,067           | 27,650                          |
| United States Postal Service .....                                | 9,392         | 8,650                | 1,488  | 1,174         | 4,030                       | NC                     | 7,635            | 6,126                           |
| Veterans Administration .....                                     | 13,306        | 12,998               | 1,702  | 98            | 4,166                       | 4,896                  | 8,243            | 7,196                           |
| All Others .....  | 11,989        | 11,960               | 965  | 212           | 4,119                       | 3,582                  | 6,515            | 6,011                           |
| <b>Workers (main shift)</b>                                       |               |                      |  |               |                             |                        |                  |                                 |
| Less than 50 .....  | 4,102         | 3,419                | 198  | 685           | 918                         | 685                    | 1,132            | 1,200                           |
| 50 to 99 .....  | 1,903         | 1,903                | 163  | 229           | 533                         | 421                    | 399              | 755                             |
| 100 to 499 .....  | 13,632        | 13,608               | 552  | 1,299         | 2,527                       | 4,132                  | 7,825            | 5,116                           |
| 500 or More .....   | 75,243        | 74,524               | 18,161   | 9,176         | 24,104                      | 22,956                 | 54,558           | 49,592                          |
| <b>Weekly Operating Hours</b>                                     |               |                      |  |               |                             |                        |                  |                                 |
| 48 or Fewer .....   | 9,694         | 9,499                | 3,943  | 3,732         | 3,561                       | 1,164                  | 6,286            | 7,577                           |
| 49 to 60 .....  | 25,540        | 25,540               | 2,461  | 3,575         | 9,528                       | 7,076                  | 20,682           | 14,457                          |
| 61 to 167 .....   | 11,993        | 11,969               | 2,377  | 2,901         | 3,956                       | 938                    | 10,252           | 6,419                           |
| Open Continuously .....   | 47,653        | 46,446               | 10,293   | 1,181         | 11,037                      | 19,016                 | 26,695           | 28,210                          |
| <b>Multibuilding Facility</b>                                     |               |                      |  |               |                             |                        |                  |                                 |
| Yes .....   | 43,861        | 42,718               | 6,223  | 7,434         | 12,523                      | 18,875                 | 24,994           | 22,887                          |
| No .....  | 51,018        | 50,736               | 12,851   | 3,954         | 15,559                      | 9,319                  | 38,921           | 33,777                          |
| <b>Percent of Floorspace Cooled</b>                               |               |                      |  |               |                             |                        |                  |                                 |
| Not Cooled .....  | 3,582         | 2,156                | NC   | NC            | NC                          | NC                     | NC               | NC                              |
| 1 to 50 .....   | 9,874         | 9,874                | 78   | 1,439         | 5,230                       | 5,301                  | 5,180            | 9,078                           |
| 51 to 100 .....   | 81,424        | 81,424               | 18,995   | 9,949         | 22,852                      | 22,893                 | 58,734           | 47,586                          |
| <b>Energy Conservation Features<br/>(more than one may apply)</b> |               |                      |  |               |                             |                        |                  |                                 |
| Any Conservation Feature .....                                    | 94,361        | 93,394               | 19,073   | 11,388        | 28,082                      | 28,194                 | 63,914           | 56,664                          |
| Building Shell .....  | 84,557        | 83,590               | 16,160   | 9,517         | 25,938                      | 28,046                 | 56,118           | 51,507                          |
| HVAC .....  | 93,543        | 92,576               | 19,060   | 10,951        | 28,023                      | 28,194                 | 63,281           | 56,075                          |
| Lighting .....  | 80,953        | 80,039               | 16,883   | 11,170        | 23,933                      | 23,915                 | 57,368           | 51,246                          |

See footnotes at end of table.

**Table 3.19. Cooling Equipment in FBSS Buildings in Federal Region 3, Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | All Cooled Buildings | Cooling Equipment<br>(more than one may apply) |            |                             |                        |                  |                                 |
|---|---------------|----------------------|--|------------|-----------------------------|------------------------|------------------|---------------------------------|
|   |               |                      | Residential-Type Central Air Conditioners      | Heat Pumps | Individual Air Conditioners | District Chilled Water | Central Chillers | Packaged-Air-Conditioning Units |
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                      |  |            |                             |                        |                  |                                 |
| Roof or Ceiling Insulation .....                                      | 69,654        | 68,795               | 14,632   | 8,197      | 20,569                      | 25,244                 | 43,797           | 41,467                          |
| Wall Insulation .....   | 31,876        | 31,847               | 4,645  | 6,557      | 9,348                       | 10,104                 | 22,676           | 19,876                          |
| Storm or Multiple Glazing .....                                       | 46,141        | 45,290               | 12,502   | 3,343      | 11,165                      | 18,464                 | 26,086           | 28,265                          |
| Tinted or Reflective Glass or Shading Film .....                      | 46,829        | 46,086               | 6,349  | 5,287      | 14,276                      | 12,692                 | 34,311           | 27,592                          |
| Exterior or Interior Shading or Awnings .....                         | 57,183        | 57,096               | 7,591  | 7,971      | 21,603                      | 17,691                 | 41,124           | 36,029                          |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                      |  |            |                             |                        |                  |                                 |
| VAV System .....  | 37,611        | 36,783               | 4,320  | 2,670      | 14,118                      | 12,225                 | 28,104           | 22,157                          |
| Economizer Cycle .....  | 61,089        | 60,894               | 14,646   | 7,007      | 20,911                      | 17,239                 | 45,863           | 42,016                          |
| HVAC Maintenance .....  | 93,402        | 92,522               | 19,060   | 10,951     | 28,023                      | 28,194                 | 63,227           | 56,075                          |
| <b>Energy Management Practices (more than one may apply)</b>          |               |                      |  |            |                             |                        |                  |                                 |
| Energy Management and Control System .....                            | 61,891        | 61,172               | 14,532   | 8,283      | 16,973                      | 19,658                 | 42,987           | 40,812                          |
| Energy Conservation Programs <sup>1</sup> .....                       | 59,284        | 58,313               | 12,578   | 6,734      | 16,389                      | 17,670                 | 43,140           | 42,232                          |
| Energy Audit .....  | 37,621        | 37,392               | 9,461  | 7,113      | 13,066                      | 12,419                 | 25,333           | 26,167                          |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 52,924        | 52,665               | 15,674   | 7,283      | 16,626                      | 17,815                 | 37,532           | 34,415                          |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>     |               |                      |  |            |                             |                        |                  |                                 |
| Heating .....   | 43,828        | 43,805               | 8,494  | 10,009     | 15,847                      | 8,444                  | 35,648           | 27,091                          |
| Cooling .....   | 43,757        | 43,757               | 8,415  | 9,798      | 15,843                      | 8,444                  | 35,589           | 27,036                          |
| Hot Water .....   | 26,018        | 26,018               | 5,189  | 5,917      | 8,884                       | 4,751                  | 19,722           | 14,679                          |
| Lighting .....  | 44,717        | 44,498               | 8,568  | 10,126     | 16,674                      | 7,915                  | 36,596           | 28,068                          |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment. NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.20. Cooling Equipment in FBSS Buildings in Federal Region 6,  
Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | All Cooled Buildings | Cooling Equipment<br>(more than one may apply) |              |                             |                        |                  |                                 |
|---|---------------|----------------------|--|--------------|-----------------------------|------------------------|------------------|---------------------------------|
|   |               |                      | Residential-Type Central Air Conditioners      | Heat Pumps   | Individual Air Conditioners | District Chilled Water | Central Chillers | Packaged-Air-Conditioning Units |
| <b>All Buildings</b> .....  | <b>35,816</b> | <b>35,273</b>        | <b>4,706</b>                                   | <b>1,549</b> | <b>6,950</b>                | <b>10,856</b>          | <b>21,596</b>    | <b>14,104</b>                   |
| <b>Building Floorspace (square feet)</b>                          |               |                      |  |              |                             |                        |                  |                                 |
| 10,000 to 50,000 .....  | 2,591         | 2,591                | 177  | 95           | 484                         | 306                    | 909              | 1,268                           |
| 50,001 to 200,000 .....   | 9,548         | 9,466                | 1,213  | 604          | 3,013                       | 1,791                  | 6,696            | 2,399                           |
| Over 200,000 .....  | 23,677        | 23,216               | 3,316  | 850          | 3,453                       | 8,760                  | 13,990           | 10,437                          |
| <b>Principal Building Activity</b>                                |               |                      |  |              |                             |                        |                  |                                 |
| Education .....   | 168           | 168                  | 28   | NC           | NC                          | NC                     | 96               | 63                              |
| Health Care .....   | 12,094        | 12,094               | 414  | 277          | 2,552                       | 6,789                  | 5,520            | 5,111                           |
| Laboratory .....  | 3,331         | 3,331                | NC   | NC           | 351                         | 909                    | 1,625            | 562                             |
| Lodging .....   | 942           | 942                  | 149  | NC           | 385                         | 168                    | 447              | 271                             |
| Mercantile and Service .....                                      | 6,236         | 5,776                | 2,025  | 926          | 1,281                       | NC                     | 4,942            | 3,189                           |
| Office .....  | 10,799        | 10,799               | 1,936  | 216          | 1,652                       | 2,586                  | 7,897            | 4,325                           |
| All Others .....  | 2,247         | 2,165                | 155  | 130          | 729                         | 404                    | 1,069            | 583                             |
| <b>Year Constructed</b>   |               |                      |  |              |                             |                        |                  |                                 |
| 1959 or Before .....  | 13,258        | 13,176               | 1,049  | 199          | 4,516                       | 4,028                  | 8,341            | 5,200                           |
| 1960 to 1969 .....  | 6,386         | 6,386                | 2,558  | 679          | 1,581                       | 1,211                  | 5,037            | 3,503                           |
| 1970 to 1979 .....  | 6,175         | 5,714                | 1,035  | 435          | 786                         | 1,355                  | 3,366            | 2,601                           |
| 1980 to 1989 .....  | 6,903         | 6,903                | 64   | 211          | 24                          | 1,562                  | 4,602            | 2,692                           |
| 1990 to 1993 .....  | 3,095         | 3,095                | NC   | 25           | 42                          | 2,700                  | 250              | 109                             |
| <b>Federal Agency</b>   |               |                      |  |              |                             |                        |                  |                                 |
| Department of Defense .....                                       | 1,668         | 1,668                | 24   | 88           | 68                          | 106                    | 604              | 872                             |
| General Services Administration .....                             | 7,888         | 7,888                | 1,700  | 162          | 731                         | 1,902                  | 6,132            | 3,235                           |
| United States Postal Service .....                                | 7,027         | 6,566                | 2,156  | 863          | 1,382                       | NC                     | 5,695            | 3,468                           |
| Veterans Administration .....                                     | 11,375        | 11,375               | 409  | 142          | 2,539                       | 6,788                  | 5,327            | 4,422                           |
| All Others .....  | 7,858         | 7,776                | 418  | 294          | 2,230                       | 2,061                  | 3,839            | 2,107                           |
| <b>Workers (main shift)</b>                                       |               |                      |  |              |                             |                        |                  |                                 |
| Less than 50 .....  | 2,548         | 2,466                | 477  | 170          | 775                         | 363                    | 1,137            | 847                             |
| 50 to 99 .....  | 2,026         | 2,026                | 333  | 42           | 339                         | 144                    | 1,216            | 549                             |
| 100 to 499 .....  | 9,029         | 9,029                | 581  | 487          | 1,977                       | 2,153                  | 5,557            | 2,399                           |
| 500 or More .....   | 22,213        | 21,752               | 3,316  | 850          | 3,858                       | 8,197                  | 13,686           | 10,310                          |
| <b>Weekly Operating Hours</b>                                     |               |                      |  |              |                             |                        |                  |                                 |
| 48 or Fewer .....   | 2,740         | 2,658                | 386  | 304          | 628                         | 269                    | 1,959            | 379                             |
| 49 to 60 .....  | 6,460         | 6,460                | 330  | 57           | 732                         | 3,048                  | 3,169            | 1,720                           |
| 61 to 167 .....   | 8,051         | 8,051                | 1,562  | 101          | 1,646                       | 1,320                  | 4,724            | 3,406                           |
| Open Continuously .....   | 18,565        | 18,104               | 2,429  | 1,087        | 3,944                       | 6,218                  | 11,744           | 8,599                           |
| <b>Multibuilding Facility</b>                                     |               |                      |  |              |                             |                        |                  |                                 |
| Yes .....   | 24,441        | 24,359               | 2,654  | 832          | 4,997                       | 10,856                 | 12,575           | 7,066                           |
| No .....  | 11,375        | 10,915               | 2,052  | 717          | 1,952                       | NC                     | 9,021            | 7,038                           |
| <b>Percent of Floorspace Cooled</b>                               |               |                      |  |              |                             |                        |                  |                                 |
| Not Cooled .....  | 554           | 11                   | NC   | NC           | NC                          | NC                     | NC               | NC                              |
| 1 to 50 .....   | 1,951         | 1,951                | 24   | 63           | 888                         | 454                    | 425              | 1,108                           |
| 51 to 100 .....   | 33,312        | 33,312               | 4,683  | 1,486        | 6,061                       | 10,402                 | 21,171           | 12,996                          |
| <b>Energy Conservation Features<br/>(more than one may apply)</b> |               |                      |  |              |                             |                        |                  |                                 |
| Any Conservation Feature .....                                    | 35,734        | 35,273               | 4,706  | 1,549        | 6,950                       | 10,856                 | 21,596           | 14,104                          |
| Building Shell .....  | 33,946        | 33,485               | 4,579  | 1,549        | 6,405                       | 10,258                 | 20,632           | 13,783                          |
| HVAC .....  | 35,425        | 34,965               | 4,595  | 1,524        | 6,919                       | 10,856                 | 21,454           | 14,094                          |
| Lighting .....  | 25,654        | 25,193               | 4,166  | 1,507        | 3,509                       | 9,134                  | 14,852           | 10,742                          |

See footnotes at end of table.

**Table 3.20. Cooling Equipment in FBSS Buildings in Federal Region 6,  
Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | All Cooled Buildings | Cooling Equipment<br>(more than one may apply) |            |                             |                        |                  |                                 |
|---|---------------|----------------------|--|------------|-----------------------------|------------------------|------------------|---------------------------------|
|   |               |                      | Residential-Type Central Air Conditioners      | Heat Pumps | Individual Air Conditioners | District Chilled Water | Central Chillers | Packaged-Air-Conditioning Units |
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                      |  |            |                             |                        |                  |                                 |
| Roof or Ceiling Insulation .....                                      | 28,249        | 27,789               | 3,715  | 1,549      | 4,623                       | 8,150                  | 17,119           | 10,265                          |
| Wall Insulation .....   | 20,550        | 20,089               | 1,922  | 1,046      | 1,632                       | 5,793                  | 11,673           | 7,286                           |
| Storm or Multiple Glazing .....                                       | 17,939        | 17,939               | 960  | 858        | 2,937                       | 7,518                  | 9,559            | 7,045                           |
| Tinted or Reflective Glass or Shading Film .....                      | 24,768        | 24,307               | 4,010  | 1,350      | 3,972                       | 8,554                  | 14,981           | 10,341                          |
| Exterior or Interior Shading or Awnings .....                         | 26,067        | 25,606               | 3,685  | 1,019      | 5,014                       | 8,430                  | 15,968           | 11,876                          |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                      |  |            |                             |                        |                  |                                 |
| VAV System .....  | 18,518        | 18,518               | 1,443  | 305        | 2,105                       | 6,902                  | 10,897           | 7,170                           |
| Economizer Cycle .....  | 23,542        | 23,081               | 2,507  | 994        | 4,263                       | 8,463                  | 13,305           | 10,331                          |
| HVAC Maintenance .....  | 35,341        | 34,880               | 4,595  | 1,461      | 6,919                       | 10,834                 | 21,454           | 14,031                          |
| <b>Energy Management Practices (more than one may apply)</b>          |               |                      |  |            |                             |                        |                  |                                 |
| Energy Management and Control System .....                            | 23,099        | 22,638               | 2,379  | 829        | 4,000                       | 9,349                  | 13,285           | 9,541                           |
| Energy Conservation Programs <sup>1</sup> .....                       | 13,513        | 13,052               | 2,207  | 88         | 1,009                       | 5,258                  | 7,116            | 6,929                           |
| Energy Audit .....  | 11,690        | 11,690               | 1,630  | 618        | 1,946                       | 2,347                  | 8,219            | 6,103                           |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 15,538        | 15,538               | 673  | 162        | 2,121                       | 5,840                  | 9,365            | 6,418                           |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>     |               |                      |  |            |                             |                        |                  |                                 |
| Heating .....   | 13,162        | 13,162               | 2,260  | 449        | 1,868                       | 3,760                  | 7,813            | 4,832                           |
| Cooling .....   | 13,864        | 13,864               | 2,237  | 449        | 1,868                       | 4,163                  | 8,135            | 4,832                           |
| Hot Water .....   | 4,554         | 4,554                | 180  | 117        | 190                         | 1,668                  | 2,659            | 1,764                           |
| Lighting .....  | 12,847        | 12,847               | 2,115  | 405        | 1,998                       | 3,185                  | 8,199            | 4,940                           |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.21. Cooling Equipment in FBSS Buildings in Federal Region 9,  
Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | All Cooled Buildings | Cooling Equipment<br>(more than one may apply) |              |                             |                        |                  |                                 |
|---|---------------|----------------------|--|--------------|-----------------------------|------------------------|------------------|---------------------------------|
|   |               |                      | Residential-Type Central Air Conditioners      | Heat Pumps   | Individual Air Conditioners | District Chilled Water | Central Chillers | Packaged-Air-Conditioning Units |
| <b>All Buildings</b> .....  | <b>44,316</b> | <b>41,907</b>        | <b>1,900</b>                                   | <b>2,724</b> | <b>5,723</b>                | <b>7,647</b>           | <b>27,723</b>    | <b>23,989</b>                   |
| <b>Building Floorspace (square feet)</b>                          |               |                      |  |              |                             |                        |                  |                                 |
| 10,000 to 50,000 .....  | 3,858         | 3,277                | 387  | 371          | 607                         | 244                    | 1,084            | 1,622                           |
| 50,001 to 200,000 .....   | 12,680        | 11,875               | 674  | 1,615        | 1,884                       | 1,641                  | 6,933            | 6,530                           |
| Over 200,000 .....  | 27,778        | 26,754               | 839  | 738          | 3,232                       | 5,763                  | 19,706           | 15,837                          |
| <b>Principal Building Activity</b>                                |               |                      |  |              |                             |                        |                  |                                 |
| Education .....   | 628           | 488                  | NC   | 38           | NC                          | NC                     | 128              | 205                             |
| Health Care .....   | 9,903         | 9,711                | 249  | 208          | 650                         | 4,898                  | 4,137            | 5,080                           |
| Laboratory .....  | 2,601         | 2,570                | 243  | 657          | 677                         | 198                    | 2,240            | 1,689                           |
| Lodging .....   | 1,220         | 982                  | 15   | 59           | 79                          | 165                    | 310              | 208                             |
| Mercantile and Service .....                                      | 8,194         | 8,079                | 587  | 1,140        | 1,524                       | 466                    | 6,663            | 4,637                           |
| Office .....  | 16,380        | 15,551               | 417  | 464          | 2,466                       | 448                    | 12,001           | 10,923                          |
| All Others .....  | 5,390         | 4,526                | 388  | 159          | 326                         | 1,472                  | 2,245            | 1,246                           |
| <b>Year Constructed</b>   |               |                      |  |              |                             |                        |                  |                                 |
| 1959 or Before .....  | 13,553        | 12,111               | 1,002  | 1,210        | 2,910                       | 2,601                  | 6,210            | 5,923                           |
| 1960 to 1969 .....  | 9,082         | 8,892                | 43   | 574          | 1,901                       | 445                    | 6,874            | 5,839                           |
| 1970 to 1979 .....  | 12,041        | 11,601               | 285  | 603          | 898                         | 1,585                  | 9,075            | 7,645                           |
| 1980 to 1989 .....  | 7,955         | 7,761                | 92   | 290          | 14                          | 2,551                  | 4,892            | 3,758                           |
| 1990 to 1993 .....  | 1,684         | 1,541                | 478  | 46           | NC                          | 466                    | 672              | 823                             |
| <b>Federal Agency</b>   |               |                      |  |              |                             |                        |                  |                                 |
| Department of Defense .....                                       | 8,489         | 7,225                | 515  | 161          | 1,222                       | 3,069                  | 2,706            | 1,382                           |
| General Services Administration .....                             | 12,505        | 12,146               | 202  | NC           | 1,457                       | NC                     | 10,369           | 8,924                           |
| United States Postal Service .....                                | 8,387         | 8,375                | 615  | 1,089        | 1,452                       | 626                    | 6,693            | 4,763                           |
| Veterans Administration .....                                     | 8,824         | 8,469                | 289  | 266          | 772                         | 3,504                  | 3,815            | 5,078                           |
| All Others .....  | 6,111         | 5,691                | 280  | 1,207        | 821                         | 448                    | 4,140            | 3,843                           |
| <b>Workers (main shift)</b>                                       |               |                      |  |              |                             |                        |                  |                                 |
| Less than 50 .....  | 3,684         | 2,830                | 170  | 112          | 732                         | 165                    | 492              | 1,025                           |
| 50 to 99 .....  | 2,161         | 2,032                | 171  | 409          | 205                         | 76                     | 1,050            | 1,396                           |
| 100 to 499 .....  | 14,017        | 13,382               | 720  | 1,667        | 2,633                       | 2,026                  | 7,527            | 6,942                           |
| 500 or More .....   | 24,454        | 23,663               | 839  | 536          | 2,153                       | 5,380                  | 18,654           | 14,625                          |
| <b>Weekly Operating Hours</b>                                     |               |                      |  |              |                             |                        |                  |                                 |
| 48 or Fewer .....   | 4,822         | 4,322                | 171  | 721          | 1,185                       | 372                    | 1,813            | 2,524                           |
| 49 to 60 .....  | 13,424        | 12,875               | 589  | 412          | 1,683                       | 742                    | 10,962           | 9,267                           |
| 61 to 167 .....   | 5,706         | 5,264                | 210  | 306          | 1,378                       | 172                    | 3,394            | 2,388                           |
| Open Continuously .....   | 20,364        | 19,446               | 930  | 1,285        | 1,477                       | 6,361                  | 11,554           | 9,810                           |
| <b>Multibuilding Facility</b>                                     |               |                      |  |              |                             |                        |                  |                                 |
| Yes .....   | 26,821        | 24,882               | 1,673  | 1,696        | 2,956                       | 7,487                  | 14,574           | 13,236                          |
| No .....  | 17,495        | 17,025               | 227  | 1,028        | 2,767                       | 160                    | 13,149           | 10,753                          |
| <b>Percent of Floorspace Cooled</b>                               |               |                      |  |              |                             |                        |                  |                                 |
| Not Cooled .....  | 2,956         | 547                  | NC   | NC           | NC                          | NC                     | NC               | NC                              |
| 1 to 50 .....   | 7,304         | 7,304                | 531  | 412          | 2,253                       | 1,436                  | 3,430            | 3,059                           |
| 51 to 100 .....   | 34,056        | 34,056               | 1,369  | 2,312        | 3,471                       | 6,212                  | 24,293           | 20,930                          |
| <b>Energy Conservation Features<br/>(more than one may apply)</b> |               |                      |  |              |                             |                        |                  |                                 |
| Any Conservation Feature .....                                    | 44,023        | 41,894               | 1,900  | 2,724        | 5,723                       | 7,647                  | 27,723           | 23,989                          |
| Building Shell .....  | 34,105        | 32,754               | 1,670  | 2,320        | 4,149                       | 7,342                  | 20,592           | 18,416                          |
| HVAC .....  | 43,116        | 41,282               | 1,847  | 2,724        | 5,520                       | 7,647                  | 27,301           | 23,777                          |
| Lighting .....  | 34,825        | 33,846               | 1,693  | 2,439        | 4,449                       | 5,559                  | 24,098           | 20,584                          |

See footnotes at end of table.

**Table 3.21. Cooling Equipment in FBSS Buildings in Federal Region 9,  
Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | All Cooled Buildings | Cooling Equipment<br>(more than one may apply) |            |                             |                        |                  |                                 |
|---|---------------|----------------------|--|------------|-----------------------------|------------------------|------------------|---------------------------------|
|   |               |                      | Residential-Type Central Air Conditioners      | Heat Pumps | Individual Air Conditioners | District Chilled Water | Central Chillers | Packaged-Air-Conditioning Units |
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                      |  |            |                             |                        |                  |                                 |
| Roof or Ceiling Insulation .....                                      | 27,234        | 26,314               | 1,519  | 1,969      | 2,868                       | 6,977                  | 17,294           | 13,549                          |
| Wall Insulation .....   | 17,462        | 16,882               | 789  | 1,122      | 1,795                       | 5,613                  | 10,215           | 8,362                           |
| Storm or Multiple Glazing .....                                       | 10,260        | 10,213               | 863  | 413        | 943                         | 4,513                  | 5,617            | 5,754                           |
| Tinted or Reflective Glass or Shading Film .....                      | 22,381        | 22,267               | 1,012  | 2,071      | 3,297                       | 5,562                  | 14,117           | 12,304                          |
| Exterior or Interior Shading or Awnings .....                         | 24,370        | 23,549               | 1,466  | 1,898      | 2,499                       | 6,065                  | 14,874           | 14,363                          |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                      |  |            |                             |                        |                  |                                 |
| VAV System .....  | 15,577        | 15,217               | 778  | 215        | 1,171                       | 3,893                  | 11,054           | 9,085                           |
| Economizer Cycle .....  | 26,367        | 25,751               | 1,221  | 1,678      | 2,927                       | 1,598                  | 21,105           | 15,872                          |
| HVAC Maintenance .....  | 43,098        | 41,264               | 1,847  | 2,724      | 5,520                       | 7,647                  | 27,284           | 23,759                          |
| <b>Energy Management Practices (more than one may apply)</b>          |               |                      |  |            |                             |                        |                  |                                 |
| Energy Management and Control System .....                            | 18,231        | 18,231               | 1,013  | 1,433      | 1,620                       | 5,146                  | 13,372           | 8,856                           |
| Energy Conservation Programs <sup>1</sup> .....                       | 24,699        | 24,044               | 1,118  | 1,823      | 2,404                       | 5,465                  | 16,944           | 14,389                          |
| Energy Audit .....  | 17,444        | 17,169               | 886  | 863        | 1,684                       | 3,138                  | 12,296           | 10,548                          |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 14,570        | 14,403               | 677  | 412        | 726                         | 4,034                  | 9,296            | 9,034                           |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>     |               |                      |  |            |                             |                        |                  |                                 |
| Heating .....   | 19,631        | 18,976               | 434  | 1,102      | 3,039                       | 478                    | 14,609           | 13,018                          |
| Cooling .....   | 19,219        | 19,219               | 329  | 904        | 2,915                       | 279                    | 14,276           | 12,614                          |
| Hot Water .....   | 13,614        | 13,163               | 103  | 107        | 1,239                       | NC                     | 10,607           | 10,594                          |
| Lighting .....  | 21,155        | 20,247               | 756  | 1,179      | 3,391                       | 860                    | 14,872           | 13,192                          |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.



**Table 3.22. Refrigeration Equipment in FBSS Buildings in Federal Region 3, Number of Buildings and Floorspace, 1993**

| Building Characteristics                                     | Number of Buildings |                             |           |                    | Total Floorspace (thousand square feet) |                             |               |                    |
|--|---------------------|-----------------------------|-----------|--------------------|---|-----------------------------|---------------|--------------------|
|  | All Buildings       | Any Refrigeration Equipment | Walk-in   | Cases and Cabinets | All Buildings                           | Any Refrigeration Equipment | Walk-in       | Cases and Cabinets |
| <b>All Buildings</b> .....                                   | <b>312</b>          | <b>109</b>                  | <b>78</b> | <b>87</b>          | <b>94,880</b>                           | <b>61,731</b>               | <b>54,223</b> | <b>53,454</b>      |
| <b>Building Floorspace (square feet)</b>                     |                     |                             |           |                    |   |                             |               |                    |
| 10,000 to 50,000 .....                                       | 94                  | 21                          | 12        | 14                 | 2,564                                   | 611                         | 393           | 446                |
| 50,001 to 200,000 .....                                      | 117                 | 25                          | 15        | 20                 | 13,166                                  | 3,269                       | 2,137         | 2,499              |
| Over 200,000 .....   | 101                 | 63                          | 51        | 53                 | 79,149                                  | 57,851                      | 51,693        | 50,509             |
| <b>Principal Building Activity</b>                           |                     |                             |           |                    |   |                             |               |                    |
| Education .....  | 8                   | 3                           | 2         | 3                  | 598                                     | 333                         | 296           | 333                |
| Health Care .....  | 41                  | 20                          | 18        | 16                 | 14,559                                  | 12,538                      | 12,365        | 11,551             |
| Laboratory .....   | 37                  | 13                          | 12        | 10                 | 5,165                                   | 1,612                       | 1,560         | 1,340              |
| Lodging .....  | 13                  | 6                           | 4         | 4                  | 2,558                                   | 545                         | 492           | 492                |
| Mercantile and Service .....                                 | 46                  | 13                          | 4         | 8                  | 7,966                                   | 5,406                       | 2,723         | 2,727              |
| Office .....   | 124                 | 45                          | 33        | 38                 | 56,881                                  | 38,733                      | 34,471        | 34,464             |
| All Others .....   | 43                  | 9                           | 5         | 8                  | 7,152                                   | 2,563                       | 2,316         | 2,547              |
| <b>Year Constructed</b>                                      |                     |                             |           |                    |   |                             |               |                    |
| 1959 or Before .....   | 142                 | 52                          | 42        | 40                 | 43,829                                  | 29,060                      | 26,998        | 24,902             |
| 1960 to 1969 .....   | 70                  | 17                          | 13        | 15                 | 19,564                                  | 11,392                      | 10,715        | 10,916             |
| 1970 to 1979 .....   | 47                  | 18                          | 10        | 13                 | 17,737                                  | 11,923                      | 9,426         | 9,355              |
| 1980 to 1989 .....   | 38                  | 17                          | 10        | 14                 | 8,975                                   | 6,503                       | 4,908         | 5,429              |
| 1990 to 1993 .....   | 15                  | 5                           | 3         | 5                  | 4,774                                   | 2,852                       | 2,176         | 2,852              |
| <b>Federal Agency</b>  |                     |                             |           |                    |   |                             |               |                    |
| Department of Defense .....                                  | 22                  | 12                          | 8         | 10                 | 13,988                                  | 11,914                      | 11,729        | 10,698             |
| General Services Administration .....                        | 83                  | 36                          | 26        | 32                 | 46,205                                  | 29,362                      | 25,234        | 26,480             |
| United States Postal Service .....                           | 57                  | 15                          | 6         | 9                  | 9,392                                   | 6,596                       | 3,913         | 3,757              |
| Veterans Administration .....                                | 56                  | 20                          | 19        | 16                 | 13,306                                  | 9,510                       | 9,402         | 8,523              |
| All Others .....   | 94                  | 26                          | 19        | 20                 | 11,989                                  | 4,348                       | 3,945         | 3,995              |
| <b>Workers (main shift)</b>                                  |                     |                             |           |                    |   |                             |               |                    |
| Less than 50 .....   | 71                  | 13                          | 6         | 7                  | 4,102                                   | 436                         | 195           | 298                |
| 50 to 99 .....   | 39                  | 10                          | 7         | 9                  | 1,903                                   | 602                         | 472           | 576                |
| 100 to 499 .....   | 107                 | 26                          | 20        | 21                 | 13,632                                  | 4,120                       | 3,582         | 3,291              |
| 500 or More .....  | 95                  | 60                          | 45        | 50                 | 75,243                                  | 56,572                      | 49,974        | 49,289             |
| <b>Weekly Operating Hours</b>                                |                     |                             |           |                    |   |                             |               |                    |
| 48 or Fewer .....  | 51                  | 15                          | 8         | 12                 | 9,694                                   | 3,253                       | 2,424         | 3,186              |
| 49 to 60 .....   | 76                  | 26                          | 19        | 20                 | 25,540                                  | 16,534                      | 14,755        | 13,772             |
| 61 to 167 .....  | 60                  | 12                          | 6         | 10                 | 11,993                                  | 5,103                       | 4,581         | 5,068              |
| Open Continuously .....                                      | 125                 | 56                          | 45        | 45                 | 47,653                                  | 36,841                      | 32,463        | 31,428             |
| <b>Multibuilding Facility</b>                                |                     |                             |           |                    |   |                             |               |                    |
| Yes .....  | 176                 | 62                          | 50        | 48                 | 43,861                                  | 25,949                      | 23,440        | 21,708             |
| No .....   | 136                 | 47                          | 28        | 39                 | 51,018                                  | 35,782                      | 30,783        | 31,745             |
| <b>Energy Management Practices (more than one may apply)</b> |                     |                             |           |                    |   |                             |               |                    |
| Energy Management and Control System .....                   | 132                 | 62                          | 45        | 53                 | 61,891                                  | 45,906                      | 39,610        | 40,299             |
| Energy Conservation Programs <sup>1</sup> .....              | 99                  | 45                          | 34        | 38                 | 59,284                                  | 42,794                      | 39,087        | 39,676             |
| Energy Audit .....   | 99                  | 37                          | 30        | 32                 | 37,621                                  | 25,972                      | 24,329        | 23,964             |
| HVAC Maintenance Staff <sup>2</sup> .....                    | 97                  | 45                          | 37        | 38                 | 52,924                                  | 36,640                      | 33,334        | 31,884             |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.23. Refrigeration Equipment in FBSS Buildings in Federal Region 6, Number of Buildings and Floorspace, 1993**

| Building Characteristics                                     | Number of Buildings |                             |           |                    | Total Floorspace (thousand square feet) |                             |               |                    |
|--|---------------------|-----------------------------|-----------|--------------------|---|-----------------------------|---------------|--------------------|
|  | All Buildings       | Any Refrigeration Equipment | Walk-in   | Cases and Cabinets | All Buildings                           | Any Refrigeration Equipment | Walk-in       | Cases and Cabinets |
| <b>All Buildings</b> .....                                   | <b>243</b>          | <b>70</b>                   | <b>40</b> | <b>44</b>          | <b>35,816</b>                           | <b>17,917</b>               | <b>12,381</b> | <b>14,125</b>      |
| <b>Building Floorspace (square feet)</b>                     |                     |                             |           |                    |   |                             |               |                    |
| 10,000 to 50,000 .....                                       | 107                 | 18                          | 9         | 10                 | 2,591                                   | 541                         | 297           | 309                |
| 50,001 to 200,000 .....                                      | 86                  | 28                          | 18        | 15                 | 9,548                                   | 3,104                       | 1,993         | 1,512              |
| Over 200,000 .....   | 50                  | 24                          | 13        | 19                 | 23,677                                  | 14,273                      | 10,091        | 12,304             |
| <b>Principal Building Activity</b>                           |                     |                             |           |                    |   |                             |               |                    |
| Education .....  | 6                   | 2                           | 1         | 1                  | 168                                     | 73                          | 55            | 55                 |
| Health Care .....  | 35                  | 21                          | 17        | 20                 | 12,094                                  | 11,045                      | 10,026        | 10,870             |
| Laboratory .....   | 29                  | 14                          | 6         | 3                  | 3,331                                   | 1,460                       | 489           | 134                |
| Lodging .....  | 16                  | 5                           | 4         | 2                  | 942                                     | 495                         | 432           | 212                |
| Mercantile and Service .....                                 | 49                  | 7                           | NC        | 4                  | 6,236                                   | 1,990                       | NC            | 1,309              |
| Office .....   | 76                  | 12                          | 5         | 8                  | 10,799                                  | 2,255                       | 827           | 1,200              |
| All Others .....   | 32                  | 9                           | 7         | 6                  | 2,247                                   | 599                         | 552           | 345                |
| <b>Year Constructed</b>                                      |                     |                             |           |                    |   |                             |               |                    |
| 1959 or Before .....   | 103                 | 30                          | 19        | 20                 | 13,258                                  | 5,477                       | 4,539         | 4,537              |
| 1960 to 1969 .....   | 38                  | 12                          | 6         | 7                  | 6,386                                   | 2,183                       | 898           | 1,099              |
| 1970 to 1979 .....   | 34                  | 12                          | 6         | 8                  | 6,175                                   | 3,463                       | 1,790         | 2,703              |
| 1980 to 1989 .....   | 57                  | 14                          | 7         | 7                  | 6,903                                   | 4,071                       | 2,431         | 3,064              |
| 1990 to 1993 .....   | 11                  | 2                           | 2         | 2                  | 3,095                                   | 2,723                       | 2,723         | 2,723              |
| <b>Federal Agency</b>  |                     |                             |           |                    |   |                             |               |                    |
| Department of Defense .....                                  | 22                  | 7                           | 3         | 6                  | 1,668                                   | 951                         | 835           | 936                |
| General Services Administration ...                          | 35                  | 4                           | 2         | 2                  | 7,888                                   | 1,651                       | 614           | 757                |
| United States Postal Service .....                           | 61                  | 8                           | NC        | 5                  | 7,027                                   | 2,261                       | NC            | 1,580              |
| Veterans Administration .....                                | 36                  | 21                          | 15        | 18                 | 11,375                                  | 10,288                      | 9,169         | 9,905              |
| All Others .....   | 89                  | 30                          | 20        | 13                 | 7,858                                   | 2,767                       | 1,763         | 948                |
| <b>Workers (main shift)</b>                                  |                     |                             |           |                    |   |                             |               |                    |
| Less than 50 .....   | 70                  | 12                          | 6         | 5                  | 2,548                                   | 597                         | 314           | 252                |
| 50 to 99 .....   | 44                  | 11                          | 7         | 6                  | 2,026                                   | 703                         | 520           | 283                |
| 100 to 499 .....   | 80                  | 23                          | 13        | 13                 | 9,029                                   | 2,639                       | 1,428         | 1,156              |
| 500 or More .....  | 49                  | 24                          | 14        | 20                 | 22,213                                  | 13,979                      | 10,119        | 12,434             |
| <b>Weekly Operating Hours</b>                                |                     |                             |           |                    |   |                             |               |                    |
| 48 or Fewer .....  | 39                  | 10                          | 7         | 7                  | 2,740                                   | 825                         | 614           | 487                |
| 49 to 60 .....   | 46                  | 13                          | 4         | 6                  | 6,460                                   | 2,131                       | 1,206         | 1,659              |
| 61 to 167 .....  | 78                  | 11                          | 4         | 3                  | 8,051                                   | 1,471                       | 211           | 83                 |
| Open Continuously .....                                      | 80                  | 36                          | 25        | 28                 | 18,565                                  | 13,491                      | 10,350        | 11,897             |
| <b>Multibuilding Facility</b>                                |                     |                             |           |                    |   |                             |               |                    |
| Yes .....  | 148                 | 52                          | 30        | 31                 | 24,441                                  | 12,886                      | 8,881         | 9,701              |
| No .....   | 95                  | 18                          | 10        | 13                 | 11,375                                  | 5,031                       | 3,499         | 4,424              |
| <b>Energy Management Practices (more than one may apply)</b> |                     |                             |           |                    |   |                             |               |                    |
| Energy Management and Control System .....                   | 96                  | 43                          | 23        | 29                 | 23,099                                  | 15,512                      | 10,672        | 12,539             |
| Energy Conservation Programs <sup>1</sup> .....              | 48                  | 23                          | 12        | 18                 | 13,513                                  | 10,486                      | 7,573         | 8,774              |
| Energy Audit .....   | 64                  | 14                          | 10        | 9                  | 11,690                                  | 5,304                       | 3,849         | 3,958              |
| HVAC Maintenance Staff <sup>2</sup> .....                    | 57                  | 15                          | 13        | 13                 | 15,538                                  | 7,950                       | 7,464         | 7,804              |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.  
NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.24. Refrigeration Equipment in FBSS Buildings in Federal Region 9,  
Number of Buildings and Floorspace, 1993**

| Building Characteristics   | Number of Buildings |                             |           |                    | Total Floorspace<br>(thousand square feet) |                             |               |                    |
|--|---------------------|-----------------------------|-----------|--------------------|--|-----------------------------|---------------|--------------------|
|  | All Buildings       | Any Refrigeration Equipment | Walk-in   | Cases and Cabinets | All Buildings                              | Any Refrigeration Equipment | Walk-in       | Cases and Cabinets |
| <b>All Buildings</b> .....                                       | <b>326</b>          | <b>63</b>                   | <b>44</b> | <b>50</b>          | <b>44,316</b>                              | <b>18,781</b>               | <b>12,536</b> | <b>14,928</b>      |
| <b>Building Floorspace (square feet)</b>                         |                     |                             |           |                    |  |                             |               |                    |
| 10,000 to 50,000 .....   | 148                 | 14                          | 11        | 12                 | 3,858                                      | 336                         | 237           | 299                |
| 50,001 to 200,000 .....  | 123                 | 22                          | 17        | 19                 | 12,680                                     | 2,380                       | 1,883         | 2,188              |
| Over 200,000 .....   | 55                  | 27                          | 16        | 19                 | 27,778                                     | 16,065                      | 10,416        | 12,441             |
| <b>Principal Building Activity</b>                               |                     |                             |           |                    |  |                             |               |                    |
| Education .....  | 12                  | 2                           | 2         | 2                  | 628  | 94                          | 94            | 94                 |
| Health Care .....  | 48                  | 18                          | 15        | 15                 | 9,903                                      | 7,062                       | 6,811         | 6,349              |
| Laboratory .....   | 31                  | 4                           | 4         | 4                  | 2,601                                      | 325                         | 325           | 325                |
| Lodging .....  | 22                  | 4                           | 4         | 3                  | 1,220                                      | 131                         | 131           | 72                 |
| Mercantile and Service .....                                     | 63                  | 11                          | 6         | 8                  | 8,194                                      | 3,921                       | 2,372         | 2,793              |
| Office .....   | 92                  | 11                          | 3         | 9                  | 16,380                                     | 4,880                       | 1,919         | 4,435              |
| All Others .....   | 58                  | 13                          | 10        | 9                  | 5,390                                      | 2,368                       | 885           | 860                |
| <b>Year Constructed</b>  |                     |                             |           |                    |  |                             |               |                    |
| 1959 or Before .....   | 130                 | 19                          | 14        | 15                 | 13,553                                     | 3,577                       | 1,552         | 1,725              |
| 1960 to 1969 .....   | 55                  | 13                          | 8         | 11                 | 9,082                                      | 3,410                       | 2,083         | 3,018              |
| 1970 to 1979 .....   | 62                  | 14                          | 12        | 12                 | 12,041                                     | 6,298                       | 4,796         | 5,904              |
| 1980 to 1989 .....   | 65                  | 14                          | 9         | 11                 | 7,955                                      | 4,647                       | 3,788         | 3,963              |
| 1990 to 1993 .....   | 14                  | 3                           | 1         | 1                  | 1,684                                      | 848                         | (*)           | (*)                |
| <b>Federal Agency</b>  |                     |                             |           |                    |  |                             |               |                    |
| Department of Defense .....                                      | 78                  | 12                          | 7         | 9                  | 8,489                                      | 3,726                       | 1,758         | 2,187              |
| General Services Administration ...                              | 39                  | 8                           | 3         | 7                  | 12,505                                     | 4,332                       | 1,867         | 3,955              |
| United States Postal Service .....                               | 63                  | 9                           | 4         | 6                  | 8,387                                      | 3,785                       | 2,236         | 2,657              |
| Veterans Administration .....                                    | 56                  | 17                          | 15        | 13                 | 8,824                                      | 5,394                       | 5,228         | 4,623              |
| All Others .....   | 90                  | 17                          | 15        | 15                 | 6,111                                      | 1,544                       | 1,448         | 1,507              |
| <b>Workers (main shift)</b>                                      |                     |                             |           |                    |  |                             |               |                    |
| Less than 50 .....   | 93                  | 10                          | 10        | 8                  | 3,684                                      | 234                         | 234           | 197                |
| 50 to 99 .....   | 49                  | 2                           | 1         | 2                  | 2,161                                      | 66                          | 54            | 66                 |
| 100 to 499 .....   | 134                 | 24                          | 16        | 20                 | 14,017                                     | 3,029                       | 2,054         | 2,525              |
| 500 or More .....  | 50                  | 27                          | 17        | 20                 | 24,454                                     | 15,451                      | 10,194        | 12,140             |
| <b>Weekly Operating Hours</b>                                    |                     |                             |           |                    |  |                             |               |                    |
| 48 or Fewer .....  | 80                  | 8                           | 4         | 6                  | 4,822                                      | 762                         | 208           | 629                |
| 49 to 60 .....   | 65                  | 13                          | 6         | 12                 | 13,424                                     | 4,675                       | 1,785         | 4,302              |
| 61 to 167 .....  | 68                  | 6                           | 4         | 5                  | 5,706                                      | 1,091                       | 672           | 714                |
| Open Continuously .....  | 113                 | 36                          | 30        | 27                 | 20,364                                     | 12,253                      | 9,871         | 9,282              |
| <b>Multibuilding Facility</b>                                    |                     |                             |           |                    |  |                             |               |                    |
| Yes .....  | 200                 | 43                          | 33        | 33                 | 26,821                                     | 13,420                      | 10,412        | 9,956              |
| No .....   | 126                 | 20                          | 11        | 17                 | 17,495                                     | 5,361                       | 2,125         | 4,972              |
| <b>Energy Management Practices<br/>(more than one may apply)</b> |                     |                             |           |                    |  |                             |               |                    |
| Energy Management and Control System .....                       | 71                  | 25                          | 14        | 17                 | 18,231                                     | 12,657                      | 8,327         | 9,589              |
| Energy Conservation Programs <sup>1</sup> .....                  | 124                 | 34                          | 22        | 29                 | 24,699                                     | 12,274                      | 7,606         | 9,921              |
| Energy Audit .....   | 99                  | 26                          | 17        | 23                 | 17,444                                     | 9,337                       | 6,259         | 7,420              |
| HVAC Maintenance Staff <sup>2</sup> .....                        | 52                  | 20                          | 14        | 14                 | 14,570                                     | 8,294                       | 6,029         | 6,417              |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

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

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.25. Water-Heating Equipment in FBSS Buildings in Federal Region 3, Number of Buildings and Floorspace, 1993**

| Building Characteristics                 | Number of Buildings |                                  |                    |                    | Total Floorspace (thousand square feet) |                                  |                    |                    |
|--|---------------------|----------------------------------|--------------------|--------------------|---|----------------------------------|--------------------|--------------------|
|  | All Buildings       | All Buildings With Water Heating | Centralized System | Distributed System | All Buildings                           | All Buildings With Water Heating | Centralized System | Distributed System |
| <b>All Buildings</b> .....               | <b>312</b>          | <b>303</b>                       | <b>223</b>         | <b>71</b>          | <b>94,880</b>                           | <b>93,138</b>                    | <b>63,477</b>      | <b>24,696</b>      |
| <b>Building Floorspace (square feet)</b> |                     |                                  |                    |                    |   |                                  |                    |                    |
| 10,000 to 50,000 .....                   | 94                  | 92                               | 65                 | 24                 | 2,564                                   | 2,525                            | 1,860              | 595                |
| 50,001 to 200,000 .....                  | 117                 | 113                              | 89                 | 21                 | 13,166                                  | 12,671                           | 10,005             | 2,343              |
| Over 200,000 .....                       | 101                 | 98                               | 69                 | 26                 | 79,149                                  | 77,942                           | 51,612             | 21,758             |
| <b>Principal Building Activity</b>       |                     |                                  |                    |                    |   |                                  |                    |                    |
| Education .....                          | 8                   | 8                                | 5                  | 3                  | 598                                     | 598                              | 423                | 176                |
| Health Care .....                        | 41                  | 40                               | 34                 | 5                  | 14,559                                  | 14,450                           | 10,417             | 1,461              |
| Laboratory .....                         | 37                  | 37                               | 31                 | 4                  | 5,165                                   | 5,165                            | 4,693              | 423                |
| Lodging .....                            | 13                  | 13                               | 8                  | 5                  | 2,558                                   | 2,558                            | 965                | 1,593              |
| Mercantile and Service .....             | 46                  | 45                               | 28                 | 17                 | 7,966                                   | 7,953                            | 3,284              | 4,669              |
| Office .....                             | 124                 | 121                              | 93                 | 23                 | 56,881                                  | 56,125                           | 41,602             | 12,240             |
| All Others .....                         | 43                  | 39                               | 24                 | 14                 | 7,152                                   | 6,288                            | 2,094              | 4,134              |
| <b>Year Constructed</b>                  |                     |                                  |                    |                    |   |                                  |                    |                    |
| 1959 or Before .....                     | 142                 | 137                              | 104                | 30                 | 43,829                                  | 42,768                           | 30,877             | 10,668             |
| 1960 to 1969 .....                       | 70                  | 69                               | 55                 | 11                 | 19,564                                  | 19,477                           | 15,849             | 3,494              |
| 1970 to 1979 .....                       | 47                  | 47                               | 32                 | 12                 | 17,737                                  | 17,737                           | 8,172              | 5,957              |
| 1980 to 1989 .....                       | 38                  | 37                               | 25                 | 12                 | 8,975                                   | 8,775                            | 5,254              | 3,521              |
| 1990 to 1993 .....                       | 15                  | 13                               | 7                  | 6                  | 4,774                                   | 4,381                            | 3,325              | 1,056              |
| <b>Federal Agency</b>                    |                     |                                  |                    |                    |   |                                  |                    |                    |
| Department of Defense .....              | 22                  | 21                               | 15                 | 4                  | 13,988                                  | 13,888                           | 8,525              | 2,730              |
| General Services Administration .....    | 83                  | 80                               | 61                 | 16                 | 46,205                                  | 45,290                           | 30,838             | 12,352             |
| United States Postal Service .....       | 57                  | 56                               | 36                 | 19                 | 9,392                                   | 9,379                            | 4,947              | 4,269              |
| Veterans Administration .....            | 56                  | 53                               | 43                 | 10                 | 13,306                                  | 12,618                           | 10,520             | 2,098              |
| All Others .....                         | 94                  | 93                               | 68                 | 22                 | 11,989                                  | 11,963                           | 8,647              | 3,247              |
| <b>Workers (main shift)</b>              |                     |                                  |                    |                    |   |                                  |                    |                    |
| Less than 50 .....                       | 71                  | 64                               | 44                 | 18                 | 4,102                                   | 3,029                            | 2,276              | 704                |
| 50 to 99 .....                           | 39                  | 39                               | 32                 | 6                  | 1,903                                   | 1,903                            | 1,688              | 195                |
| 100 to 499 .....                         | 107                 | 107                              | 84                 | 20                 | 13,632                                  | 13,632                           | 10,527             | 2,782              |
| 500 or More .....                        | 95                  | 93                               | 63                 | 27                 | 75,243                                  | 74,574                           | 48,986             | 21,016             |
| <b>Weekly Operating Hours</b>            |                     |                                  |                    |                    |   |                                  |                    |                    |
| 48 or Fewer .....                        | 51                  | 49                               | 30                 | 15                 | 9,694                                   | 9,499                            | 5,026              | 4,115              |
| 49 to 60 .....                           | 76                  | 74                               | 61                 | 11                 | 25,540                                  | 24,871                           | 18,837             | 5,999              |
| 61 to 167 .....                          | 60                  | 58                               | 44                 | 14                 | 11,993                                  | 11,954                           | 9,788              | 2,165              |
| Open Continuously .....                  | 125                 | 122                              | 88                 | 31                 | 47,653                                  | 46,814                           | 29,825             | 12,417             |
| <b>Multibuilding Facility</b>            |                     |                                  |                    |                    |   |                                  |                    |                    |
| Yes .....                                | 176                 | 171                              | 122                | 41                 | 43,861                                  | 42,986                           | 24,249             | 13,935             |
| No .....                                 | 136                 | 132                              | 101                | 30                 | 51,018                                  | 50,152                           | 39,228             | 10,761             |

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey.

• Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.26. Water-Heating Equipment in FBSS Buildings in Federal Region 6, Number of Buildings and Floorspace, 1993**

| Building Characteristics                 | Number of Buildings |                                  |                    |                    | Total Floorspace (thousand square feet) |                                  |                    |                    |
|--|---------------------|----------------------------------|--------------------|--------------------|---|----------------------------------|--------------------|--------------------|
|  | All Buildings       | All Buildings With Water Heating | Centralized System | Distributed System | All Buildings                           | All Buildings With Water Heating | Centralized System | Distributed System |
| <b>All Buildings</b> .....               | 243                 | 238                              | 163                | 71                 | 35,816                                  | 35,221                           | 23,206             | 11,827             |
| <b>Building Floorspace (square feet)</b> |                     |                                  |                    |                    |   |                                  |                    |                    |
| 10,000 to 50,000 .....                   | 107                 | 104                              | 70                 | 31                 | 2,591                                   | 2,539                            | 1,675              | 811                |
| 50,001 to 200,000 .....                  | 86                  | 85                               | 68                 | 16                 | 9,548                                   | 9,466                            | 7,426              | 1,905              |
| Over 200,000 .....                       | 50                  | 49                               | 25                 | 24                 | 23,677                                  | 23,216                           | 14,105             | 9,111              |
| <b>Principal Building Activity</b>       |                     |                                  |                    |                    |   |                                  |                    |                    |
| Education .....                          | 6                   | 6                                | 5                  | 1                  | 168                                     | 168                              | 143                | 25                 |
| Health Care .....                        | 35                  | 35                               | 27                 | 6                  | 12,094                                  | 12,094                           | 10,341             | 1,607              |
| Laboratory .....                         | 29                  | 29                               | 18                 | 11                 | 3,331                                   | 3,331                            | 2,211              | 1,120              |
| Lodging .....                            | 16                  | 16                               | 15                 | 1                  | 942                                     | 942                              | 815                | 127                |
| Mercantile and Service .....             | 49                  | 47                               | 21                 | 25                 | 6,236                                   | 5,763                            | 1,528              | 4,210              |
| Office .....                             | 76                  | 75                               | 58                 | 16                 | 10,799                                  | 10,779                           | 6,697              | 4,064              |
| All Others .....                         | 32                  | 30                               | 19                 | 11                 | 2,247                                   | 2,146                            | 1,472              | 674                |
| <b>Year Constructed</b>                  |                     |                                  |                    |                    |   |                                  |                    |                    |
| 1959 or Before .....                     | 103                 | 102                              | 75                 | 26                 | 13,258                                  | 13,176                           | 8,536              | 4,622              |
| 1960 to 1969 .....                       | 38                  | 37                               | 26                 | 11                 | 6,386                                   | 6,367                            | 3,770              | 2,597              |
| 1970 to 1979 .....                       | 34                  | 32                               | 22                 | 10                 | 6,175                                   | 5,694                            | 3,153              | 2,540              |
| 1980 to 1989 .....                       | 57                  | 56                               | 36                 | 19                 | 6,903                                   | 6,890                            | 4,855              | 1,900              |
| 1990 to 1993 .....                       | 11                  | 11                               | 4                  | 5                  | 3,095                                   | 3,095                            | 2,892              | 167                |
| <b>Federal Agency</b>                    |                     |                                  |                    |                    |   |                                  |                    |                    |
| Department of Defense .....              | 22                  | 21                               | 18                 | 3                  | 1,668                                   | 1,648                            | 928                | 721                |
| General Service Administration .....     | 35                  | 35                               | 26                 | 9                  | 7,888                                   | 7,888                            | 4,821              | 3,067              |
| United States Parcel Service .....       | 61                  | 59                               | 32                 | 26                 | 7,027                                   | 6,553                            | 2,077              | 4,451              |
| Veterans Administration .....            | 36                  | 36                               | 27                 | 8                  | 11,375                                  | 11,375                           | 10,349             | 1,014              |
| All Others .....                         | 89                  | 87                               | 60                 | 25                 | 7,858                                   | 7,757                            | 5,031              | 2,574              |
| <b>Workers (main shift)</b>              |                     |                                  |                    |                    |   |                                  |                    |                    |
| Less than 50 .....                       | 70                  | 67                               | 50                 | 16                 | 2,548                                   | 2,427                            | 1,748              | 662                |
| 50 to 99 .....                           | 44                  | 43                               | 25                 | 17                 | 2,026                                   | 2,013                            | 1,278              | 710                |
| 100 to 499 .....                         | 80                  | 80                               | 62                 | 16                 | 9,029                                   | 9,029                            | 6,462              | 2,421              |
| 500 or More .....                        | 49                  | 48                               | 26                 | 22                 | 22,213                                  | 21,752                           | 13,718             | 8,034              |
| <b>Weekly Operating Hours</b>            |                     |                                  |                    |                    |   |                                  |                    |                    |
| 48 or Fewer .....                        | 39                  | 37                               | 29                 | 8                  | 2,740                                   | 2,639                            | 2,181              | 457                |
| 49 to 60 .....                           | 46                  | 45                               | 35                 | 10                 | 6,460                                   | 6,440                            | 3,966              | 2,473              |
| 61 to 167 .....                          | 78                  | 77                               | 45                 | 30                 | 8,051                                   | 8,038                            | 5,458              | 2,538              |
| Open Continuously .....                  | 80                  | 79                               | 54                 | 23                 | 18,565                                  | 18,104                           | 11,600             | 6,358              |
| <b>Multibuilding Facility</b>            |                     |                                  |                    |                    |   |                                  |                    |                    |
| Yes .....                                | 148                 | 146                              | 98                 | 45                 | 24,441                                  | 24,339                           | 16,457             | 7,719              |
| No .....                                 | 95                  | 92                               | 65                 | 26                 | 11,375                                  | 10,881                           | 6,749              | 4,108              |

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.27. Water-Heating Equipment in FBSS Buildings in Federal Region 9,  
Number of Buildings and Floorspace, 1993**

| Building Characteristics                 | Number of Buildings |                                  |                    |                    | Total Floorspace<br>(thousand square feet) |                                  |                    |                    |
|--|---------------------|----------------------------------|--------------------|--------------------|--|----------------------------------|--------------------|--------------------|
|  | All Buildings       | All Buildings With Water Heating | Centralized System | Distributed System | All Buildings                              | All Buildings With Water Heating | Centralized System | Distributed System |
| <b>All Buildings</b> .....               | <b>326</b>          | <b>315</b>                       | <b>225</b>         | <b>80</b>          | <b>44,316</b>                              | <b>42,984</b>                    | <b>31,069</b>      | <b>10,750</b>      |
| <b>Building Floorspace (square feet)</b> |                     |                                  |                    |                    |  |                                  |                    |                    |
| 10,000 to 50,000 .....                   | 148                 | 142                              | 101                | 37                 | 3,858                                      | 3,728                            | 2,612              | 1,044              |
| 50,001 to 200,000 .....                  | 123                 | 120                              | 87                 | 29                 | 12,680                                     | 12,325                           | 8,929              | 3,024              |
| Over 200,000 .....                       | 55                  | 53                               | 37                 | 14                 | 27,778                                     | 26,931                           | 19,528             | 6,681              |
| <b>Principal Building Activity</b>       |                     |                                  |                    |                    |  |                                  |                    |                    |
| Education .....                          | 12                  | 12                               | 11                 | 1                  | 628  | 628                              | 590                | 38                 |
| Health Care .....                        | 48                  | 47                               | 41                 | 4                  | 9,903                                      | 9,888                            | 8,985              | 732                |
| Laboratory .....                         | 31                  | 30                               | 23                 | 7                  | 2,601                                      | 2,582                            | 1,612              | 970                |
| Lodging .....                            | 22                  | 22                               | 17                 | 5                  | 1,220                                      | 1,220                            | 988                | 232                |
| Mercantile and Service .....             | 63                  | 60                               | 34                 | 22                 | 8,194                                      | 7,562                            | 3,947              | 3,081              |
| Office .....                             | 92                  | 90                               | 64                 | 26                 | 16,380                                     | 16,329                           | 12,672             | 3,657              |
| All Others .....                         | 58                  | 54                               | 35                 | 15                 | 5,390                                      | 4,775                            | 2,275              | 2,040              |
| <b>Year Constructed</b>                  |                     |                                  |                    |                    |  |                                  |                    |                    |
| 1959 or Before .....                     | 130                 | 125                              | 83                 | 38                 | 13,553                                     | 13,321                           | 7,763              | 5,050              |
| 1960 to 1969 .....                       | 55                  | 55                               | 45                 | 10                 | 9,082                                      | 9,082                            | 6,873              | 2,210              |
| 1970 to 1979 .....                       | 62                  | 61                               | 44                 | 14                 | 12,041                                     | 11,736                           | 9,014              | 2,323              |
| 1980 to 1989 .....                       | 65                  | 61                               | 43                 | 16                 | 7,955                                      | 7,303                            | 5,963              | 1,140              |
| 1990 to 1993 .....                       | 14                  | 13                               | 10                 | 2                  | 1,684                                      | 1,541                            | 1,457              | 26                 |
| <b>Federal Agency</b>                    |                     |                                  |                    |                    |  |                                  |                    |                    |
| Department of Defense .....              | 78                  | 73                               | 49                 | 22                 | 8,489                                      | 7,928                            | 4,447              | 2,995              |
| General Services Administration .....    | 39                  | 39                               | 34                 | 5                  | 12,505                                     | 12,505                           | 10,625             | 1,880              |
| United States Postal Service .....       | 63                  | 60                               | 35                 | 22                 | 8,387                                      | 7,813                            | 4,266              | 3,126              |
| Veterans Administration .....            | 56                  | 55                               | 48                 | 5                  | 8,824                                      | 8,681                            | 7,729              | 780                |
| All Others .....                         | 90                  | 88                               | 59                 | 26                 | 6,111                                      | 6,057                            | 4,002              | 1,968              |
| <b>Workers (main shift)</b>              |                     |                                  |                    |                    |  |                                  |                    |                    |
| Less than 50 .....                       | 93                  | 87                               | 64                 | 20                 | 3,684                                      | 3,319                            | 2,219              | 1,014              |
| 50 to 99 .....                           | 49                  | 48                               | 34                 | 14                 | 2,161                                      | 2,150                            | 1,477              | 674                |
| 100 to 499 .....                         | 134                 | 131                              | 92                 | 34                 | 14,017                                     | 13,603                           | 9,812              | 3,434              |
| 500 or More .....                        | 50                  | 49                               | 35                 | 12                 | 24,454                                     | 23,912                           | 17,561             | 5,629              |
| <b>Weekly Operating Hours</b>            |                     |                                  |                    |                    |  |                                  |                    |                    |
| 48 or Fewer .....                        | 80                  | 76                               | 48                 | 27                 | 4,822                                      | 4,611                            | 2,520              | 2,080              |
| 49 to 60 .....                           | 65                  | 64                               | 51                 | 11                 | 13,424                                     | 13,344                           | 10,505             | 2,353              |
| 61 to 167 .....                          | 68                  | 65                               | 46                 | 14                 | 5,706                                      | 5,369                            | 3,717              | 1,344              |
| Open Continuously .....                  | 113                 | 110                              | 80                 | 28                 | 20,364                                     | 19,660                           | 14,327             | 4,972              |
| <b>Multibuilding Facility</b>            |                     |                                  |                    |                    |  |                                  |                    |                    |
| Yes .....                                | 200                 | 192                              | 146                | 40                 | 26,821                                     | 26,063                           | 20,291             | 5,039              |
| No .....                                 | 126                 | 123                              | 79                 | 40                 | 17,495                                     | 16,921                           | 10,778             | 5,711              |

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey.

• Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.28. Lighting Equipment in FBSS Buildings in Federal Region 3,  
Number of Buildings, 1993**

| Building Characteristics                 | All Buildings | Lighting Equipment Types<br>(more than one may apply) |                      |                     |                          |                    |
|--|---------------|---|----------------------|---------------------|--------------------------|--------------------|
|  |               | Incandescent  | Standard Fluorescent | Compact Fluorescent | High-Intensity Discharge | Electronic Ballast |
| <b>All Buildings</b> .....               | <b>312</b>    | <b>184</b>  | <b>300</b>           | <b>80</b>           | <b>111</b>               | <b>135</b>         |
| <b>Building Floorspace (square feet)</b> |               |   |                      |                     |                          |                    |
| 10,000 to 50,000 .....                   | 94            | 49  | 91                   | 12                  | 16                       | 22                 |
| 50,001 to 200,000 .....                  | 117           | 69  | 112                  | 19                  | 42                       | 44                 |
| Over 200,000 .....                       | 101           | 66  | 97                   | 49                  | 53                       | 69                 |
| <b>Principal Building Activity</b>       |               |   |                      |                     |                          |                    |
| Education .....                          | 8             | 7   | 8                    | 2                   | NC                       | NC                 |
| Health Care .....                        | 41            | 28  | 40                   | 9                   | 10                       | 24                 |
| Laboratory .....                         | 37            | 30  | 36                   | 2                   | 13                       | 11                 |
| Lodging .....                            | 13            | 9   | 12                   | 1                   | 1                        | 4                  |
| Mercantile and Service .....             | 46            | 18  | 44                   | 7                   | 25                       | 9                  |
| Office .....                             | 124           | 72  | 121                  | 52                  | 44                       | 77                 |
| All Others .....                         | 43            | 20  | 39                   | 7                   | 18                       | 10                 |
| <b>Year Constructed</b>                  |               |   |                      |                     |                          |                    |
| 1959 or Before .....                     | 142           | 94  | 133                  | 34                  | 37                       | 64                 |
| 1960 to 1969 .....                       | 70            | 49  | 68                   | 18                  | 26                       | 31                 |
| 1970 to 1979 .....                       | 47            | 19  | 47                   | 15                  | 25                       | 19                 |
| 1980 to 1989 .....                       | 38            | 17  | 37                   | 10                  | 18                       | 14                 |
| 1990 to 1993 .....                       | 15            | 5   | 15                   | 3                   | 5                        | 7                  |
| <b>Federal Agency</b>                    |               |   |                      |                     |                          |                    |
| Department of Defense .....              | 22            | 15  | 21                   | 4                   | 4                        | 6                  |
| General Services Administration ...      | 83            | 44  | 80                   | 44                  | 32                       | 57                 |
| United States Postal Service .....       | 57            | 23  | 54                   | 7                   | 33                       | 10                 |
| Veterans Administration .....            | 56            | 37  | 54                   | 9                   | 10                       | 29                 |
| All Others .....                         | 94            | 65  | 91                   | 16                  | 32                       | 33                 |
| <b>Workers (main shift)</b>              |               |   |                      |                     |                          |                    |
| Less than 50 .....                       | 71            | 36  | 67                   | 6                   | 14                       | 13                 |
| 50 to 99 .....                           | 39            | 23  | 37                   | 5                   | 8                        | 8                  |
| 100 to 499 .....                         | 107           | 65  | 104                  | 24                  | 36                       | 47                 |
| 500 or More .....                        | 95            | 60  | 92                   | 45                  | 53                       | 67                 |
| <b>Weekly Operating Hours</b>            |               |   |                      |                     |                          |                    |
| 48 or Fewer .....                        | 51            | 28  | 51                   | 8                   | 9                        | 18                 |
| 49 to 60 .....                           | 76            | 45  | 73                   | 27                  | 27                       | 47                 |
| 61 to 167 .....                          | 60            | 30  | 57                   | 21                  | 25                       | 21                 |
| Open Continuously .....                  | 125           | 81  | 119                  | 24                  | 50                       | 49                 |
| <b>Percent Window Glass</b>              |               |   |                      |                     |                          |                    |
| 50 or Less .....                         | 269           | 163   | 258                  | 64                  | 100                      | 113                |
| 51 to 100 .....                          | 42            | 20  | 41                   | 15                  | 10                       | 22                 |
| Don't Know .....                         | 1             | 1   | 1                    | 1                   | 1                        | NC                 |
| <b>Multibuilding Facility</b>            |               |   |                      |                     |                          |                    |
| Yes .....                                | 176           | 109   | 171                  | 35                  | 59                       | 73                 |
| No .....                                 | 136           | 75  | 129                  | 45                  | 52                       | 62                 |
| <b>Percent Lit When Open</b>             |               |   |                      |                     |                          |                    |
| 1 to 50 .....                            | 11            | 5   | 10                   | 3                   | NC                       | 3                  |
| 51 to 100 .....                          | 300           | 179   | 290                  | 77                  | 111                      | 132                |
| No Operating Hours .....                 | 1             | NC  | NC                   | NC                  | NC                       | NC                 |
| Don't Know .....                         | NC            | NC  | NC                   | NC                  | NC                       | NC                 |

See footnotes at end of table.

**Table 3.28. Lighting Equipment in FBSS Buildings in Federal Region 3,  
Number of Buildings, 1993 (Continued)**

| Building Characteristics  | All Buildings | Lighting Equipment Types<br>(more than one may apply) |                      |                     |                          |                    |
|---|---------------|---|----------------------|---------------------|--------------------------|--------------------|
|   |               | Incandescent  | Standard Fluorescent | Compact Fluorescent | High-Intensity Discharge | Electronic Ballast |
| <b>Percent Lit When Closed</b>  |               |   |                      |                     |                          |                    |
| Not Lit .....   | 39            | 18  | 37                   | 6                   | 12                       | 10                 |
| 1 to 50 .....   | 194           | 113   | 189                  | 58                  | 67                       | 93                 |
| 51 to 100 .....   | 42            | 29  | 40                   | 7                   | 20                       | 19                 |
| No Off Hours .....  | 37            | 24  | 34                   | 9                   | 12                       | 13                 |
| Don't Know .....  | NC            | NC  | NC                   | NC                  | NC                       | NC                 |
| <b>Lighting Conservation Features<br/>(more than one may apply)</b>       |               |   |                      |                     |                          |                    |
| Specular Reflectors .....   | 124           | 76  | 120                  | 43                  | 46                       | 72                 |
| Natural Lighting Control<br>Sensors .....                                 | 29            | 20  | 29                   | 17                  | 15                       | 23                 |
| Occupancy Sensors .....   | 95            | 57  | 94                   | 51                  | 41                       | 68                 |
| Time Clock .....  | 74            | 48  | 73                   | 35                  | 31                       | 46                 |
| Manual Dimmer Switches .....  | 93            | 73  | 90                   | 47                  | 37                       | 62                 |
| <b>Energy Management Practices<br/>(more than one may apply)</b>          |               |   |                      |                     |                          |                    |
| Energy Management and Control<br>System .....                             | 132           | 77  | 130                  | 43                  | 59                       | 82                 |
| Energy Conservation<br>Programs <sup>1</sup> .....                        | 99            | 64  | 97                   | 44                  | 37                       | 66                 |
| Energy Audit .....  | 99            | 60  | 98                   | 31                  | 36                       | 53                 |
| HVAC Maintenance Staff <sup>2</sup> .....                                 | 97            | 61  | 94                   | 33                  | 41                       | 57                 |
| <b>Off-Hours Reduction in<br/>Equipment (more than one may<br/>apply)</b> |               |   |                      |                     |                          |                    |
| Heating .....   | 144           | 80  | 142                  | 50                  | 51                       | 75                 |
| Cooling .....   | 145           | 84  | 141                  | 51                  | 51                       | 76                 |
| Hot Water .....   | 77            | 43  | 76                   | 32                  | 27                       | 39                 |
| Lighting .....  | 162           | 90  | 157                  | 51                  | 50                       | 76                 |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.  
NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey.

• HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.



**Table 3.29. Lighting Equipment in FBSS Buildings in Federal Region 6,  
Number of Buildings, 1993**

| Building Characteristics                 | All Buildings | Lighting Equipment Types<br>(more than one may apply) |                      |                     |                          |                    |
|--|---------------|---|----------------------|---------------------|--------------------------|--------------------|
|  |               | Incandescent  | Standard Fluorescent | Compact Fluorescent | High-Intensity Discharge | Electronic Ballast |
| <b>All Buildings</b> .....               | <b>243</b>    | <b>135</b>  | <b>235</b>           | <b>29</b>           | <b>64</b>                | <b>59</b>          |
| <b>Building Floorspace (square feet)</b> |               |   |                      |                     |                          |                    |
| 10,000 to 50,000 .....                   | 107           | 42  | 103                  | 7                   | 17                       | 15                 |
| 50,001 to 200,000 .....                  | 86            | 62  | 83                   | 5                   | 19                       | 22                 |
| Over 200,000 .....                       | 50            | 31  | 49                   | 17                  | 28                       | 22                 |
| <b>Principal Building Activity</b>       |               |   |                      |                     |                          |                    |
| Education .....                          | 6             | 2   | 6                    | 1                   | 2                        | 1                  |
| Health Care .....                        | 35            | 20  | 35                   | 5                   | 9                        | 16                 |
| Laboratory .....                         | 29            | 21  | 28                   | 1                   | 10                       | 1                  |
| Lodging .....                            | 16            | 9   | 15                   | NC                  | 1                        | 4                  |
| Mercantile and Service .....             | 49            | 22  | 48                   | 5                   | 15                       | 9                  |
| Office .....                             | 76            | 43  | 75                   | 17                  | 19                       | 23                 |
| All Others .....                         | 32            | 18  | 28                   | NC                  | 8                        | 5                  |
| <b>Year Constructed</b>                  |               |   |                      |                     |                          |                    |
| 1959 or Before .....                     | 103           | 67  | 98                   | 13                  | 23                       | 23                 |
| 1960 to 1969 .....                       | 38            | 25  | 37                   | 7                   | 13                       | 14                 |
| 1970 to 1979 .....                       | 34            | 17  | 34                   | 4                   | 14                       | 11                 |
| 1980 to 1989 .....                       | 57            | 22  | 55                   | 4                   | 13                       | 9                  |
| 1990 to 1993 .....                       | 11            | 4   | 11                   | 1                   | 1                        | 2                  |
| <b>Federal Agency</b>                    |               |   |                      |                     |                          |                    |
| Department of Defense .....              | 22            | 12  | 20                   | 1                   | 6                        | 3                  |
| General Services Administration ...      | 35            | 21  | 34                   | 15                  | 12                       | 19                 |
| United States Postal Service .....       | 61            | 28  | 59                   | 6                   | 16                       | 10                 |
| Veterans Administration .....            | 36            | 14  | 35                   | 2                   | 6                        | 19                 |
| All Others .....                         | 89            | 60  | 87                   | 5                   | 24                       | 8                  |
| <b>Workers (main shift)</b>              |               |   |                      |                     |                          |                    |
| Less than 50 .....                       | 70            | 29  | 66                   | 3                   | 10                       | 7                  |
| 50 to 99 .....                           | 44            | 22  | 43                   | 2                   | 8                        | 7                  |
| 100 to 499 .....                         | 80            | 53  | 77                   | 9                   | 19                       | 23                 |
| 500 or More .....                        | 49            | 31  | 49                   | 15                  | 27                       | 22                 |
| <b>Weekly Operating Hours</b>            |               |   |                      |                     |                          |                    |
| 48 or Fewer .....                        | 39            | 18  | 37                   | 4                   | 5                        | 10                 |
| 49 to 60 .....                           | 46            | 22  | 45                   | 11                  | 9                        | 10                 |
| 61 to 167 .....                          | 78            | 47  | 76                   | 6                   | 26                       | 14                 |
| Open Continuously .....                  | 80            | 48  | 77                   | 8                   | 24                       | 25                 |
| <b>Percent Window Glass</b>              |               |   |                      |                     |                          |                    |
| 50 or Less .....                         | 204           | 103   | 196                  | 25                  | 44                       | 51                 |
| 51 to 100 .....                          | 16            | 10  | 16                   | 4                   | 4                        | 8                  |
| Don't Know .....                         | 23            | 22  | 23                   | NC                  | 16                       | NC                 |
| <b>Multibuilding Facility</b>            |               |   |                      |                     |                          |                    |
| Yes .....                                | 148           | 93  | 144                  | 15                  | 39                       | 35                 |
| No .....                                 | 95            | 42  | 91                   | 14                  | 25                       | 24                 |
| <b>Percent Lit When Open</b>             |               |   |                      |                     |                          |                    |
| 1 to 50 .....                            | 15            | 9   | 14                   | NC                  | 1                        | 1                  |
| 51 to 100 .....                          | 227           | 126   | 221                  | 29                  | 63                       | 58                 |
| No Operating Hours .....                 | 1             | NC  | NC                   | NC                  | NC                       | NC                 |
| Don't Know .....                         | NC            | NC  | NC                   | NC                  | NC                       | NC                 |

See footnotes at end of table.

**Table 3.29. Lighting Equipment in FBSS Buildings in Federal Region 6,  
Number of Buildings, 1993 (Continued)**

| Building Characteristics  | All Buildings | Lighting Equipment Types<br>(more than one may apply) |                      |                     |                          |                    |  |
|---|---------------|---|----------------------|---------------------|--------------------------|--------------------|--|
|   |               | Incandescent  | Standard Fluorescent | Compact Fluorescent | High-Intensity Discharge | Electronic Ballast |  |
| <b>Percent Lit When Closed</b>  |               |   |                      |                     |                          |                    |  |
| Not Lit .....   | 33            | 10  | 30                   | 4                   | 11                       | 8                  |  |
| 1 to 50 .....   | 165           | 97  | 162                  | 21                  | 38                       | 34                 |  |
| 51 to 100 .....   | 25            | 18  | 25                   | 4                   | 10                       | 9                  |  |
| No Off Hours .....  | 20            | 10  | 18                   | NC                  | 5                        | 8                  |  |
| Don't Know .....  | NC            | NC  | NC                   | NC                  | NC                       | NC                 |  |
| <b>Lighting Conservation Features<br/>(more than one may apply)</b>       |               |   |                      |                     |                          |                    |  |
| Specular Reflectors .....   | 92            | 44  | 89                   | 16                  | 24                       | 39                 |  |
| Natural Lighting Control<br>Sensors .....                                 | 27            | 13  | 26                   | 8                   | 12                       | 16                 |  |
| Occupancy Sensors .....   | 58            | 29  | 56                   | 17                  | 20                       | 34                 |  |
| Time Clock .....  | 36            | 18  | 35                   | 9                   | 14                       | 18                 |  |
| Manual Dimmer Switches .....  | 44            | 26  | 41                   | 16                  | 11                       | 20                 |  |
| <b>Energy Management Practices<br/>(more than one may apply)</b>          |               |   |                      |                     |                          |                    |  |
| Energy Management and Control<br>System .....                             | 96            | 52  | 92                   | 18                  | 29                       | 34                 |  |
| Energy Conservation<br>Programs <sup>1</sup> .....                        | 48            | 25  | 47                   | 8                   | 16                       | 21                 |  |
| Energy Audit .....  | 64            | 27  | 60                   | 10                  | 16                       | 22                 |  |
| HVAC Maintenance Staff <sup>2</sup> .....                                 | 57            | 35  | 56                   | 15                  | 19                       | 25                 |  |
| <b>Off-Hours Reduction in<br/>Equipment (more than one may<br/>apply)</b> |               |   |                      |                     |                          |                    |  |
| Heating .....   | 123           | 57  | 119                  | 21                  | 23                       | 30                 |  |
| Cooling .....   | 124           | 58  | 121                  | 21                  | 22                       | 31                 |  |
| Hot Water .....   | 33            | 14  | 33                   | 7                   | 9                        | 10                 |  |
| Lighting .....  | 120           | 61  | 117                  | 19                  | 21                       | 33                 |  |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.  
NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.30. Lighting Equipment in FBSS Buildings in Federal Region 9,  
Number of Buildings, 1993**

| Building Characteristics                 | All Buildings | Lighting Equipment Types<br>(more than one may apply) |                      |                     |                          |                    |
|--|---------------|---|----------------------|---------------------|--------------------------|--------------------|
|  |               | Incandescent  | Standard Fluorescent | Compact Fluorescent | High-Intensity Discharge | Electronic Ballast |
| <b>All Buildings</b> .....               | <b>326</b>    | <b>161</b>  | <b>309</b>           | <b>73</b>           | <b>75</b>                | <b>105</b>         |
| <b>Building Floorspace (square feet)</b> |               |   |                      |                     |                          |                    |
| 10,000 to 50,000 .....                   | 148           | 73  | 140                  | 16                  | 20                       | 33                 |
| 50,001 to 200,000 .....                  | 123           | 68  | 117                  | 35                  | 30                       | 45                 |
| Over 200,000 .....                       | 55            | 20  | 52                   | 22                  | 25                       | 27                 |
| <b>Principal Building Activity</b>       |               |   |                      |                     |                          |                    |
| Education .....                          | 12            | 9   | 12                   | NC                  | 4                        | 1                  |
| Health Care .....                        | 48            | 20  | 48                   | 4                   | 6                        | 19                 |
| Laboratory .....                         | 31            | 21  | 29                   | 16                  | 4                        | 7                  |
| Lodging .....                            | 22            | 15  | 19                   | 2                   | 2                        | 2                  |
| Mercantile and Service .....             | 63            | 28  | 61                   | 11                  | 27                       | 21                 |
| Office .....                             | 92            | 37  | 88                   | 34                  | 14                       | 40                 |
| All Others .....                         | 58            | 31  | 52                   | 6                   | 18                       | 15                 |
| <b>Year Constructed</b>                  |               |   |                      |                     |                          |                    |
| 1959 or Before .....                     | 130           | 70  | 124                  | 27                  | 27                       | 34                 |
| 1960 to 1969 .....                       | 55            | 28  | 54                   | 13                  | 9                        | 21                 |
| 1970 to 1979 .....                       | 62            | 27  | 56                   | 19                  | 16                       | 27                 |
| 1980 to 1989 .....                       | 65            | 31  | 62                   | 11                  | 20                       | 21                 |
| 1990 to 1993 .....                       | 14            | 5   | 13                   | 3                   | 3                        | 2                  |
| <b>Federal Agency</b>                    |               |   |                      |                     |                          |                    |
| Department of Defense .....              | 78            | 33  | 73                   | 9                   | 19                       | 14                 |
| General Services Administration ...      | 39            | 11  | 37                   | 29                  | 10                       | 26                 |
| United States Postal Service .....       | 63            | 28  | 61                   | 11                  | 22                       | 22                 |
| Veterans Administration .....            | 56            | 19  | 55                   | 4                   | 7                        | 24                 |
| All Others .....                         | 90            | 70  | 83                   | 20                  | 17                       | 19                 |
| <b>Workers (main shift)</b>              |               |   |                      |                     |                          |                    |
| Less than 50 .....                       | 93            | 54  | 83                   | 10                  | 17                       | 14                 |
| 50 to 99 .....                           | 49            | 22  | 48                   | 7                   | 10                       | 15                 |
| 100 to 499 .....                         | 134           | 67  | 129                  | 35                  | 25                       | 46                 |
| 500 or More .....                        | 50            | 18  | 49                   | 21                  | 23                       | 30                 |
| <b>Weekly Operating Hours</b>            |               |   |                      |                     |                          |                    |
| 48 or Fewer .....                        | 80            | 40  | 73                   | 5                   | 15                       | 12                 |
| 49 to 60 .....                           | 65            | 23  | 64                   | 28                  | 15                       | 32                 |
| 61 to 167 .....                          | 68            | 34  | 65                   | 10                  | 19                       | 27                 |
| Open Continuously .....                  | 113           | 64  | 107                  | 30                  | 26                       | 34                 |
| <b>Percent Window Glass</b>              |               |   |                      |                     |                          |                    |
| 50 or Less .....                         | 298           | 150   | 284                  | 58                  | 72                       | 90                 |
| 51 to 100 .....                          | 26            | 11  | 25                   | 15                  | 3                        | 15                 |
| Don't Know .....                         | 2             | NC  | NC                   | NC                  | NC                       | NC                 |
| <b>Multibuilding Facility</b>            |               |   |                      |                     |                          |                    |
| Yes .....                                | 200           | 103   | 189                  | 41                  | 46                       | 64                 |
| No .....                                 | 126           | 58  | 120                  | 32                  | 29                       | 41                 |
| <b>Percent Lit When Open</b>             |               |   |                      |                     |                          |                    |
| 1 to 50 .....                            | 20            | 11  | 18                   | 1                   | 2                        | 1                  |
| 51 to 100 .....                          | 304           | 150   | 291                  | 72                  | 73                       | 104                |
| No Operating Hours .....                 | 1             | NC  | NC                   | NC                  | NC                       | NC                 |
| Don't Know .....                         | 1             | NC  | NC                   | NC                  | NC                       | NC                 |

See footnotes at end of table.

**Table 3.30. Lighting Equipment in FBSS Buildings in Federal Region 9,  
Number of Buildings, 1993 (Continued)**

| Building Characteristics  | All Buildings | Lighting Equipment Types<br>(more than one may apply) |                      |                     |                          |                    |  |
|---|---------------|---|----------------------|---------------------|--------------------------|--------------------|--|
|   |               | Incandescent  | Standard Fluorescent | Compact Fluorescent | High-Intensity Discharge | Electronic Ballast |  |
| <b>Percent Lit When Closed</b>  |               |   |                      |                     |                          |                    |  |
| Not Lit .....   | 35            | 10  | 33                   | 3                   | 6                        | 10                 |  |
| 1 to 50 .....   | 205           | 107   | 197                  | 46                  | 45                       | 71                 |  |
| 51 to 100 .....   | 44            | 32  | 41                   | 22                  | 9                        | 11                 |  |
| No Off Hours .....  | 41            | 12  | 38                   | 2                   | 15                       | 13                 |  |
| Don't Know .....  | 1             | NC  | NC                   | NC                  | NC                       | NC                 |  |
| <b>Lighting Conservation Features<br/>(more than one may apply)</b>       |               |   |                      |                     |                          |                    |  |
| Specular Reflectors .....   | 124           | 59  | 119                  | 42                  | 31                       | 59                 |  |
| Natural Lighting Control<br>Sensors .....                                 | 58            | 21  | 57                   | 23                  | 17                       | 33                 |  |
| Occupancy Sensors .....   | 109           | 54  | 108                  | 55                  | 30                       | 51                 |  |
| Time Clock .....  | 41            | 25  | 40                   | 20                  | 16                       | 24                 |  |
| Manual Dimmer Switches .....  | 78            | 54  | 76                   | 29                  | 19                       | 35                 |  |
| <b>Energy Management Practices<br/>(more than one may apply)</b>          |               |   |                      |                     |                          |                    |  |
| Energy Management and Control<br>System .....                             | 71            | 34  | 69                   | 24                  | 25                       | 31                 |  |
| Energy Conservation<br>Programs <sup>1</sup> .....                        | 124           | 64  | 119                  | 43                  | 34                       | 63                 |  |
| Energy Audit .....  | 99            | 48  | 95                   | 24                  | 24                       | 45                 |  |
| HVAC Maintenance Staff <sup>2</sup> .....                                 | 52            | 27  | 52                   | 20                  | 17                       | 28                 |  |
| <b>Off-Hours Reduction in<br/>Equipment (more than one may<br/>apply)</b> |               |   |                      |                     |                          |                    |  |
| Heating .....   | 151           | 71  | 142                  | 40                  | 30                       | 60                 |  |
| Cooling .....   | 157           | 73  | 149                  | 37                  | 32                       | 56                 |  |
| Hot Water .....   | 68            | 30  | 62                   | 26                  | 11                       | 31                 |  |
| Lighting .....  | 172           | 80  | 164                  | 38                  | 36                       | 65                 |  |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.  
NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.31. Lighting Equipment in FBSS Building in Federal Region 3,  
Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics                 | All Buildings | Lighting Equipment Types<br>(more than one may apply) |                      |                     |                          |                    |
|--|---------------|---|----------------------|---------------------|--------------------------|--------------------|
|  |               | Incandescent  | Standard Fluorescent | Compact Fluorescent | High-Intensity Discharge | Electronic Ballast |
| <b>All Buildings</b> .....               | <b>94,880</b> | <b>64,981</b>   | <b>91,986</b>        | <b>49,455</b>       | <b>52,593</b>            | <b>65,560</b>      |
| <b>Building Floorspace (square feet)</b> |               |   |                      |                     |                          |                    |
| 10,000 to 50,000 .....                   | 2,564         | 1,398   | 2,494                | 349                 | 368                      | 640                |
| 50,001 to 200,000 .....                  | 13,166        | 7,539   | 12,661               | 2,180               | 5,287                    | 5,285              |
| Over 200,000 .....                       | 79,149        | 56,045  | 76,831               | 46,925              | 46,938                   | 59,634             |
| <b>Principal Building Activity</b>       |               |   |                      |                     |                          |                    |
| Education .....                          | 598           | 571   | 598                  | 162                 | NC                       | NC                 |
| Health Care .....                        | 14,559        | 10,992  | 14,412               | 7,501               | 8,509                    | 11,161             |
| Laboratory .....                         | 5,165         | 4,603   | 5,112                | 1,162               | 2,654                    | 2,555              |
| Lodging .....                            | 2,558         | 2,431   | 2,508                | 31                  | 375                      | 364                |
| Mercantile and Service .....             | 7,966         | 2,821   | 6,851                | 1,433               | 7,031                    | 2,168              |
| Office .....                             | 56,881        | 40,025  | 55,892               | 36,601              | 30,658                   | 45,520             |
| All Others .....                         | 7,152         | 3,538   | 6,613                | 2,565               | 3,366                    | 3,791              |
| <b>Year Constructed</b>                  |               |   |                      |                     |                          |                    |
| 1959 or Before .....                     | 43,829        | 32,805  | 42,104               | 23,915              | 23,514                   | 33,695             |
| 1960 to 1969 .....                       | 19,564        | 13,197  | 18,595               | 7,637               | 6,697                    | 10,765             |
| 1970 to 1979 .....                       | 17,737        | 11,535  | 17,737               | 12,283              | 14,377                   | 13,909             |
| 1980 to 1989 .....                       | 8,975         | 5,688   | 8,775                | 4,537               | 6,424                    | 5,163              |
| 1990 to 1993 .....                       | 4,774         | 1,756   | 4,774                | 1,082               | 1,581                    | 2,027              |
| <b>Federal Agency</b>                    |               |   |                      |                     |                          |                    |
| Department of Defense .....              | 13,988        | 13,431  | 13,938               | 10,688              | 11,155                   | 10,819             |
| General Services Administration ...      | 46,205        | 29,825  | 44,977               | 30,330              | 21,578                   | 36,094             |
| United States Postal Service .....       | 9,392         | 3,693   | 8,256                | 1,153               | 8,637                    | 2,918              |
| Veterans Administration .....            | 13,306        | 8,926   | 12,959               | 5,291               | 5,702                    | 9,535              |
| All Others .....                         | 11,989        | 9,106   | 11,856               | 1,993               | 5,522                    | 6,194              |
| <b>Workers (main shift)</b>              |               |   |                      |                     |                          |                    |
| Less than 50 .....                       | 4,102         | 1,741   | 3,593                | 365                 | 1,166                    | 814                |
| 50 to 99 .....                           | 1,903         | 1,203   | 1,833                | 236                 | 412                      | 310                |
| 100 to 499 .....                         | 13,632        | 8,871   | 13,377               | 3,870               | 5,702                    | 6,753              |
| 500 or More .....                        | 75,243        | 53,166  | 73,183               | 44,983              | 45,313                   | 57,682             |
| <b>Weekly Operating Hours</b>            |               |   |                      |                     |                          |                    |
| 48 or Fewer .....                        | 9,694         | 6,878   | 9,694                | 4,841               | 2,164                    | 5,933              |
| 49 to 60 .....                           | 25,540        | 17,434  | 24,519               | 13,371              | 12,454                   | 22,383             |
| 61 to 167 .....                          | 11,993        | 7,802   | 11,922               | 8,519               | 8,062                    | 8,530              |
| Open Continuously .....                  | 47,653        | 32,867  | 45,851               | 22,724              | 29,913                   | 28,714             |
| <b>Percent Window Glass</b>              |               |   |                      |                     |                          |                    |
| 50 or Less .....                         | 79,002        | 54,231  | 76,558               | 38,208              | 46,067                   | 53,692             |
| 51 to 100 .....                          | 14,878        | 9,750   | 14,428               | 10,247              | 5,526                    | 11,867             |
| Don't Know .....                         | 1,000         | 1,000   | 1,000                | 1,000               | 1,000                    | NC                 |
| <b>Multibuilding Facility</b>            |               |   |                      |                     |                          |                    |
| Yes .....                                | 43,861        | 28,586  | 42,321               | 18,115              | 24,187                   | 27,847             |
| No .....                                 | 51,018        | 36,395  | 49,665               | 31,339              | 28,406                   | 37,713             |
| <b>Percent Lit When Open</b>             |               |   |                      |                     |                          |                    |
| 1 to 50 .....                            | 663           | 229   | 643                  | 291                 | NC                       | 266                |
| 51 to 100 .....                          | 94,070        | 64,752  | 91,343               | 49,163              | 52,593                   | 65,293             |
| No Operating Hours .....                 | 147           | NC  | NC                   | NC                  | NC                       | NC                 |
| Don't Know .....                         | NC            | NC  | NC                   | NC                  | NC                       | NC                 |
| <b>Percent Lit When Closed</b>           |               |   |                      |                     |                          |                    |
| Not Lit .....                            | 5,149         | 2,079   | 4,039                | 1,708               | 3,311                    | 2,244              |
| 1 to 50 .....                            | 57,953        | 36,667  | 56,880               | 28,192              | 26,092                   | 40,357             |
| 51 to 100 .....                          | 17,412        | 13,955  | 17,161               | 10,197              | 14,864                   | 13,725             |
| No Off Hours .....                       | 14,366        | 12,280  | 13,906               | 9,357               | 8,325                    | 9,234              |
| Don't Know .....                         | NC            | NC  | NC                   | NC                  | NC                       | NC                 |

See footnotes at end of table.

**Table 3.31. Lighting Equipment in FBSS Building in Federal Region 3, Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | Lighting Equipment Types<br>(more than one may apply) |                      |                     |                          |                    |
|---|---------------|---|----------------------|---------------------|--------------------------|--------------------|
|   |               | Incandescent  | Standard Fluorescent | Compact Fluorescent | High-Intensity Discharge | Electronic Ballast |
| <b>Lighting Conservation Features<br/>(more than one may apply)</b> |               |   |                      |                     |                          |                    |
| Specular Reflectors .....   | 44,741        | 32,688  | 44,126               | 27,412              | 24,739                   | 36,255             |
| Natural Lighting Control  |               |   |                      |                     |                          |                    |
| Sensors .....   | 17,743        | 15,216  | 17,743               | 14,476              | 9,237                    | 16,076             |
| Occupancy Sensors .....   | 62,261        | 45,486  | 61,742               | 43,991              | 37,666                   | 52,610             |
| Time Clock .....  | 46,555        | 39,907  | 46,036               | 36,171              | 29,709                   | 39,466             |
| Manual Dimmer Switches .....  | 49,824        | 42,097  | 49,259               | 37,377              | 28,905                   | 43,797             |
| <b>Energy Management Practices<br/>(more than one may apply)</b>    |               |   |                      |                     |                          |                    |
| Energy Management and Control System .....                          | 61,891        | 42,602  | 60,750               | 33,756              | 35,944                   | 46,236             |
| Energy Conservation Programs <sup>1</sup> .....                     | 59,284        | 42,505  | 58,634               | 37,128              | 32,936                   | 48,576             |
| Energy Audit .....  | 37,621        | 28,368  | 37,421               | 21,471              | 22,966                   | 30,043             |
| HVAC Maintenance Staff <sup>2</sup> .....                           | 52,924        | 39,568  | 51,125               | 30,245              | 29,904                   | 40,191             |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>   |               |   |                      |                     |                          |                    |
| Heating .....   | 43,828        | 29,832  | 42,859               | 26,438              | 21,851                   | 35,668             |
| Cooling .....   | 43,757        | 30,067  | 42,742               | 26,261              | 21,774                   | 35,491             |
| Hot Water .....   | 26,018        | 19,184  | 25,499               | 17,164              | 10,462                   | 20,798             |
| Lighting .....  | 44,717        | 30,343  | 43,678               | 26,105              | 21,391                   | 35,670             |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.  
NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.32. Lighting Equipment in FBSS Buildings in Federal Region 6,  
Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics                 | All Buildings | Lighting Equipment Types<br>(more than one may apply) |                      |                     |                          |                    |
|--|---------------|---|----------------------|---------------------|--------------------------|--------------------|
|  |               | Incandescent  | Standard Fluorescent | Compact Fluorescent | High-Intensity Discharge | Electronic Ballast |
| <b>All Buildings</b> .....               | <b>35,816</b> | <b>20,248</b>   | <b>35,057</b>        | <b>7,942</b>        | <b>16,188</b>            | <b>15,861</b>      |
| <b>Building Floorspace (square feet)</b> |               |   |                      |                     |                          |                    |
| 10,000 to 50,000 .....                   | 2,591         | 1,099   | 2,478                | 164                 | 406                      | 440                |
| 50,001 to 200,000 .....                  | 9,548         | 7,017   | 9,146                | 602                 | 2,343                    | 2,620              |
| Over 200,000 .....                       | 23,677        | 12,133  | 23,433               | 7,175               | 13,439                   | 12,801             |
| <b>Principal Building Activity</b>       |               |   |                      |                     |                          |                    |
| Education .....                          | 168           | 43  | 168                  | 18                  | 53                       | 55                 |
| Health Care .....                        | 12,094        | 4,168   | 12,094               | 2,076               | 5,304                    | 8,444              |
| Laboratory .....                         | 3,331         | 2,639   | 3,087                | 256                 | 1,323                    | 50                 |
| Lodging .....                            | 942           | 607   | 783                  | NC                  | 21                       | 432                |
| Mercantile and Service .....             | 6,236         | 3,927   | 6,192                | 671                 | 4,060                    | 1,299              |
| Office .....                             | 10,799        | 7,256   | 10,637               | 4,920               | 4,915                    | 5,247              |
| All Others .....                         | 2,247         | 1,608   | 2,096                | NC                  | 512                      | 334                |
| <b>Year Constructed</b>                  |               |   |                      |                     |                          |                    |
| 1959 or Before .....                     | 13,258        | 9,746   | 12,831               | 3,350               | 5,968                    | 5,886              |
| 1960 to 1969 .....                       | 6,386         | 5,302   | 6,225                | 1,938               | 2,989                    | 2,891              |
| 1970 to 1979 .....                       | 6,175         | 1,749   | 6,175                | 2,087               | 4,716                    | 2,400              |
| 1980 to 1989 .....                       | 6,903         | 3,338   | 6,731                | 546                 | 2,493                    | 1,972              |
| 1990 to 1993 .....                       | 3,095         | 114   | 3,095                | 19                  | 23                       | 2,711              |
| <b>Federal Agency</b>                    |               |   |                      |                     |                          |                    |
| Department of Defense .....              | 1,668         | 665   | 1,612                | 633                 | 992                      | 165                |
| General Services Administration ...      | 7,888         | 4,809   | 7,727                | 4,719               | 4,068                    | 5,053              |
| United States Postal Service .....       | 7,027         | 4,607   | 6,970                | 897                 | 4,169                    | 1,435              |
| Veterans Administration .....            | 11,375        | 3,669   | 11,216               | 1,339               | 4,552                    | 8,628              |
| All Others .....                         | 7,858         | 6,499   | 7,532                | 354                 | 2,407                    | 580                |
| <b>Workers (main shift)</b>              |               |   |                      |                     |                          |                    |
| Less than 50 .....                       | 2,548         | 1,601   | 2,397                | 48                  | 506                      | 319                |
| 50 to 99 .....                           | 2,026         | 1,016   | 1,867                | 124                 | 263                      | 588                |
| 100 to 499 .....                         | 9,029         | 6,640   | 8,580                | 1,145               | 2,964                    | 2,371              |
| 500 or More .....                        | 22,213        | 10,992  | 22,213               | 6,625               | 12,456                   | 12,582             |
| <b>Weekly Operating Hours</b>            |               |   |                      |                     |                          |                    |
| 48 or Fewer .....                        | 2,740         | 1,280   | 2,497                | 174                 | 361                      | 1,046              |
| 49 to 60 .....                           | 6,460         | 2,878   | 6,447                | 2,968               | 2,314                    | 1,834              |
| 61 to 167 .....                          | 8,051         | 6,731   | 7,995                | 1,783               | 4,117                    | 2,472              |
| Open Continuously .....                  | 18,565        | 9,359   | 18,118               | 3,016               | 9,396                    | 10,508             |
| <b>Percent Window Glass</b>              |               |   |                      |                     |                          |                    |
| 50 or Less .....                         | 29,836        | 16,321  | 29,076               | 6,021               | 12,127                   | 13,265             |
| 51 to 100 .....                          | 3,429         | 1,390   | 3,429                | 1,920               | 1,920                    | 2,596              |
| Don't Know .....                         | 2,552         | 2,538   | 2,552                | NC                  | 2,141                    | NC                 |
| <b>Multibuilding Facility</b>            |               |   |                      |                     |                          |                    |
| Yes .....                                | 24,441        | 14,792  | 23,933               | 4,014               | 9,206                    | 10,340             |
| No .....                                 | 11,375        | 5,457   | 11,124               | 3,927               | 6,983                    | 5,521              |
| <b>Percent Lit When Open</b>             |               |   |                      |                     |                          |                    |
| 1 to 50 .....                            | 1,062         | 744   | 1,049                | NC                  | 183                      | 75                 |
| 51 to 100 .....                          | 34,672        | 19,505  | 34,008               | 7,942               | 16,005                   | 15,786             |
| No Operating Hours .....                 | 82            | NC  | NC                   | NC                  | NC                       | NC                 |
| Don't Know .....                         | NC            | NC  | NC                   | NC                  | NC                       | NC                 |
| <b>Percent Lit When Closed</b>           |               |   |                      |                     |                          |                    |
| Not Lit .....                            | 2,691         | 1,147   | 2,424                | 1,201               | 1,496                    | 724                |
| 1 to 50 .....                            | 20,495        | 13,218  | 20,406               | 5,814               | 8,833                    | 7,195              |
| 51 to 100 .....                          | 8,029         | 4,121   | 8,029                | 927                 | 3,308                    | 5,239              |
| No Off Hours .....                       | 4,601         | 1,763   | 4,199                | NC                  | 2,552                    | 2,702              |
| Don't Know .....                         | NC            | NC  | NC                   | NC                  | NC                       | NC                 |

See footnotes at end of table.

**Table 3.32. Lighting Equipment in FBSS Buildings in Federal Region 6, Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | Lighting Equipment Types<br>(more than one may apply) |                      |                     |                          |                    |
|---|---------------|---|----------------------|---------------------|--------------------------|--------------------|
|   |               | Incandescent  | Standard Fluorescent | Compact Fluorescent | High-Intensity Discharge | Electronic Ballast |
| <b>Lighting Conservation Features<br/>(more than one may apply)</b>   |               |   |                      |                     |                          |                    |
| Specular Reflectors .....   | 18,017        | 9,240   | 17,664               | 4,173               | 7,863                    | 11,662             |
| Natural Lighting Control  |               |   |                      |                     |                          |                    |
| Sensors .....   | 6,740         | 2,524   | 6,581                | 2,025               | 2,658                    | 5,669              |
| Occupancy Sensors .....   | 16,435        | 8,859   | 16,114               | 4,909               | 8,217                    | 11,542             |
| Time Clock .....  | 9,037         | 3,236   | 8,878                | 2,875               | 3,191                    | 6,225              |
| Manual Dimmer Switches .....  | 13,454        | 6,641   | 13,249               | 4,457               | 4,567                    | 8,110              |
| <b>Energy Management Practices<br/>(more than one may apply)</b>      |               |   |                      |                     |                          |                    |
| Energy Management and Control System .....                            | 23,099        | 10,360  | 22,511               | 6,385               | 11,491                   | 12,411             |
| Energy Conservation Programs <sup>1</sup> .....                       | 13,513        | 6,777   | 13,480               | 3,388               | 6,805                    | 9,798              |
| Energy Audit .....  | 11,690        | 5,719   | 11,251               | 4,430               | 6,194                    | 5,856              |
| HVAC Maintenance Staff <sup>2</sup> .....                             | 15,538        | 7,664   | 15,376               | 4,995               | 6,374                    | 9,417              |
| <b>Off-Hours Reduction in Equipment<br/>(more than one may apply)</b> |               |   |                      |                     |                          |                    |
| Heating .....   | 13,162        | 7,434   | 12,932               | 4,926               | 4,639                    | 4,923              |
| Cooling .....   | 13,864        | 7,837   | 13,657               | 4,926               | 4,615                    | 5,246              |
| Hot Water .....   | 4,554         | 2,503   | 4,554                | 1,780               | 2,266                    | 1,387              |
| Lighting .....  | 12,847        | 7,991   | 12,640               | 4,892               | 4,577                    | 5,342              |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.  
NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.



**Table 3.33. Lighting Equipment in FBSS Buildings in Federal Region 9,  
Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics                 | All Buildings | Lighting Equipment Types<br>(more than one may apply) |                      |                     |                          |                    |
|--|---------------|---|----------------------|---------------------|--------------------------|--------------------|
|  |               | Incandescent  | Standard Fluorescent | Compact Fluorescent | High-Intensity Discharge | Electronic Ballast |
| <b>All Buildings</b> .....               | <b>44,316</b> | <b>20,475</b>   | <b>42,850</b>        | <b>17,339</b>       | <b>18,736</b>            | <b>23,307</b>      |
| <b>Building Floorspace (square feet)</b> |               |   |                      |                     |                          |                    |
| 10,000 to 50,000 .....                   | 3,858         | 1,864   | 3,663                | 415                 | 562                      | 1,032              |
| 50,001 to 200,000 .....                  | 12,680        | 7,322   | 12,228               | 4,155               | 3,503                    | 5,236              |
| Over 200,000 .....                       | 27,778        | 11,289  | 26,960               | 12,769              | 14,671                   | 17,038             |
| <b>Principal Building Activity</b>       |               |   |                      |                     |                          |                    |
| Education .....                          | 628           | 450   | 628                  | NC                  | 262                      | 85                 |
| Health Care .....                        | 9,903         | 4,574   | 9,903                | 2,484               | 2,472                    | 4,961              |
| Laboratory .....                         | 2,601         | 1,960   | 2,527                | 1,592               | 213                      | 631                |
| Lodging .....                            | 1,220         | 667   | 897                  | 83                  | 62                       | 73                 |
| Mercantile and Service .....             | 8,194         | 3,716   | 8,111                | 859                 | 6,475                    | 4,237              |
| Office .....                             | 16,380        | 6,522   | 15,725               | 11,151              | 5,590                    | 10,762             |
| All Others .....                         | 5,390         | 2,586   | 5,060                | 1,170               | 3,662                    | 2,558              |
| <b>Year Constructed</b>                  |               |   |                      |                     |                          |                    |
| 1959 or Before .....                     | 13,553        | 6,594   | 12,818               | 4,673               | 4,693                    | 6,824              |
| 1960 to 1969 .....                       | 9,082         | 4,486   | 9,027                | 5,204               | 3,997                    | 5,592              |
| 1970 to 1979 .....                       | 12,041        | 5,426   | 11,622               | 4,454               | 5,379                    | 7,411              |
| 1980 to 1989 .....                       | 7,955         | 3,097   | 7,842                | 2,750               | 3,741                    | 3,241              |
| 1990 to 1993 .....                       | 1,684         | 870   | 1,541                | 258                 | 926                      | 239                |
| <b>Federal Agency</b>                    |               |   |                      |                     |                          |                    |
| Department of Defense .....              | 8,489         | 2,849   | 7,866                | 2,943               | 3,537                    | 2,868              |
| General Services Administration ...      | 12,505        | 4,354   | 12,165               | 10,436              | 5,024                    | 9,527              |
| United States Postal Service .....       | 8,387         | 3,827   | 8,304                | 1,001               | 6,229                    | 4,292              |
| Veterans Administration .....            | 8,824         | 4,269   | 8,681                | 1,043               | 2,615                    | 5,302              |
| All Others .....                         | 6,111         | 5,175   | 5,834                | 1,916               | 1,330                    | 1,318              |
| <b>Workers (main shift)</b>              |               |   |                      |                     |                          |                    |
| Less than 50 .....                       | 3,684         | 2,242   | 2,945                | 719                 | 930                      | 753                |
| 50 to 99 .....                           | 2,161         | 1,100   | 2,142                | 437                 | 604                      | 705                |
| 100 to 499 .....                         | 14,017        | 7,305   | 13,540               | 4,446               | 3,734                    | 5,095              |
| 500 or More .....                        | 24,454        | 9,828   | 24,223               | 11,738              | 13,468                   | 16,753             |
| <b>Weekly Operating Hours</b>            |               |   |                      |                     |                          |                    |
| 48 or Fewer .....                        | 4,822         | 2,719   | 4,276                | 454                 | 1,172                    | 955                |
| 49 to 60 .....                           | 13,424        | 4,499   | 13,369               | 9,532               | 5,133                    | 9,185              |
| 61 to 167 .....                          | 5,706         | 3,301   | 5,558                | 1,877               | 2,905                    | 3,217              |
| Open Continuously .....                  | 20,364        | 9,955   | 19,647               | 5,476               | 9,526                    | 9,950              |
| <b>Percent Window Glass</b>              |               |   |                      |                     |                          |                    |
| 50 or Less .....                         | 37,432        | 18,276  | 36,105               | 12,394              | 16,372                   | 17,762             |
| 51 to 100 .....                          | 6,800         | 2,199   | 6,745                | 4,945               | 2,363                    | 5,545              |
| Don't Know .....                         | 84            | NC  | NC                   | NC                  | NC                       | NC                 |
| <b>Multibuilding Facility</b>            |               |   |                      |                     |                          |                    |
| Yes .....                                | 26,821        | 14,046  | 26,038               | 8,337               | 10,972                   | 12,980             |
| No .....                                 | 17,495        | 6,429   | 16,812               | 9,002               | 7,763                    | 10,327             |
| <b>Percent Lit When Open</b>             |               |   |                      |                     |                          |                    |
| 1 to 50 .....                            | 1,847         | 931   | 1,260                | 78                  | 69                       | 123                |
| 51 to 100 .....                          | 42,375        | 19,543  | 41,590               | 17,261              | 18,667                   | 23,184             |
| No Operating Hours .....                 | 29            | NC  | NC                   | NC                  | NC                       | NC                 |
| Don't Know .....                         | 64            | NC  | NC                   | NC                  | NC                       | NC                 |
| <b>Percent Lit When Closed</b>           |               |   |                      |                     |                          |                    |
| Not Lit .....                            | 1,664         | 222   | 1,600                | 317                 | 417                      | 701                |
| 1 to 50 .....                            | 25,288        | 12,656  | 24,667               | 12,447              | 9,589                    | 14,273             |
| 51 to 100 .....                          | 8,109         | 4,994   | 7,801                | 3,640               | 2,615                    | 2,684              |
| No Off Hours .....                       | 9,190         | 2,603   | 8,781                | 935                 | 6,115                    | 5,648              |
| Don't Know .....                         | 64            | NC  | NC                   | NC                  | NC                       | NC                 |

See footnotes at end of table.

**Table 3.33. Lighting Equipment in FBSS Buildings in Federal Region 9,  
Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | Lighting Equipment Types<br>(more than one may apply) |                      |                     |                          |                    |
|---|---------------|---|----------------------|---------------------|--------------------------|--------------------|
|   |               | Incandescent  | Standard Fluorescent | Compact Fluorescent | High-Intensity Discharge | Electronic Ballast |
| <b>Lighting Conservation Features<br/>(more than one may apply)</b> |               |   |                      |                     |                          |                    |
| Specular Reflectors .....   | 21,850        | 9,554   | 21,637               | 12,265              | 8,640                    | 13,517             |
| Natural Lighting Control  |               |   |                      |                     |                          |                    |
| Sensors .....   | 13,760        | 4,011   | 13,617               | 7,935               | 6,074                    | 8,258              |
| Occupancy Sensors .....   | 25,245        | 11,469  | 25,180               | 15,083              | 12,036                   | 16,127             |
| Time Clock .....  | 10,539        | 6,482   | 10,484               | 7,210               | 6,584                    | 6,656              |
| Manual Dimmer Switches .....  | 14,455        | 10,224  | 14,371               | 7,795               | 6,245                    | 7,293              |
| <b>Energy Management Practices<br/>(more than one may apply)</b>    |               |   |                      |                     |                          |                    |
| Energy Management and Control System .....                          | 18,231        | 7,727   | 17,903               | 7,441               | 10,875                   | 11,378             |
| Energy Conservation Programs <sup>1</sup> .....                     | 24,699        | 11,924  | 24,511               | 13,891              | 10,570                   | 16,181             |
| Energy Audit .....  | 17,444        | 9,157   | 16,789               | 6,254               | 9,828                    | 12,008             |
| HVAC Maintenance Staff <sup>2</sup> .....                           | 14,570        | 8,130   | 14,570               | 8,282               | 6,651                    | 8,859              |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>   |               |   |                      |                     |                          |                    |
| Heating .....   | 19,631        | 9,172   | 19,015               | 11,608              | 6,905                    | 12,166             |
| Cooling .....   | 19,219        | 8,636   | 18,599               | 10,787              | 6,834                    | 11,521             |
| Hot Water .....   | 13,614        | 5,154   | 13,155               | 9,541               | 4,876                    | 9,004              |
| Lighting .....  | 21,155        | 9,503   | 20,567               | 11,605              | 7,825                    | 12,556             |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.  
NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.34. Energy Conservation Features in FBSS Building in Federal Region 3, Number of Buildings and Floorspace, 1993**

| Building Characteristics                         | Number of Buildings |                          |                |            |            | Total Floorspace (thousand square feet) |                          |                |               |               |
|--|---------------------|--------------------------|----------------|------------|------------|---|--------------------------|----------------|---------------|---------------|
|  | All Buildings       | Any Conservation Feature | Building Shell | HVAC       | Lighting   | All Buildings                           | Any Conservation Feature | Building Shell | HVAC          | Lighting      |
| <b>All Buildings</b> .....                       | <b>312</b>          | <b>309</b>               | <b>290</b>     | <b>303</b> | <b>210</b> | <b>94,880</b>                           | <b>94,361</b>            | <b>84,557</b>  | <b>93,543</b> | <b>80,953</b> |
| <b>Building Floorspace (square feet)</b>         |                     |                          |                |            |            |   |                          |                |               |               |
| 10,000 to 50,000 .....                           | 94                  | 94                       | 91             | 92         | 52         | 2,564                                   | 2,564                    | 2,451          | 2,541         | 1,401         |
| 50,001 to 200,000 .....                          | 117                 | 115                      | 110            | 112        | 74         | 13,166                                  | 12,906                   | 12,381         | 12,538        | 8,315         |
| Over 200,000 .....                               | 101                 | 100                      | 89             | 99         | 84         | 79,149                                  | 78,891                   | 69,724         | 78,464        | 71,238        |
| <b>Principal Building Activity</b>               |                     |                          |                |            |            |   |                          |                |               |               |
| Education .....                                  | 8                   | 8                        | 8              | 8          | 5          | 598                                     | 598                      | 598            | 598           | 459           |
| Health Care .....                                | 41                  | 41                       | 41             | 40         | 31         | 14,559                                  | 14,559                   | 14,559         | 14,412        | 12,538        |
| Laboratory .....                                 | 37                  | 37                       | 37             | 37         | 13         | 5,165                                   | 5,165                    | 5,165          | 5,165         | 2,654         |
| Lodging .....                                    | 13                  | 13                       | 12             | 13         | 6          | 2,558                                   | 2,558                    | 1,077          | 2,558         | 605           |
| Mercantile and Service .....                     | 46                  | 46                       | 44             | 45         | 29         | 7,966                                   | 7,966                    | 7,863          | 7,907         | 6,050         |
| Office .....                                     | 124                 | 124                      | 111            | 120        | 103        | 56,881                                  | 56,881                   | 48,877         | 56,269        | 53,853        |
| All Others .....                                 | 43                  | 40                       | 37             | 40         | 23         | 7,152                                   | 6,633                    | 6,418          | 6,633         | 4,795         |
| <b>Year Constructed</b>                          |                     |                          |                |            |            |   |                          |                |               |               |
| 1959 or Before .....                             | 142                 | 140                      | 128            | 136        | 98         | 43,829                                  | 43,510                   | 37,203         | 43,129        | 37,505        |
| 1960 to 1969 .....                               | 70                  | 70                       | 65             | 69         | 41         | 19,564                                  | 19,564                   | 16,273         | 19,138        | 14,596        |
| 1970 to 1979 .....                               | 47                  | 47                       | 46             | 47         | 32         | 17,737                                  | 17,737                   | 17,679         | 17,737        | 16,630        |
| 1980 to 1989 .....                               | 38                  | 37                       | 37             | 36         | 29         | 8,975                                   | 8,775                    | 8,775          | 8,765         | 8,058         |
| 1990 to 1993 .....                               | 15                  | 15                       | 14             | 15         | 10         | 4,774                                   | 4,774                    | 4,626          | 4,774         | 4,163         |
| <b>Federal Agency</b>                            |                     |                          |                |            |            |   |                          |                |               |               |
| Department of Defense .....                      | 22                  | 21                       | 20             | 21         | 14         | 13,988                                  | 13,928                   | 12,447         | 13,928        | 12,088        |
| General Services Administration .....            | 83                  | 82                       | 69             | 81         | 73         | 46,205                                  | 45,946                   | 37,942         | 45,519        | 43,692        |
| United States Postal Service .....               | 57                  | 57                       | 55             | 55         | 36         | 9,392                                   | 9,392                    | 9,289          | 9,319         | 6,866         |
| Veterans Administration .....                    | 56                  | 55                       | 54             | 53         | 40         | 13,306                                  | 13,106                   | 12,958         | 12,949        | 10,241        |
| All Others .....                                 | 94                  | 94                       | 92             | 93         | 47         | 11,989                                  | 11,989                   | 11,921         | 11,827        | 8,067         |
| <b>Energy Sources (more than one may apply)</b>  |                     |                          |                |            |            |   |                          |                |               |               |
| Electricity .....                                | 311                 | 308                      | 289            | 302        | 209        | 94,161                                  | 93,642                   | 83,838         | 92,824        | 80,234        |
| Natural Gas .....                                | 139                 | 139                      | 130            | 136        | 100        | 58,674                                  | 58,674                   | 53,375         | 58,454        | 52,264        |
| Fuel Oil .....                                   | 89                  | 89                       | 86             | 88         | 63         | 39,300                                  | 39,300                   | 37,719         | 39,153        | 35,096        |
| District Heat .....                              | 154                 | 153                      | 142            | 151        | 103        | 63,991                                  | 63,931                   | 57,611         | 63,342        | 56,414        |
| District Chilled Water .....                     | 57                  | 57                       | 57             | 56         | 35         | 22,922                                  | 22,922                   | 22,922         | 22,495        | 19,908        |
| Propane .....                                    | 5                   | 5                        | 5              | 5          | 4          | 941                                     | 941                      | 941            | 941           | 905           |
| Any Other .....                                  | 8                   | 8                        | 6              | 8          | 6          | 4,470                                   | 4,470                    | 2,941          | 4,470         | 4,293         |
| <b>Energy End Uses (more than one may apply)</b> |                     |                          |                |            |            |   |                          |                |               |               |
| Heating .....                                    | 307                 | 306                      | 287            | 300        | 207        | 94,063                                  | 94,003                   | 84,198         | 93,184        | 80,595        |
| Air Conditioning .....                           | 305                 | 304                      | 285            | 298        | 207        | 93,454                                  | 93,394                   | 83,590         | 92,576        | 80,039        |
| Water Heating .....                              | 303                 | 302                      | 284            | 296        | 205        | 93,138                                  | 93,078                   | 83,299         | 92,260        | 80,064        |
| Cooking .....                                    | 108                 | 108                      | 103            | 107        | 91         | 69,947                                  | 69,947                   | 64,665         | 69,520        | 63,750        |
| Manufacturing .....                              | 50                  | 49                       | 48             | 48         | 35         | 27,041                                  | 26,981                   | 26,923         | 26,922        | 24,375        |
| <b>Workers (main shift)</b>                      |                     |                          |                |            |            |   |                          |                |               |               |
| Less than 50 .....                               | 71                  | 69                       | 64             | 66         | 35         | 4,102                                   | 3,643                    | 3,113          | 3,194         | 1,978         |
| 50 to 99 .....                                   | 39                  | 39                       | 38             | 39         | 26         | 1,903                                   | 1,903                    | 1,858          | 1,903         | 1,354         |
| 100 to 499 .....                                 | 107                 | 106                      | 103            | 103        | 68         | 13,632                                  | 13,572                   | 13,300         | 13,203        | 8,973         |
| 500 or More .....                                | 95                  | 95                       | 85             | 95         | 81         | 75,243                                  | 75,243                   | 66,285         | 75,243        | 68,648        |
| <b>Weekly Operating Hours</b>                    |                     |                          |                |            |            |   |                          |                |               |               |
| 48 or Fewer .....                                | 51                  | 50                       | 44             | 47         | 35         | 9,694                                   | 9,634                    | 5,910          | 9,036         | 8,377         |
| 49 to 60 .....                                   | 76                  | 76                       | 73             | 76         | 55         | 25,540                                  | 25,540                   | 24,449         | 25,540        | 23,182        |
| 61 to 167 .....                                  | 60                  | 60                       | 54             | 59         | 40         | 11,993                                  | 11,993                   | 8,720          | 11,980        | 10,939        |
| Open Continuously .....                          | 125                 | 123                      | 119            | 121        | 80         | 47,653                                  | 47,194                   | 45,477         | 46,987        | 38,455        |

See footnotes at end of table.

**Table 3.34. Energy Conservation Features in FBSS Building in Federal Region 3, Number of Buildings and Floorspace, 1993 (Continued)**

| Building Characteristics                                     | Number of Buildings |                          |                |      |          | Total Floorspace<br>(thousand square feet) |                          |                |        |          |
|--|---------------------|--------------------------|----------------|------|----------|--|--------------------------|----------------|--------|----------|
|  | All Buildings       | Any Conservation Feature | Building Shell | HVAC | Lighting | All Buildings                              | Any Conservation Feature | Building Shell | HVAC   | Lighting |
| <b>Percent Window Glass</b>                                  |                     |                          |                |      |          |  |                          |                |        |          |
| 50 or Less .....   | 269                 | 266                      | 249            | 261  | 173      | 79,002                                     | 78,483                   | 69,326         | 78,091 | 67,002   |
| 51 to 100 .....  | 42                  | 42                       | 40             | 41   | 36       | 14,878                                     | 14,878                   | 14,231         | 14,452 | 12,952   |
| Don't Know .....   | 1                   | 1                        | 1              | 1    | 1        | 1,000                                      | 1,000                    | 1,000          | 1,000  | 1,000    |
| <b>Multibuilding Facility</b>                                |                     |                          |                |      |          |  |                          |                |        |          |
| Yes .....  | 176                 | 174                      | 163            | 170  | 110      | 43,861                                     | 43,601                   | 38,067         | 42,806 | 33,289   |
| No .....   | 136                 | 135                      | 127            | 133  | 100      | 51,018                                     | 50,760                   | 46,490         | 50,737 | 47,664   |
| <b>Percent of Floorspace Heated</b>                          |                     |                          |                |      |          |  |                          |                |        |          |
| Not Heated .....   | 5                   | 3                        | 3              | 3    | 3        | 817  | 359                      | 359            | 359    | 359      |
| 1 to 50 .....  | 12                  | 12                       | 11             | 10   | 7        | 5,787                                      | 5,787                    | 5,639          | 5,350  | 5,127    |
| 51 to 100 .....  | 295                 | 294                      | 276            | 290  | 200      | 88,275                                     | 88,215                   | 78,559         | 87,834 | 75,468   |
| <b>Percent of Floorspace Cooled</b>                          |                     |                          |                |      |          |  |                          |                |        |          |
| Not Cooled .....   | 13                  | 11                       | 10             | 11   | 7        | 3,582                                      | 3,123                    | 1,641          | 3,123  | 1,209    |
| 1 to 50 .....  | 30                  | 30                       | 25             | 29   | 18       | 9,874                                      | 9,874                    | 9,351          | 9,864  | 9,047    |
| 51 to 100 .....  | 269                 | 268                      | 255            | 263  | 185      | 81,424                                     | 81,364                   | 73,565         | 80,556 | 70,697   |
| <b>Percent Lit When Open</b>                                 |                     |                          |                |      |          |  |                          |                |        |          |
| 1 to 50 .....  | 11                  | 11                       | 9              | 10   | 5        | 663  | 663                      | 515            | 653    | 297      |
| 51 to 100 .....  | 300                 | 297                      | 280            | 293  | 205      | 94,070                                     | 93,551                   | 83,895         | 92,890 | 80,656   |
| No Operating Hours .....                                     | 1                   | 1                        | 1              | NC   | NC       | 147  | 147                      | 147            | NC     | NC       |
| Don't Know .....   | NC                  | NC                       | NC             | NC   | NC       | NC   | NC                       | NC             | NC     | NC       |
| <b>Heating Equipment (more than one may apply)</b>           |                     |                          |                |      |          |  |                          |                |        |          |
| Heat Pumps .....   | 34                  | 34                       | 34             | 32   | 28       | 10,922                                     | 10,922                   | 10,922         | 10,485 | 10,724   |
| Furnaces .....   | 16                  | 16                       | 15             | 15   | 8        | 1,694                                      | 1,694                    | 1,636          | 1,635  | 1,332    |
| Individual Space Heaters .....                               | 75                  | 75                       | 69             | 73   | 56       | 34,923                                     | 34,923                   | 32,183         | 34,717 | 31,690   |
| District Heat .....  | 167                 | 166                      | 152            | 164  | 107      | 67,704                                     | 67,644                   | 59,221         | 67,055 | 57,181   |
| Boilers .....  | 93                  | 93                       | 89             | 91   | 69       | 20,082                                     | 20,082                   | 18,726         | 20,009 | 18,347   |
| Packaged-Heating Units .....                                 | 25                  | 25                       | 25             | 24   | 17       | 6,006                                      | 6,006                    | 6,006          | 5,579  | 4,321    |
| <b>Cooling Equipment (more than one may apply)</b>           |                     |                          |                |      |          |  |                          |                |        |          |
| Residential-Type Central A/C .....                           | 30                  | 30                       | 25             | 29   | 19       | 19,073                                     | 19,073                   | 16,160         | 19,060 | 16,883   |
| Heat Pumps .....   | 37                  | 37                       | 34             | 35   | 29       | 11,388                                     | 11,388                   | 9,517          | 10,951 | 11,170   |
| Individual A/C .....   | 80                  | 80                       | 72             | 79   | 60       | 28,082                                     | 28,082                   | 25,938         | 28,023 | 23,933   |
| District Chilled Water .....                                 | 72                  | 72                       | 71             | 72   | 45       | 28,194                                     | 28,194                   | 28,046         | 28,194 | 23,915   |
| Central Chillers .....                                       | 158                 | 158                      | 146            | 155  | 120      | 63,914                                     | 63,914                   | 56,118         | 63,281 | 57,368   |
| Packaged-A/C Units .....                                     | 127                 | 127                      | 117            | 125  | 94       | 56,664                                     | 56,664                   | 51,507         | 56,075 | 51,246   |
| Swamp Coolers .....  | 3                   | 3                        | 3              | 3    | 3        | 378  | 378                      | 378            | 378    | 378      |
| <b>Lighting Equipment (more than one may apply)</b>          |                     |                          |                |      |          |  |                          |                |        |          |
| Incandescent .....   | 184                 | 182                      | 170            | 180  | 133      | 64,981                                     | 64,662                   | 57,532         | 64,593 | 57,794   |
| Standard Fluorescent .....                                   | 300                 | 299                      | 281            | 294  | 205      | 91,986                                     | 91,926                   | 82,147         | 91,255 | 80,314   |
| Compact Fluorescent .....                                    | 80                  | 80                       | 72             | 80   | 72       | 49,455                                     | 49,455                   | 42,933         | 49,455 | 48,012   |
| High-Intensity Discharge .....                               | 111                 | 109                      | 102            | 109  | 82       | 52,593                                     | 52,134                   | 48,685         | 52,134 | 47,858   |
| Electronic Ballast .....                                     | 135                 | 135                      | 126            | 135  | 115      | 65,560                                     | 65,560                   | 60,177         | 65,560 | 62,397   |
| <b>Energy Management Practices (more than one may apply)</b> |                     |                          |                |      |          |  |                          |                |        |          |
| Energy Management and Control System .....                   | 132                 | 132                      | 127            | 132  | 105      | 61,891                                     | 61,891                   | 57,447         | 61,891 | 55,202   |
| Energy Conservation Programs <sup>1</sup> .....              | 99                  | 97                       | 87             | 97   | 84       | 59,284                                     | 59,024                   | 51,419         | 59,024 | 56,297   |
| Energy Audit .....   | 99                  | 98                       | 90             | 98   | 74       | 37,621                                     | 37,421                   | 33,287         | 37,421 | 34,439   |
| HVAC Maintenance Staff <sup>2</sup> .....                    | 97                  | 96                       | 84             | 96   | 67       | 52,924                                     | 52,665                   | 43,488         | 52,665 | 44,519   |

See footnotes at end of table.

**Table 3.34. Energy Conservation Features in FBSS Building in Federal Region 3, Number of Buildings and Floorspace, 1993 (Continued)**

| Building Characteristics  | Number of Buildings |                          |                |      |          | Total Floorspace (thousand square feet) |                          |                |        |          |
|---|---------------------|--------------------------|----------------|------|----------|---|--------------------------|----------------|--------|----------|
|   | All Buildings       | Any Conservation Feature | Building Shell | HVAC | Lighting | All Buildings                           | Any Conservation Feature | Building Shell | HVAC   | Lighting |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b> |                     |                          |                |      |          |   |                          |                |        |          |
| Heating .....   | 144                 | 144                      | 130            | 140  | 107      | 43,828                                  | 43,828                   | 35,766         | 43,217 | 40,223   |
| Cooling .....   | 145                 | 145                      | 130            | 141  | 109      | 43,757                                  | 43,757                   | 35,669         | 43,145 | 40,171   |
| Hot Water .....   | 77                  | 77                       | 69             | 76   | 65       | 26,018                                  | 26,018                   | 21,230         | 25,591 | 24,187   |
| Lighting .....  | 162                 | 162                      | 148            | 159  | 119      | 44,717                                  | 44,717                   | 36,688         | 44,118 | 41,127   |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.35. Energy Conservation Features in FBSS Buildings in Federal Region 6, Number of Buildings and Floorspace, 1993**

| Building Characteristics                         | Number of Buildings |                          |                |            |            | Total Floorspace (thousand square feet) |                          |                |               |               |
|--|---------------------|--------------------------|----------------|------------|------------|---|--------------------------|----------------|---------------|---------------|
|  | All Buildings       | Any Conservation Feature | Building Shell | HVAC       | Lighting   | All Buildings                           | Any Conservation Feature | Building Shell | HVAC          | Lighting      |
| <b>All Buildings</b> .....                       | <b>243</b>          | <b>242</b>               | <b>228</b>     | <b>236</b> | <b>136</b> | <b>35,816</b>                           | <b>35,734</b>            | <b>33,946</b>  | <b>35,425</b> | <b>25,654</b> |
| <b>Building Floorspace (square feet)</b>         |                     |                          |                |            |            |   |                          |                |               |               |
| 10,000 to 50,000 .....                           | 107                 | 107                      | 102            | 103        | 55         | 2,591                                   | 2,591                    | 2,454          | 2,525         | 1,450         |
| 50,001 to 200,000 .....                          | 86                  | 85                       | 79             | 83         | 42         | 9,548                                   | 9,466                    | 8,763          | 9,224         | 4,717         |
| Over 200,000 .....                               | 50                  | 50                       | 47             | 50         | 39         | 23,677                                  | 23,677                   | 22,728         | 23,677        | 19,487        |
| <b>Principal Building Activity</b>               |                     |                          |                |            |            |   |                          |                |               |               |
| Education .....                                  | 6                   | 6                        | 6              | 6          | 6          | 168                                     | 168                      | 168            | 168           | 168           |
| Health Care .....                                | 35                  | 35                       | 32             | 34         | 24         | 12,094                                  | 12,094                   | 11,738         | 11,951        | 10,284        |
| Laboratory .....                                 | 29                  | 29                       | 27             | 29         | 8          | 3,331                                   | 3,331                    | 3,131          | 3,331         | 715           |
| Lodging .....                                    | 16                  | 16                       | 14             | 16         | 11         | 942                                     | 942                      | 757            | 942           | 704           |
| Mercantile and Service .....                     | 49                  | 49                       | 48             | 48         | 30         | 6,236                                   | 6,236                    | 5,791          | 6,136         | 4,474         |
| Office .....                                     | 76                  | 76                       | 73             | 73         | 43         | 10,799                                  | 10,799                   | 10,616         | 10,752        | 8,453         |
| All Others .....                                 | 32                  | 31                       | 28             | 30         | 14         | 2,247                                   | 2,165                    | 1,745          | 2,146         | 856           |
| <b>Year Constructed</b>                          |                     |                          |                |            |            |   |                          |                |               |               |
| 1959 or Before .....                             | 103                 | 102                      | 94             | 100        | 52         | 13,258                                  | 13,176                   | 11,805         | 13,023        | 7,543         |
| 1960 to 1969 .....                               | 38                  | 38                       | 36             | 36         | 26         | 6,386                                   | 6,386                    | 6,107          | 6,356         | 5,577         |
| 1970 to 1979 .....                               | 34                  | 34                       | 34             | 33         | 20         | 6,175                                   | 6,175                    | 6,175          | 6,075         | 4,743         |
| 1980 to 1989 .....                               | 57                  | 57                       | 54             | 57         | 31         | 6,903                                   | 6,903                    | 6,822          | 6,903         | 4,785         |
| 1990 to 1993 .....                               | 11                  | 11                       | 10             | 10         | 7          | 3,095                                   | 3,095                    | 3,037          | 3,070         | 3,006         |
| <b>Federal Agency</b>                            |                     |                          |                |            |            |   |                          |                |               |               |
| Department of Defense .....                      | 22                  | 22                       | 21             | 20         | 12         | 1,668                                   | 1,668                    | 1,658          | 1,501         | 1,042         |
| General Services Administration .....            | 35                  | 35                       | 35             | 35         | 28         | 7,888                                   | 7,888                    | 7,888          | 7,888         | 7,128         |
| United States Postal Service .....               | 61                  | 61                       | 57             | 59         | 37         | 7,027                                   | 7,027                    | 6,396          | 6,916         | 4,947         |
| Veterans Administration .....                    | 36                  | 36                       | 33             | 36         | 24         | 11,375                                  | 11,375                   | 11,019         | 11,375        | 9,709         |
| All Others .....                                 | 89                  | 88                       | 82             | 86         | 35         | 7,858                                   | 7,776                    | 6,984          | 7,746         | 2,828         |
| <b>Energy Sources (more than one may apply)</b>  |                     |                          |                |            |            |   |                          |                |               |               |
| Electricity .....                                | 243                 | 242                      | 228            | 236        | 136        | 35,816                                  | 35,734                   | 33,946         | 35,425        | 25,654        |
| Natural Gas .....                                | 168                 | 168                      | 163            | 163        | 98         | 24,827                                  | 24,827                   | 24,186         | 24,544        | 18,117        |
| Fuel Oil .....                                   | 18                  | 18                       | 17             | 17         | 14         | 4,740                                   | 4,740                    | 4,294          | 4,598         | 4,492         |
| District Heat .....                              | 68                  | 68                       | 59             | 68         | 33         | 13,437                                  | 13,437                   | 12,289         | 13,437        | 9,527         |
| District Chilled Water .....                     | 30                  | 30                       | 27             | 30         | 21         | 7,980                                   | 7,980                    | 7,624          | 7,980         | 7,497         |
| Propane .....                                    | 5                   | 5                        | 5              | 5          | 1          | 200                                     | 200                      | 200            | 200           | 135           |
| Any Other .....                                  | 8                   | 8                        | 8              | 8          | 7          | 2,850                                   | 2,850                    | 2,850          | 2,850         | 2,709         |
| <b>Energy End Uses (more than one may apply)</b> |                     |                          |                |            |            |   |                          |                |               |               |
| Heating .....                                    | 242                 | 242                      | 228            | 236        | 136        | 35,734                                  | 35,734                   | 33,946         | 35,425        | 25,654        |
| Air Conditioning .....                           | 241                 | 241                      | 227            | 235        | 135        | 35,273                                  | 35,273                   | 33,485         | 34,965        | 25,193        |
| Water Heating .....                              | 238                 | 238                      | 224            | 233        | 133        | 35,221                                  | 35,221                   | 33,432         | 34,932        | 25,154        |
| Cooking .....                                    | 63                  | 63                       | 62             | 63         | 48         | 19,213                                  | 19,213                   | 19,203         | 19,213        | 16,821        |
| Manufacturing .....                              | 28                  | 28                       | 27             | 27         | 22         | 5,335                                   | 5,335                    | 4,890          | 5,316         | 4,471         |
| <b>Workers (main shift)</b>                      |                     |                          |                |            |            |   |                          |                |               |               |
| Less than 50 .....                               | 70                  | 69                       | 63             | 66         | 34         | 2,548                                   | 2,466                    | 2,074          | 2,425         | 1,226         |
| 50 to 99 .....                                   | 44                  | 44                       | 41             | 43         | 24         | 2,026                                   | 2,026                    | 1,874          | 1,926         | 1,253         |
| 100 to 499 .....                                 | 80                  | 80                       | 76             | 78         | 39         | 9,029                                   | 9,029                    | 8,231          | 8,862         | 4,083         |
| 500 or More .....                                | 49                  | 49                       | 48             | 49         | 39         | 22,213                                  | 22,213                   | 21,767         | 22,213        | 19,091        |
| <b>Weekly Operating Hours</b>                    |                     |                          |                |            |            |   |                          |                |               |               |
| 48 or Fewer .....                                | 39                  | 38                       | 33             | 35         | 22         | 2,740                                   | 2,658                    | 2,245          | 2,486         | 1,802         |
| 49 to 60 .....                                   | 46                  | 46                       | 45             | 46         | 28         | 6,460                                   | 6,460                    | 6,447          | 6,460         | 5,279         |
| 61 to 167 .....                                  | 78                  | 78                       | 75             | 75         | 32         | 8,051                                   | 8,051                    | 7,636          | 7,915         | 3,672         |
| Open Continuously .....                          | 80                  | 80                       | 75             | 80         | 54         | 18,565                                  | 18,565                   | 17,618         | 18,565        | 14,901        |

See footnotes at end of table.

**Table 3.35. Energy Conservation Features in FBSS Buildings in Federal Region 6, Number of Buildings and Floorspace, 1993 (Continued)**

| Building Characteristics                                     | Number of Buildings |                          |                |      |          | Total Floorspace<br>(thousand square feet) |                          |                |        |          |
|--|---------------------|--------------------------|----------------|------|----------|--|--------------------------|----------------|--------|----------|
|  | All Buildings       | Any Conservation Feature | Building Shell | HVAC | Lighting | All Buildings                              | Any Conservation Feature | Building Shell | HVAC   | Lighting |
| <b>Percent Window Glass</b>                                  |                     |                          |                |      |          |  |                          |                |        |          |
| 50 or Less .....   | 204                 | 203                      | 189            | 197  | 125      | 29,836                                     | 29,754                   | 27,965         | 29,445 | 23,491   |
| 51 to 100 .....  | 16                  | 16                       | 16             | 16   | 11       | 3,429                                      | 3,429                    | 3,429          | 3,429  | 2,163    |
| Don't Know .....   | 23                  | 23                       | 23             | 23   | NC       | 2,552                                      | 2,552                    | 2,552          | 2,552  | NC       |
| <b>Multibuilding Facility</b>                                |                     |                          |                |      |          |  |                          |                |        |          |
| Yes .....  | 148                 | 147                      | 137            | 145  | 75       | 24,441                                     | 24,359                   | 22,765         | 24,328 | 17,836   |
| No .....   | 95                  | 95                       | 91             | 91   | 61       | 11,375                                     | 11,375                   | 11,180         | 11,097 | 7,819    |
| <b>Percent of Floorspace Heated</b>                          |                     |                          |                |      |          |  |                          |                |        |          |
| Not Heated .....   | 1                   | NC                       | NC             | NC   | NC       | 82   | NC                       | NC             | NC     | NC       |
| 1 to 50 .....  | 11                  | 11                       | 10             | 11   | 8        | 1,288                                      | 1,288                    | 1,123          | 1,288  | 1,197    |
| 51 to 100 .....  | 231                 | 231                      | 218            | 225  | 128      | 34,446                                     | 34,446                   | 32,823         | 34,138 | 24,457   |
| <b>Percent of Floorspace Cooled</b>                          |                     |                          |                |      |          |  |                          |                |        |          |
| Not Cooled .....   | 3                   | 2                        | 2              | 2    | 1        | 554  | 472                      | 472            | 472    | 461      |
| 1 to 50 .....  | 26                  | 26                       | 24             | 25   | 13       | 1,951                                      | 1,951                    | 1,747          | 1,931  | 1,120    |
| 51 to 100 .....  | 214                 | 214                      | 202            | 209  | 122      | 33,312                                     | 33,312                   | 31,726         | 33,023 | 24,073   |
| <b>Percent Lit When Open</b>                                 |                     |                          |                |      |          |  |                          |                |        |          |
| 1 to 50 .....  | 15                  | 15                       | 12             | 15   | 7        | 1,062                                      | 1,062                    | 873            | 1,062  | 485      |
| 51 to 100 .....  | 227                 | 227                      | 216            | 221  | 129      | 34,672                                     | 34,672                   | 33,072         | 34,364 | 25,169   |
| No Operating Hours .....                                     | 1                   | NC                       | NC             | NC   | NC       | 82   | NC                       | NC             | NC     | NC       |
| Don't Know .....   | NC                  | NC                       | NC             | NC   | NC       | NC   | NC                       | NC             | NC     | NC       |
| <b>Heating Equipment (more than one may apply)</b>           |                     |                          |                |      |          |  |                          |                |        |          |
| Heat Pumps .....   | 10                  | 10                       | 10             | 9    | 7        | 964  | 964                      | 964            | 939    | 910      |
| Furnaces .....   | 18                  | 18                       | 18             | 16   | 11       | 791  | 791                      | 791            | 680    | 429      |
| Individual Space Heaters .....                               | 30                  | 30                       | 30             | 28   | 20       | 5,408                                      | 5,408                    | 5,408          | 5,377  | 4,370    |
| District Heat .....  | 82                  | 82                       | 73             | 82   | 42       | 15,205                                     | 15,205                   | 14,057         | 15,205 | 10,979   |
| Boilers .....  | 102                 | 102                      | 99             | 101  | 57       | 16,718                                     | 16,718                   | 16,100         | 16,576 | 11,447   |
| Packaged-Heating Units .....                                 | 59                  | 59                       | 57             | 58   | 39       | 7,574                                      | 7,574                    | 7,550          | 7,563  | 5,574    |
| <b>Cooling Equipment (more than one may apply)</b>           |                     |                          |                |      |          |  |                          |                |        |          |
| Residential-Type Central A/C .....                           | 29                  | 29                       | 28             | 27   | 19       | 4,706                                      | 4,706                    | 4,579          | 4,595  | 4,166    |
| Heat Pumps .....   | 11                  | 11                       | 11             | 10   | 9        | 1,549                                      | 1,549                    | 1,549          | 1,524  | 1,507    |
| Individual A/C .....   | 50                  | 50                       | 46             | 48   | 23       | 6,950                                      | 6,950                    | 6,405          | 6,919  | 3,509    |
| District Chilled Water .....                                 | 44                  | 44                       | 40             | 44   | 24       | 10,856                                     | 10,856                   | 10,258         | 10,856 | 9,134    |
| Central Chillers .....                                       | 122                 | 122                      | 116            | 121  | 72       | 21,596                                     | 21,596                   | 20,632         | 21,454 | 14,852   |
| Packaged-A/C Units .....                                     | 97                  | 97                       | 93             | 96   | 59       | 14,104                                     | 14,104                   | 13,783         | 14,094 | 10,742   |
| Swamp Coolers .....  | 12                  | 12                       | 12             | 12   | 9        | 2,015                                      | 2,015                    | 2,015          | 2,015  | 1,750    |
| <b>Lighting Equipment (more than one may apply)</b>          |                     |                          |                |      |          |  |                          |                |        |          |
| Incandescent .....   | 135                 | 135                      | 128            | 133  | 68       | 20,248                                     | 20,248                   | 19,082         | 20,087 | 12,950   |
| Standard Fluorescent .....                                   | 235                 | 235                      | 222            | 229  | 132      | 35,057                                     | 35,057                   | 33,281         | 34,748 | 25,288   |
| Compact Fluorescent .....                                    | 29                  | 29                       | 28             | 29   | 25       | 7,942                                      | 7,942                    | 7,807          | 7,942  | 6,370    |
| High-Intensity Discharge .....                               | 64                  | 64                       | 64             | 64   | 36       | 16,188                                     | 16,188                   | 16,188         | 16,188 | 11,208   |
| Electronic Ballast .....                                     | 59                  | 59                       | 57             | 59   | 51       | 15,861                                     | 15,861                   | 15,378         | 15,861 | 14,240   |
| <b>Energy Management Practices (more than one may apply)</b> |                     |                          |                |      |          |  |                          |                |        |          |
| Energy Management and Control System .....                   | 96                  | 96                       | 94             | 96   | 59       | 23,099                                     | 23,099                   | 22,678         | 23,099 | 17,983   |
| Energy Conservation Programs <sup>1</sup> .....              | 48                  | 48                       | 47             | 47   | 36       | 13,513                                     | 13,513                   | 13,067         | 13,488 | 12,677   |
| Energy Audit .....   | 64                  | 64                       | 62             | 61   | 45       | 11,690                                     | 11,690                   | 11,231         | 11,643 | 8,781    |
| HVAC Maintenance Staff <sup>2</sup> .....                    | 57                  | 57                       | 56             | 56   | 40       | 15,538                                     | 15,538                   | 15,092         | 15,396 | 12,576   |

See footnotes at end of table.

**Table 3.35. Energy Conservation Features in FBSS Buildings in Federal Region 6, Number of Buildings and Floorspace, 1993 (Continued)**

| Building Characteristics  | Number of Buildings |                          |                |      |          | Total Floorspace (thousand square feet) |                          |                |        |          |
|---|---------------------|--------------------------|----------------|------|----------|---|--------------------------|----------------|--------|----------|
|   | All Buildings       | Any Conservation Feature | Building Shell | HVAC | Lighting | All Buildings                           | Any Conservation Feature | Building Shell | HVAC   | Lighting |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b> |                     |                          |                |      |          |   |                          |                |        |          |
| Heating .....   | 123                 | 123                      | 115            | 117  | 75       | 13,162                                  | 13,162                   | 12,360         | 12,854 | 9,864    |
| Cooling .....   | 124                 | 124                      | 116            | 118  | 77       | 13,864                                  | 13,864                   | 13,061         | 13,555 | 10,589   |
| Hot Water .....   | 33                  | 33                       | 33             | 31   | 21       | 4,554                                   | 4,554                    | 4,554          | 4,518  | 3,532    |
| Lighting .....  | 120                 | 120                      | 112            | 114  | 74       | 12,847                                  | 12,847                   | 12,045         | 12,538 | 9,586    |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.



**Table 3.36. Energy Conservation Features in FBSS Buildings in Federal Region 9, Number of Buildings and Floorspace, 1993**

| Building Characteristics                         | Number of Buildings |                          |                |            |            | Total Floorspace<br>(thousand square feet) |                          |                |               |               |
|--|---------------------|--------------------------|----------------|------------|------------|--|--------------------------|----------------|---------------|---------------|
|  | All Buildings       | Any Conservation Feature | Building Shell | HVAC       | Lighting   | All Buildings                              | Any Conservation Feature | Building Shell | HVAC          | Lighting      |
| <b>All Buildings</b> .....                       | <b>326</b>          | <b>319</b>               | <b>248</b>     | <b>307</b> | <b>217</b> | <b>44,316</b>                              | <b>44,023</b>            | <b>34,105</b>  | <b>43,116</b> | <b>34,825</b> |
| <b>Building Floorspace (square feet)</b>         |                     |                          |                |            |            |  |                          |                |               |               |
| 10,000 to 50,000 .....                           | 148                 | 143                      | 116            | 136        | 81         | 3,858                                      | 3,711                    | 3,079          | 3,506         | 2,086         |
| 50,001 to 200,000 .....                          | 123                 | 121                      | 90             | 117        | 91         | 12,680                                     | 12,534                   | 9,234          | 12,092        | 9,914         |
| Over 200,000 .....                               | 55                  | 55                       | 42             | 54         | 45         | 27,778                                     | 27,778                   | 21,791         | 27,518        | 22,824        |
| <b>Principal Building Activity</b>               |                     |                          |                |            |            |  |                          |                |               |               |
| Education .....                                  | 12                  | 12                       | 8              | 12         | 4          | 628  | 628                      | 434            | 628           | 234           |
| Health Care .....                                | 48                  | 47                       | 42             | 47         | 35         | 9,903                                      | 9,890                    | 9,618          | 9,890         | 8,631         |
| Laboratory .....                                 | 31                  | 31                       | 15             | 31         | 25         | 2,601                                      | 2,601                    | 911            | 2,601         | 2,266         |
| Lodging .....                                    | 22                  | 19                       | 19             | 17         | 6          | 1,220                                      | 1,116                    | 1,116          | 832           | 357           |
| Mercantile and Service .....                     | 63                  | 62                       | 60             | 58         | 45         | 8,194                                      | 8,115                    | 7,525          | 7,916         | 6,681         |
| Office .....                                     | 92                  | 91                       | 59             | 89         | 66         | 16,380                                     | 16,314                   | 9,826          | 16,223        | 13,419        |
| All Others .....                                 | 58                  | 57                       | 45             | 53         | 36         | 5,390                                      | 5,360                    | 4,674          | 5,026         | 3,236         |
| <b>Year Constructed</b>                          |                     |                          |                |            |            |  |                          |                |               |               |
| 1959 or Before .....                             | 130                 | 126                      | 97             | 121        | 71         | 13,553                                     | 13,404                   | 10,689         | 13,047        | 8,530         |
| 1960 to 1969 .....                               | 55                  | 55                       | 41             | 53         | 44         | 9,082                                      | 9,082                    | 7,024          | 9,014         | 8,462         |
| 1970 to 1979 .....                               | 62                  | 60                       | 46             | 58         | 45         | 12,041                                     | 11,978                   | 8,200          | 11,702        | 9,358         |
| 1980 to 1989 .....                               | 65                  | 64                       | 52             | 62         | 46         | 7,955                                      | 7,875                    | 6,668          | 7,812         | 7,082         |
| 1990 to 1993 .....                               | 14                  | 14                       | 12             | 13         | 11         | 1,684                                      | 1,684                    | 1,524          | 1,541         | 1,392         |
| <b>Federal Agency</b>                            |                     |                          |                |            |            |  |                          |                |               |               |
| Department of Defense .....                      | 78                  | 71                       | 56             | 61         | 31         | 8,489                                      | 8,196                    | 6,964          | 7,448         | 4,260         |
| General Services Administration .....            | 39                  | 39                       | 18             | 39         | 35         | 12,505                                     | 12,505                   | 6,919          | 12,505        | 11,109        |
| United States Postal Service .....               | 63                  | 63                       | 62             | 62         | 45         | 8,387                                      | 8,387                    | 7,845          | 8,371         | 7,011         |
| Veterans Administration .....                    | 56                  | 56                       | 49             | 55         | 42         | 8,824                                      | 8,824                    | 8,326          | 8,681         | 7,466         |
| All Others .....                                 | 90                  | 90                       | 63             | 90         | 64         | 6,111                                      | 6,111                    | 4,050          | 6,111         | 4,978         |
| <b>Energy Sources (more than one may apply)</b>  |                     |                          |                |            |            |  |                          |                |               |               |
| Electricity .....                                | 325                 | 318                      | 247            | 306        | 216        | 44,296                                     | 44,004                   | 34,085         | 43,096        | 34,805        |
| Natural Gas .....                                | 225                 | 224                      | 175            | 216        | 169        | 34,703                                     | 34,669                   | 27,083         | 34,130        | 29,144        |
| Fuel Oil .....                                   | 54                  | 53                       | 37             | 53         | 40         | 11,127                                     | 11,060                   | 9,415          | 11,060        | 9,379         |
| District Heat .....                              | 74                  | 71                       | 61             | 71         | 45         | 11,757                                     | 11,675                   | 9,705          | 11,675        | 9,252         |
| District Chilled Water .....                     | 27                  | 27                       | 24             | 27         | 20         | 6,362                                      | 6,362                    | 5,629          | 6,362         | 5,484         |
| Propane .....                                    | 10                  | 10                       | 9              | 10         | 3          | 1,117                                      | 1,117                    | 1,106          | 1,117         | 815           |
| Any Other .....                                  | 5                   | 5                        | 3              | 5          | 4          | 2,606                                      | 2,606                    | 2,537          | 2,606         | 2,595         |
| <b>Energy End Uses (more than one may apply)</b> |                     |                          |                |            |            |  |                          |                |               |               |
| Heating .....                                    | 304                 | 299                      | 234            | 290        | 207        | 41,921                                     | 41,775                   | 32,838         | 41,197        | 32,968        |
| Air Conditioning .....                           | 292                 | 291                      | 228            | 282        | 205        | 41,907                                     | 41,894                   | 32,754         | 41,282        | 33,846        |
| Water Heating .....                              | 315                 | 309                      | 244            | 299        | 214        | 42,984                                     | 42,771                   | 33,733         | 42,140        | 34,007        |
| Cooking .....                                    | 70                  | 70                       | 63             | 68         | 51         | 20,045                                     | 20,045                   | 17,163         | 19,972        | 17,125        |
| Manufacturing .....                              | 30                  | 30                       | 25             | 30         | 22         | 7,693                                      | 7,693                    | 6,948          | 7,693         | 5,539         |
| <b>Workers (main shift)</b>                      |                     |                          |                |            |            |  |                          |                |               |               |
| Less than 50 .....                               | 93                  | 89                       | 66             | 83         | 44         | 3,684                                      | 3,579                    | 2,334          | 3,184         | 1,841         |
| 50 to 99 .....                                   | 49                  | 48                       | 38             | 46         | 31         | 2,161                                      | 2,120                    | 1,414          | 2,083         | 1,429         |
| 100 to 499 .....                                 | 134                 | 132                      | 104            | 128        | 98         | 14,017                                     | 13,871                   | 10,879         | 13,395        | 10,897        |
| 500 or More .....                                | 50                  | 50                       | 40             | 50         | 44         | 24,454                                     | 24,454                   | 19,477         | 24,454        | 20,658        |
| <b>Weekly Operating Hours</b>                    |                     |                          |                |            |            |  |                          |                |               |               |
| 48 or Fewer .....                                | 80                  | 77                       | 58             | 73         | 40         | 4,822                                      | 4,751                    | 3,485          | 4,507         | 2,935         |
| 49 to 60 .....                                   | 65                  | 63                       | 42             | 62         | 52         | 13,424                                     | 13,278                   | 8,153          | 13,165        | 11,802        |
| 61 to 167 .....                                  | 68                  | 68                       | 64             | 64         | 45         | 5,706                                      | 5,706                    | 5,331          | 5,582         | 4,033         |
| Open Continuously .....                          | 113                 | 111                      | 84             | 108        | 80         | 20,364                                     | 20,289                   | 17,136         | 19,862        | 16,054        |

See footnotes at end of table.

**Table 3.36. Energy Conservation Features in FBSS Buildings in Federal Region 9, Number of Buildings and Floorspace, 1993 (Continued)**

| Building Characteristics                                     | Number of Buildings |                          |                |      |          | Total Floorspace<br>(thousand square feet) |                          |                |        |          |
|--|---------------------|--------------------------|----------------|------|----------|--|--------------------------|----------------|--------|----------|
|  | All Buildings       | Any Conservation Feature | Building Shell | HVAC | Lighting | All Buildings                              | Any Conservation Feature | Building Shell | HVAC   | Lighting |
| <b>Percent Window Glass</b>                                  |                     |                          |                |      |          |  |                          |                |        |          |
| 50 or Less .....   | 298                 | 291                      | 228            | 279  | 194      | 37,432                                     | 37,140                   | 29,203         | 36,233 | 28,124   |
| 51 to 100 .....  | 26                  | 26                       | 20             | 26   | 23       | 6,800                                      | 6,800                    | 4,902          | 6,800  | 6,701    |
| Don't Know .....   | 2                   | 2                        | NC             | 2    | NC       | 84   | 84                       | NC             | 84     | NC       |
| <b>Multibuilding Facility</b>                                |                     |                          |                |      |          |  |                          |                |        |          |
| Yes .....  | 200                 | 195                      | 144            | 187  | 123      | 26,821                                     | 26,575                   | 21,499         | 25,764 | 19,635   |
| No .....   | 126                 | 124                      | 104            | 120  | 94       | 17,495                                     | 17,448                   | 12,605         | 17,352 | 15,190   |
| <b>Percent of Floorspace Heated</b>                          |                     |                          |                |      |          |  |                          |                |        |          |
| Not Heated .....   | 22                  | 20                       | 14             | 17   | 10       | 2,394                                      | 2,248                    | 1,267          | 1,919  | 1,856    |
| 1 to 50 .....  | 28                  | 27                       | 22             | 26   | 17       | 3,751                                      | 3,722                    | 3,056          | 3,683  | 1,754    |
| 51 to 100 .....  | 276                 | 272                      | 212            | 264  | 190      | 38,170                                     | 38,053                   | 29,782         | 37,514 | 31,215   |
| <b>Percent of Floorspace Cooled</b>                          |                     |                          |                |      |          |  |                          |                |        |          |
| Not Cooled .....   | 40                  | 34                       | 25             | 31   | 16       | 2,956                                      | 2,676                    | 1,840          | 2,381  | 1,420    |
| 1 to 50 .....  | 55                  | 55                       | 42             | 54   | 33       | 7,304                                      | 7,304                    | 5,776          | 7,265  | 4,415    |
| 51 to 100 .....  | 231                 | 230                      | 181            | 222  | 168      | 34,056                                     | 34,044                   | 26,489         | 33,470 | 28,990   |
| <b>Percent Lit When Open</b>                                 |                     |                          |                |      |          |  |                          |                |        |          |
| 1 to 50 .....  | 20                  | 19                       | 15             | 17   | 8        | 1,847                                      | 1,817                    | 1,235          | 1,518  | 822      |
| 51 to 100 .....  | 304                 | 299                      | 233            | 289  | 209      | 42,375                                     | 42,142                   | 32,870         | 41,533 | 34,002   |
| No Operating Hours .....                                     | 1                   | NC                       | NC             | NC   | NC       | 29   | NC                       | NC             | NC     | NC       |
| Don't Know .....   | 1                   | 1                        | NC             | 1    | NC       | 64   | 64                       | NC             | 64     | NC       |
| <b>Heating Equipment (more than one may apply)</b>           |                     |                          |                |      |          |  |                          |                |        |          |
| Heat Pumps .....   | 40                  | 40                       | 31             | 39   | 29       | 3,081                                      | 3,081                    | 2,731          | 3,060  | 2,684    |
| Furnaces .....   | 25                  | 25                       | 20             | 22   | 15       | 1,204                                      | 1,204                    | 1,037          | 1,026  | 816      |
| Individual Space Heaters .....                               | 33                  | 33                       | 31             | 32   | 23       | 4,933                                      | 4,933                    | 4,907          | 4,894  | 3,962    |
| District Heat .....  | 71                  | 69                       | 59             | 69   | 41       | 12,712                                     | 12,659                   | 10,381         | 12,659 | 8,815    |
| Boilers .....  | 146                 | 145                      | 107            | 143  | 113      | 24,010                                     | 23,976                   | 17,304         | 23,697 | 20,724   |
| Packaged-Heating Units .....                                 | 67                  | 67                       | 65             | 65   | 52       | 5,997                                      | 5,997                    | 5,848          | 5,939  | 4,692    |
| <b>Cooling Equipment (more than one may apply)</b>           |                     |                          |                |      |          |  |                          |                |        |          |
| Residential-Type Central A/C .....                           | 24                  | 24                       | 21             | 22   | 15       | 1,900                                      | 1,900                    | 1,670          | 1,847  | 1,693    |
| Heat Pumps .....   | 32                  | 32                       | 26             | 32   | 25       | 2,724                                      | 2,724                    | 2,320          | 2,724  | 2,439    |
| Individual A/C .....   | 52                  | 52                       | 38             | 49   | 32       | 5,723                                      | 5,723                    | 4,149          | 5,520  | 4,449    |
| District Chilled Water .....                                 | 31                  | 31                       | 27             | 31   | 21       | 7,647                                      | 7,647                    | 7,342          | 7,647  | 5,559    |
| Central Chillers .....                                       | 139                 | 139                      | 106            | 136  | 114      | 27,723                                     | 27,723                   | 20,592         | 27,301 | 24,098   |
| Packaged-A/C Units .....                                     | 151                 | 151                      | 120            | 147  | 121      | 23,989                                     | 23,989                   | 18,416         | 23,777 | 20,584   |
| Swamp Coolers .....  | 30                  | 29                       | 24             | 28   | 17       | 3,165                                      | 3,153                    | 2,509          | 3,114  | 2,036    |
| <b>Lighting Equipment (more than one may apply)</b>          |                     |                          |                |      |          |  |                          |                |        |          |
| Incandescent .....   | 161                 | 158                      | 129            | 151  | 113      | 20,475                                     | 20,362                   | 16,849         | 19,929 | 16,640   |
| Standard Fluorescent .....                                   | 309                 | 304                      | 240            | 294  | 211      | 42,850                                     | 42,621                   | 33,355         | 42,116 | 34,469   |
| Compact Fluorescent .....                                    | 73                  | 73                       | 39             | 72   | 68       | 17,339                                     | 17,339                   | 11,745         | 17,207 | 16,956   |
| High-Intensity Discharge .....                               | 75                  | 73                       | 57             | 69   | 55       | 18,736                                     | 18,626                   | 16,115         | 18,199 | 15,564   |
| Electronic Ballast .....                                     | 105                 | 105                      | 81             | 102  | 89       | 23,307                                     | 23,307                   | 18,775         | 23,106 | 20,342   |
| <b>Energy Management Practices (more than one may apply)</b> |                     |                          |                |      |          |  |                          |                |        |          |
| Energy Management and Control System .....                   | 71                  | 71                       | 59             | 70   | 60       | 18,231                                     | 18,231                   | 15,836         | 17,971 | 15,999   |
| Energy Conservation Programs <sup>1</sup> .....              | 124                 | 122                      | 99             | 119  | 101      | 24,699                                     | 24,624                   | 19,745         | 24,535 | 20,778   |
| Energy Audit .....   | 99                  | 98                       | 82             | 91   | 67       | 17,444                                     | 17,432                   | 14,266         | 16,780 | 13,223   |
| HVAC Maintenance Staff <sup>2</sup> .....                    | 52                  | 52                       | 40             | 51   | 41       | 14,570                                     | 14,570                   | 11,712         | 14,532 | 12,803   |

See footnotes at end of table.

**Table 3.36. Energy Conservation Features in FBSS Buildings in Federal Region 9, Number of Buildings and Floorspace, 1993 (Continued)**

| Building Characteristics  | Number of Buildings |                          |                |      |          | Total Floorspace (thousand square feet) |                          |                |        |          |
|---|---------------------|--------------------------|----------------|------|----------|---|--------------------------|----------------|--------|----------|
|   | All Buildings       | Any Conservation Feature | Building Shell | HVAC | Lighting | All Buildings                           | Any Conservation Feature | Building Shell | HVAC   | Lighting |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b> |                     |                          |                |      |          |   |                          |                |        |          |
| Heating .....   | 151                 | 149                      | 120            | 144  | 106      | 19,631                                  | 19,590                   | 13,808         | 19,425 | 16,304   |
| Cooling .....   | 157                 | 156                      | 124            | 151  | 108      | 19,219                                  | 19,207                   | 13,253         | 19,007 | 15,693   |
| Hot Water .....   | 68                  | 67                       | 46             | 66   | 57       | 13,614                                  | 13,585                   | 8,258          | 13,566 | 11,978   |
| Lighting .....  | 172                 | 170                      | 134            | 163  | 116      | 21,155                                  | 21,063                   | 14,822         | 20,711 | 17,272   |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.37. Energy Management Practices in FBSS Buildings in Federal Region 3, Number of Buildings, 1993**

| Building Characteristics                         | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|--|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>All Buildings</b> .....                       | <b>312</b>    | <b>132</b>                           | <b>99</b>                                 | <b>99</b>    | <b>97</b>                           | <b>178</b>                   | <b>229</b>   |
| <b>Building Floorspace (square feet)</b>         |               |                                      |   |              |                                     |                              |  |
| 10,000 to 50,000 .....                           | 94            | 21                                   | 12  | 29           | 4                                   | 67                           | 62   |
| 50,001 to 200,000 .....                          | 117           | 51                                   | 27  | 34           | 35                                  | 58                           | 83   |
| Over 200,000 .....                               | 101           | 60                                   | 60  | 36           | 58                                  | 53                           | 84   |
| <b>Principal Building Activity</b>               |               |                                      |   |              |                                     |                              |  |
| Education .....                                  | 8             | NC                                   | 2   | 3            | NC                                  | 6                            | 4  |
| Health Care .....                                | 41            | 29                                   | 15  | 9            | 12                                  | 4                            | 37   |
| Laboratory .....                                 | 37            | 10                                   | 3   | 11           | 16                                  | 16                           | 20   |
| Lodging .....                                    | 13            | 4                                    | 6   | 9            | 3                                   | NC                           | 9  |
| Mercantile and Service .....                     | 46            | 15                                   | 9   | 6            | 4                                   | 28                           | 31   |
| Office .....                                     | 124           | 62                                   | 54  | 47           | 56                                  | 104                          | 104  |
| All Others .....                                 | 43            | 12                                   | 10  | 14           | 6                                   | 20                           | 24   |
| <b>Year Constructed</b>                          |               |                                      |   |              |                                     |                              |  |
| 1959 or Before .....                             | 142           | 56                                   | 45  | 51           | 40                                  | 77                           | 107  |
| 1960 to 1969 .....                               | 70            | 27                                   | 18  | 20           | 27                                  | 46                           | 44   |
| 1970 to 1979 .....                               | 47            | 24                                   | 19  | 17           | 15                                  | 29                           | 38   |
| 1980 to 1989 .....                               | 38            | 17                                   | 13  | 10           | 11                                  | 18                           | 28   |
| 1990 to 1993 .....                               | 15            | 8                                    | 4   | 1            | 4                                   | 8                            | 12   |
| <b>Federal Agency</b>                            |               |                                      |   |              |                                     |                              |  |
| Department of Defense .....                      | 22            | 7                                    | 6   | 6            | 8                                   | 7                            | 13   |
| General Services Administration ..               | 83            | 42                                   | 52  | 41           | 47                                  | 71                           | 71   |
| United States Postal Service .....               | 57            | 19                                   | 9   | 7            | 5                                   | 33                           | 39   |
| Veterans Administration .....                    | 56            | 31                                   | 21  | 15           | 15                                  | 13                           | 46   |
| All Others .....                                 | 94            | 33                                   | 11  | 30           | 22                                  | 54                           | 60   |
| <b>Energy Sources (more than one may apply)</b>  |               |                                      |   |              |                                     |                              |  |
| Electricity .....                                | 311           | 131                                  | 98  | 99           | 97                                  | 178                          | 228  |
| Natural Gas .....                                | 139           | 68                                   | 49  | 40           | 52                                  | 66                           | 111  |
| Fuel Oil .....                                   | 89            | 42                                   | 29  | 24           | 26                                  | 46                           | 63   |
| District Heat .....                              | 154           | 70                                   | 57  | 54           | 55                                  | 91                           | 119  |
| District Chilled Water .....                     | 57            | 26                                   | 13  | 17           | 20                                  | 27                           | 41   |
| Propane .....                                    | 5             | NC                                   | NC  | 1            | 1                                   | 4                            | 3  |
| Any Other .....                                  | 8             | 6                                    | 5   | 3            | 5                                   | 5                            | 7  |
| <b>Energy End Uses (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Heating .....                                    | 307           | 132                                  | 98  | 98           | 96                                  | 175                          | 227  |
| Air Conditioning .....                           | 305           | 131                                  | 95  | 97           | 96                                  | 175                          | 224  |
| Water Heating .....                              | 303           | 130                                  | 96  | 98           | 94                                  | 172                          | 225  |
| Cooking .....                                    | 108           | 66                                   | 53  | 34           | 49                                  | 55                           | 91   |
| Manufacturing .....                              | 50            | 28                                   | 20  | 13           | 18                                  | 22                           | 33   |
| <b>Workers (main shift)</b>                      |               |                                      |   |              |                                     |                              |  |
| Less than 50 .....                               | 71            | 17                                   | 13  | 23           | 4                                   | 43                           | 45   |
| 50 to 99 .....                                   | 39            | 12                                   | 4   | 11           | 1                                   | 26                           | 25   |
| 100 to 499 .....                                 | 107           | 39                                   | 21  | 33           | 36                                  | 58                           | 75   |
| 500 or More .....                                | 95            | 64                                   | 61  | 32           | 56                                  | 51                           | 84   |
| <b>Weekly Operating Hours</b>                    |               |                                      |   |              |                                     |                              |  |
| 48 or Fewer .....                                | 51            | 18                                   | 15  | 20           | 10                                  | 47                           | 38   |
| 49 to 60 .....                                   | 76            | 37                                   | 28  | 23           | 30                                  | 72                           | 58   |
| 61 to 167 .....                                  | 60            | 14                                   | 16  | 17           | 13                                  | 58                           | 42   |
| Open Continuously .....                          | 125           | 63                                   | 40  | 39           | 44                                  | 1                            | 91   |
| <b>Multibuilding Facility</b>                    |               |                                      |   |              |                                     |                              |  |
| Yes .....  | 176           | 73                                   | 50  | 51           | 54                                  | 79                           | 119  |
| No .....   | 136           | 59                                   | 49  | 48           | 43                                  | 99                           | 110  |

See footnotes at end of table.

**Table 3.37. Energy Management Practices in FBSS Buildings in Federal Region 3, Number of Buildings, 1993 (Continued)**

| Building Characteristics                                      | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|---|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>Percent of Floorspace Heated</b>                           |               |                                      |   |              |                                     |                              |  |
| Not Heated .....  | 5             | NC                                   | 1   | 1            | 1                                   | 3                            | 2  |
| 1 to 50 .....   | 12            | 3                                    | 4   | NC           | 2                                   | 6                            | 8  |
| 51 to 100 .....   | 295           | 129                                  | 94  | 98           | 94                                  | 169                          | 219  |
| <b>Percent of Floorspace Cooled</b>                           |               |                                      |   |              |                                     |                              |  |
| Not Cooled .....  | 13            | 2                                    | 6   | 5            | 3                                   | 5                            | 7  |
| 1 to 50 .....   | 30            | 8                                    | 6   | 10           | 5                                   | 21                           | 19   |
| 51 to 100 .....   | 269           | 122                                  | 87  | 84           | 89                                  | 152                          | 203  |
| <b>Percent Lit When Open</b>                                  |               |                                      |   |              |                                     |                              |  |
| 1 to 50 .....   | 11            | 1                                    | 3   | 4            | 2                                   | 8                            | 6  |
| 51 to 100 .....   | 300           | 131                                  | 96  | 95           | 95                                  | 170                          | 223  |
| No Operating Hours .....                                      | 1             | NC                                   | NC  | NC           | NC                                  | NC                           | NC   |
| Don't Know .....  | NC            | NC                                   | NC  | NC           | NC                                  | NC                           | NC   |
| <b>Heating Equipment (more than one may apply)</b>            |               |                                      |   |              |                                     |                              |  |
| Heat Pumps .....  | 34            | 19                                   | 13  | 14           | 6                                   | 25                           | 29   |
| Furnaces .....  | 16            | 1                                    | 1   | 5            | 2                                   | 12                           | 12   |
| Individual Space Heaters .....                                | 75            | 39                                   | 29  | 31           | 27                                  | 44                           | 60   |
| District Heat .....   | 167           | 80                                   | 58  | 60           | 64                                  | 88                           | 131  |
| Boilers .....   | 93            | 40                                   | 28  | 27           | 24                                  | 54                           | 67   |
| Packaged-Heating Units .....                                  | 25            | 11                                   | 7   | 10           | 8                                   | 12                           | 21   |
| <b>Cooling Equipment (more than one may apply)</b>            |               |                                      |   |              |                                     |                              |  |
| Residential-Type Central A/C .....                            | 30            | 13                                   | 8   | 10           | 13                                  | 21                           | 25   |
| Heat Pumps .....  | 37            | 19                                   | 15  | 14           | 9                                   | 30                           | 32   |
| Individual A/C .....  | 80            | 36                                   | 28  | 32           | 28                                  | 47                           | 61   |
| District Chilled Water .....                                  | 72            | 38                                   | 20  | 17           | 26                                  | 30                           | 52   |
| Central Chillers .....  | 158           | 80                                   | 70  | 61           | 70                                  | 93                           | 128  |
| Packaged-A/C Units .....                                      | 127           | 65                                   | 50  | 43           | 44                                  | 74                           | 101  |
| Swamp Coolers .....   | 3             | 2                                    | NC  | 2            | 2                                   | 1                            | 3  |
| <b>Lighting Equipment (more than one may apply)</b>           |               |                                      |   |              |                                     |                              |  |
| Incandescent .....  | 184           | 77                                   | 64  | 60           | 61                                  | 100                          | 132  |
| Standard Fluorescent .....                                    | 300           | 130                                  | 97  | 98           | 94                                  | 173                          | 223  |
| Compact Fluorescent .....                                     | 80            | 43                                   | 44  | 31           | 33                                  | 56                           | 73   |
| High-Intensity Discharge .....                                | 111           | 59                                   | 37  | 36           | 41                                  | 58                           | 87   |
| Electronic Ballast .....                                      | 135           | 82                                   | 66  | 53           | 57                                  | 84                           | 125  |
| <b>Water-Heating Equipment (more than one may apply)</b>      |               |                                      |   |              |                                     |                              |  |
| Centralized System .....                                      | 223           | 95                                   | 69  | 75           | 76                                  | 130                          | 165  |
| Distributed System .....                                      | 71            | 29                                   | 25  | 23           | 18                                  | 37                           | 57   |
| Don't Know/<br>Not Ascertained .....                          | 9             | 6                                    | 2   | NC           | NC                                  | 5                            | 3  |
| <b>Energy Conservation Features (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Any Conservation Feature .....                                | 309           | 132                                  | 97  | 98           | 96                                  | 178                          | 228  |
| Building Shell .....  | 290           | 127                                  | 87  | 90           | 84                                  | 163                          | 215  |
| HVAC .....  | 303           | 132                                  | 97  | 98           | 96                                  | 174                          | 227  |
| Lighting .....  | 210           | 105                                  | 84  | 74           | 67                                  | 128                          | 175  |

See footnotes at end of table.

**Table 3.37. Energy Management Practices in FBSS Buildings in Federal Region 3, Number of Buildings, 1993 (Continued)**

| Building Characteristics  | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|---|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Roof or Ceiling   |               |                                      |   |              |                                     |                              |  |
| Insulation .....  | 240           | 110                                  | 70  | 75           | 69                                  | 135                          | 176  |
| Wall Insulation .....   | 117           | 61                                   | 31  | 29           | 29                                  | 69                           | 87   |
| Storm or Multiple   |               |                                      |   |              |                                     |                              |  |
| Glazing .....   | 173           | 87                                   | 49  | 49           | 36                                  | 91                           | 139  |
| Tinted or Reflective Glass  |               |                                      |   |              |                                     |                              |  |
| or Shading Film .....   | 158           | 83                                   | 47  | 40           | 56                                  | 94                           | 117  |
| Exterior or Interior Shading  |               |                                      |   |              |                                     |                              |  |
| or Awnings .....  | 197           | 97                                   | 57  | 58           | 55                                  | 115                          | 145  |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                                      |   |              |                                     |                              |  |
| VAV System .....  | 84            | 59                                   | 33  | 25           | 37                                  | 37                           | 75   |
| Economizer Cycle .....  | 156           | 93                                   | 59  | 50           | 60                                  | 92                           | 131  |
| HVAC Maintenance .....  | 301           | 132                                  | 97  | 98           | 96                                  | 173                          | 227  |
| <b>Lighting Conservation Features (more than one may apply)</b>       |               |                                      |   |              |                                     |                              |  |
| Specular Reflectors .....   | 124           | 64                                   | 49  | 52           | 43                                  | 69                           | 101  |
| Natural Lighting Control  |               |                                      |   |              |                                     |                              |  |
| Sensors .....   | 29            | 18                                   | 17  | 9            | 13                                  | 14                           | 26   |
| Occupancy Sensors .....   | 95            | 55                                   | 54  | 40           | 44                                  | 66                           | 86   |
| Time Clock .....  | 74            | 39                                   | 36  | 28           | 32                                  | 47                           | 64   |
| Manual Dimmer Switches .....  | 93            | 50                                   | 45  | 29           | 32                                  | 64                           | 81   |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey.

• HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.38. Energy Management Practices in FBSS Buildings in Federal Region 6, Number of Buildings, 1993**

| Building Characteristics                         | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|--|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>All Buildings</b> .....                       | <b>243</b>    | <b>96</b>                            | <b>48</b>                                 | <b>64</b>    | <b>57</b>                           | <b>136</b>                   | <b>162</b>   |
| <b>Building Floorspace (square feet)</b>         |               |                                      |   |              |                                     |                              |  |
| 10,000 to 50,000 .....                           | 107           | 21                                   | 18  | 28           | 14                                  | 74                           | 65   |
| 50,001 to 200,000 .....                          | 86            | 40                                   | 9   | 16           | 20                                  | 43                           | 54   |
| Over 200,000 .....                               | 50            | 35                                   | 21  | 20           | 23                                  | 19                           | 43   |
| <b>Principal Building Activity</b>               |               |                                      |   |              |                                     |                              |  |
| Education .....                                  | 6             | 1                                    | NC  | NC           | 1                                   | 6                            | 3  |
| Health Care .....                                | 35            | 28                                   | 9   | 6            | 10                                  | 6                            | 31   |
| Laboratory .....                                 | 29            | 10                                   | 3   | 1            | 3                                   | 14                           | 9  |
| Lodging .....                                    | 16            | 5                                    | 5   | 7            | 2                                   | NC                           | 13   |
| Mercantile and Service .....                     | 49            | 17                                   | 14  | 19           | 8                                   | 30                           | 39   |
| Office .....                                     | 76            | 30                                   | 16  | 25           | 30                                  | 61                           | 50   |
| All Others .....                                 | 32            | 5                                    | 1   | 6            | 3                                   | 19                           | 17   |
| <b>Year Constructed</b>                          |               |                                      |   |              |                                     |                              |  |
| 1959 or Before .....                             | 103           | 44                                   | 14  | 22           | 24                                  | 57                           | 70   |
| 1960 to 1969 .....                               | 38            | 12                                   | 11  | 14           | 12                                  | 25                           | 28   |
| 1970 to 1979 .....                               | 34            | 15                                   | 11  | 9            | 9                                   | 14                           | 22   |
| 1980 to 1989 .....                               | 57            | 21                                   | 9   | 16           | 10                                  | 33                           | 36   |
| 1990 to 1993 .....                               | 11            | 4                                    | 3   | 3            | 2                                   | 7                            | 6  |
| <b>Federal Agency</b>                            |               |                                      |   |              |                                     |                              |  |
| Department of Defense .....                      | 22            | 6                                    | 5   | 10           | 6                                   | 16                           | 13   |
| General Services Administration ..               | 35            | 19                                   | 12  | 17           | 24                                  | 32                           | 31   |
| United States Postal Service .....               | 61            | 19                                   | 15  | 21           | 10                                  | 38                           | 45   |
| Veterans Administration .....                    | 36            | 30                                   | 10  | 8            | 6                                   | 10                           | 33   |
| All Others .....                                 | 89            | 22                                   | 6   | 8            | 11                                  | 40                           | 40   |
| <b>Energy Sources (more than one may apply)</b>  |               |                                      |   |              |                                     |                              |  |
| Electricity .....                                | 243           | 96                                   | 48  | 64           | 57                                  | 136                          | 162  |
| Natural Gas .....                                | 168           | 65                                   | 34  | 55           | 45                                  | 95                           | 121  |
| Fuel Oil .....                                   | 18            | 10                                   | 8   | 7            | 9                                   | 9                            | 15   |
| District Heat .....                              | 68            | 36                                   | 11  | 5            | 12                                  | 36                           | 40   |
| District Chilled Water .....                     | 30            | 22                                   | 12  | 5            | 10                                  | 16                           | 25   |
| Propane .....                                    | 5             | 1                                    | 2   | NC           | 2                                   | 4                            | 1  |
| Any Other .....                                  | 8             | 4                                    | 3   | NC           | 2                                   | 1                            | 8  |
| <b>Energy End Uses (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Heating .....                                    | 242           | 96                                   | 48  | 64           | 57                                  | 136                          | 162  |
| Air Conditioning .....                           | 241           | 95                                   | 47  | 64           | 57                                  | 136                          | 161  |
| Water Heating .....                              | 238           | 95                                   | 47  | 62           | 56                                  | 133                          | 160  |
| Cooking .....                                    | 63            | 37                                   | 20  | 24           | 21                                  | 27                           | 51   |
| Manufacturing .....                              | 28            | 13                                   | 8   | 14           | 9                                   | 16                           | 21   |
| <b>Workers (main shift)</b>                      |               |                                      |   |              |                                     |                              |  |
| Less than 50 .....                               | 70            | 10                                   | 10  | 19           | 10                                  | 43                           | 41   |
| 50 to 99 .....                                   | 44            | 15                                   | 4   | 9            | 9                                   | 27                           | 26   |
| 100 to 499 .....                                 | 80            | 36                                   | 11  | 14           | 13                                  | 47                           | 50   |
| 500 or More .....                                | 49            | 35                                   | 23  | 22           | 25                                  | 19                           | 45   |
| <b>Weekly Operating Hours</b>                    |               |                                      |   |              |                                     |                              |  |
| 48 or Fewer .....                                | 39            | 11                                   | 4   | 10           | 10                                  | 36                           | 24   |
| 49 to 60 .....                                   | 46            | 27                                   | 10  | 14           | 18                                  | 46                           | 29   |
| 61 to 167 .....                                  | 78            | 12                                   | 11  | 17           | 9                                   | 54                           | 42   |
| Open Continuously .....                          | 80            | 46                                   | 23  | 23           | 20                                  | NC                           | 67   |
| <b>Multibuilding Facility</b>                    |               |                                      |   |              |                                     |                              |  |
| Yes .....  | 148           | 69                                   | 29  | 33           | 29                                  | 64                           | 95   |
| No .....   | 95            | 27                                   | 19  | 31           | 28                                  | 72                           | 67   |

See footnotes at end of table.

**Table 3.38. Energy Management Practices in FBSS Buildings in Federal Region 6, Number of Buildings, 1993 (Continued)**

| Building Characteristics                                      | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|---|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>Percent of Floorspace Heated</b>                           |               |                                      |   |              |                                     |                              |  |
| Not Heated .....  | 1             | NC                                   | NC  | NC           | NC                                  | NC                           | NC   |
| 1 to 50 .....   | 11            | 5                                    | 2   | 3            | 3                                   | 8                            | 8  |
| 51 to 100 .....   | 231           | 91                                   | 46  | 61           | 54                                  | 128                          | 154  |
| <b>Percent of Floorspace Cooled</b>                           |               |                                      |   |              |                                     |                              |  |
| Not Cooled .....  | 3             | 2                                    | 1   | NC           | 1                                   | NC                           | 2  |
| 1 to 50 .....   | 26            | 4                                    | 2   | 6            | 3                                   | 14                           | 14   |
| 51 to 100 .....   | 214           | 90                                   | 45  | 58           | 53                                  | 122                          | 146  |
| <b>Percent Lit When Open</b>                                  |               |                                      |   |              |                                     |                              |  |
| 1 to 50 .....   | 15            | 4                                    | 1   | 3            | 3                                   | 10                           | 10   |
| 51 to 100 .....   | 227           | 92                                   | 47  | 61           | 54                                  | 126                          | 152  |
| No Operating Hours .....                                      | 1             | NC                                   | NC  | NC           | NC                                  | NC                           | NC   |
| Don't Know .....  | NC            | NC                                   | NC  | NC           | NC                                  | NC                           | NC   |
| <b>Heating Equipment (more than one may apply)</b>            |               |                                      |   |              |                                     |                              |  |
| Heat Pumps .....  | 10            | 3                                    | 3   | 4            | 1                                   | 7                            | 6  |
| Furnaces .....  | 18            | 3                                    | 3   | 4            | 2                                   | 14                           | 14   |
| Individual Space Heaters .....                                | 30            | 14                                   | 9   | 6            | 9                                   | 19                           | 23   |
| District Heat .....   | 82            | 47                                   | 13  | 12           | 14                                  | 41                           | 53   |
| Boilers .....   | 102           | 35                                   | 22  | 28           | 36                                  | 52                           | 66   |
| Packaged-Heating Units .....                                  | 59            | 17                                   | 18  | 21           | 15                                  | 39                           | 45   |
| <b>Cooling Equipment (more than one may apply)</b>            |               |                                      |   |              |                                     |                              |  |
| Residential-Type Central A/C .....                            | 29            | 10                                   | 7   | 8            | 3                                   | 18                           | 24   |
| Heat Pumps .....  | 11            | 6                                    | 2   | 4            | 1                                   | 7                            | 8  |
| Individual A/C .....  | 50            | 17                                   | 6   | 10           | 9                                   | 20                           | 31   |
| District Chilled Water .....                                  | 44            | 31                                   | 12  | 8            | 13                                  | 22                           | 33   |
| Central Chillers .....  | 122           | 54                                   | 23  | 32           | 40                                  | 59                           | 84   |
| Packaged-A/C Units .....                                      | 97            | 37                                   | 28  | 29           | 21                                  | 59                           | 75   |
| Swamp Coolers .....   | 12            | 6                                    | 1   | 1            | 2                                   | 6                            | 8  |
| <b>Lighting Equipment (more than one may apply)</b>           |               |                                      |   |              |                                     |                              |  |
| Incandescent .....  | 135           | 52                                   | 25  | 27           | 35                                  | 64                           | 80   |
| Standard Fluorescent .....                                    | 235           | 92                                   | 47  | 60           | 56                                  | 132                          | 157  |
| Compact Fluorescent .....                                     | 29            | 18                                   | 8   | 10           | 15                                  | 21                           | 27   |
| High-Intensity Discharge .....                                | 64            | 29                                   | 16  | 16           | 19                                  | 24                           | 45   |
| Electronic Ballast .....                                      | 59            | 34                                   | 21  | 22           | 25                                  | 34                           | 53   |
| <b>Water-Heating Equipment (more than one may apply)</b>      |               |                                      |   |              |                                     |                              |  |
| Centralized System .....                                      | 163           | 66                                   | 27  | 39           | 37                                  | 98                           | 107  |
| Distributed System .....                                      | 71            | 27                                   | 19  | 22           | 18                                  | 34                           | 51   |
| Don't Know/<br>Not Ascertained .....                          | 4             | 2                                    | 1   | 1            | 1                                   | 1                            | 2  |
| <b>Energy Conservation Features (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Any Conservation Feature .....                                | 242           | 96                                   | 48  | 64           | 57                                  | 136                          | 162  |
| Building Shell .....  | 228           | 94                                   | 47  | 62           | 56                                  | 128                          | 154  |
| HVAC .....  | 236           | 96                                   | 47  | 61           | 56                                  | 130                          | 158  |
| Lighting .....  | 136           | 59                                   | 36  | 45           | 40                                  | 82                           | 113  |

See footnotes at end of table.



**Table 3.38. Energy Management Practices in FBSS Buildings in Federal Region 6, Number of Buildings, 1993 (Continued)**

| Building Characteristics  | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|---|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Roof or Ceiling   |               |                                      |   |              |                                     |                              |  |
| Insulation .....  | 196           | 82                                   | 42  | 53           | 43                                  | 106                          | 129  |
| Wall Insulation .....   | 122           | 49                                   | 26  | 35           | 25                                  | 58                           | 76   |
| Storm or Multiple   |               |                                      |   |              |                                     |                              |  |
| Glazing .....   | 96            | 48                                   | 21  | 22           | 22                                  | 53                           | 66   |
| Tinted or Reflective Glass or Shading Film .....                      | 127           | 59                                   | 39  | 41           | 42                                  | 69                           | 98   |
| Exterior or Interior Shading or Awnings .....                         | 142           | 68                                   | 33  | 47           | 46                                  | 84                           | 114  |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                                      |   |              |                                     |                              |  |
| VAV System .....  | 65            | 40                                   | 16  | 20           | 25                                  | 32                           | 47   |
| Economizer Cycle .....  | 123           | 62                                   | 28  | 32           | 30                                  | 55                           | 87   |
| HVAC Maintenance .....  | 234           | 95                                   | 46  | 60           | 56                                  | 129                          | 156  |
| <b>Lighting Conservation Features (more than one may apply)</b>       |               |                                      |   |              |                                     |                              |  |
| Specular Reflectors .....   | 92            | 36                                   | 30  | 33           | 28                                  | 55                           | 76   |
| Natural Lighting Control  |               |                                      |   |              |                                     |                              |  |
| Sensors .....   | 27            | 12                                   | 9   | 9            | 13                                  | 14                           | 23   |
| Occupancy Sensors .....   | 58            | 31                                   | 18  | 28           | 24                                  | 35                           | 49   |
| Time Clock .....  | 36            | 18                                   | 14  | 15           | 16                                  | 22                           | 29   |
| Manual Dimmer Switches .....  | 44            | 29                                   | 16  | 17           | 14                                  | 27                           | 39   |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey.

• HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.39. Energy Management Practices in FBSS Buildings in Federal Region 9, Number of Buildings, 1993**

| Building Characteristics                         | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|--|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>All Buildings</b> .....                       | <b>326</b>    | <b>71</b>                            | <b>124</b>                                | <b>99</b>    | <b>52</b>                           | <b>189</b>                   | <b>213</b>   |
| <b>Building Floorspace (square feet)</b>         |               |                                      |   |              |                                     |                              |  |
| 10,000 to 50,000 .....                           | 148           | 15                                   | 46  | 40           | 11                                  | 96                           | 84   |
| 50,001 to 200,000 .....                          | 123           | 34                                   | 50  | 42           | 22                                  | 67                           | 85   |
| Over 200,000 .....                               | 55            | 22                                   | 28  | 17           | 19                                  | 26                           | 44   |
| <b>Principal Building Activity</b>               |               |                                      |   |              |                                     |                              |  |
| Education .....                                  | 12            | NC                                   | 1   | 2            | 1                                   | 7                            | 4  |
| Health Care .....                                | 48            | 14                                   | 18  | 14           | 16                                  | 15                           | 30   |
| Laboratory .....                                 | 31            | 12                                   | 9   | 9            | 1                                   | 13                           | 25   |
| Lodging .....                                    | 22            | 2                                    | 8   | 8            | 1                                   | 1                            | 11   |
| Mercantile and Service .....                     | 63            | 20                                   | 25  | 21           | 8                                   | 43                           | 47   |
| Office .....                                     | 92            | 18                                   | 43  | 27           | 17                                  | 75                           | 65   |
| All Others .....                                 | 58            | 5                                    | 20  | 18           | 8                                   | 35                           | 31   |
| <b>Year Constructed</b>                          |               |                                      |   |              |                                     |                              |  |
| 1959 or Before .....                             | 130           | 20                                   | 37  | 36           | 18                                  | 86                           | 77   |
| 1960 to 1969 .....                               | 55            | 11                                   | 30  | 16           | 6                                   | 36                           | 35   |
| 1970 to 1979 .....                               | 62            | 13                                   | 29  | 24           | 13                                  | 30                           | 46   |
| 1980 to 1989 .....                               | 65            | 23                                   | 25  | 18           | 12                                  | 29                           | 44   |
| 1990 to 1993 .....                               | 14            | 4                                    | 3   | 5            | 3                                   | 8                            | 11   |
| <b>Federal Agency</b>                            |               |                                      |   |              |                                     |                              |  |
| Department of Defense .....                      | 78            | 14                                   | 17  | 26           | 6                                   | 52                           | 36   |
| General Services Administration .....            | 39            | 5                                    | 27  | 12           | 14                                  | 35                           | 33   |
| United States Postal Service .....               | 63            | 21                                   | 24  | 22           | 9                                   | 43                           | 49   |
| Veterans Administration .....                    | 56            | 15                                   | 16  | 15           | 15                                  | 18                           | 36   |
| All Others .....                                 | 90            | 16                                   | 40  | 24           | 8                                   | 41                           | 59   |
| <b>Energy Sources (more than one may apply)</b>  |               |                                      |   |              |                                     |                              |  |
| Electricity .....                                | 325           | 71                                   | 123                                       | 98           | 52                                  | 189                          | 212  |
| Natural Gas .....                                | 225           | 57                                   | 98  | 67           | 39                                  | 141                          | 162  |
| Fuel Oil .....                                   | 54            | 17                                   | 23  | 11           | 12                                  | 14                           | 46   |
| District Heat .....                              | 74            | 13                                   | 21  | 24           | 15                                  | 29                           | 39   |
| District Chilled Water .....                     | 27            | 6                                    | 6   | 14           | 8                                   | 10                           | 15   |
| Propane .....                                    | 10            | 1                                    | 4   | 2            | 1                                   | 4                            | 5  |
| Any Other .....                                  | 5             | 2                                    | 1   | 3            | NC                                  | 2                            | 3  |
| <b>Energy End Uses (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Heating .....                                    | 304           | 67                                   | 122                                       | 92           | 48                                  | 177                          | 202  |
| Air Conditioning .....                           | 292           | 71                                   | 115                                       | 92           | 50                                  | 174                          | 201  |
| Water Heating .....                              | 315           | 70                                   | 123                                       | 97           | 51                                  | 182                          | 209  |
| Cooking .....                                    | 70            | 23                                   | 42  | 25           | 22                                  | 25                           | 54   |
| Manufacturing .....                              | 30            | 15                                   | 14  | 13           | 6                                   | 15                           | 23   |
| <b>Workers (main shift)</b>                      |               |                                      |   |              |                                     |                              |  |
| Less than 50 .....                               | 93            | 8                                    | 20  | 27           | 7                                   | 51                           | 43   |
| 50 to 99 .....                                   | 49            | 5                                    | 14  | 14           | 2                                   | 39                           | 30   |
| 100 to 499 .....                                 | 134           | 36                                   | 58  | 41           | 20                                  | 79                           | 98   |
| 500 or More .....                                | 50            | 22                                   | 32  | 17           | 23                                  | 20                           | 42   |
| <b>Weekly Operating Hours</b>                    |               |                                      |   |              |                                     |                              |  |
| 48 or Fewer .....                                | 80            | 8                                    | 20  | 21           | 3                                   | 67                           | 29   |
| 49 to 60 .....                                   | 65            | 9                                    | 27  | 18           | 14                                  | 59                           | 45   |
| 61 to 167 .....                                  | 68            | 14                                   | 26  | 26           | 8                                   | 63                           | 52   |
| Open Continuously .....                          | 113           | 40                                   | 51  | 34           | 27                                  | NC                           | 87   |
| <b>Multibuilding Facility</b>                    |               |                                      |   |              |                                     |                              |  |
| Yes .....  | 200           | 48                                   | 69  | 64           | 35                                  | 95                           | 128  |
| No .....   | 126           | 23                                   | 55  | 35           | 17                                  | 94                           | 85   |

See footnotes at end of table.

**Table 3.39. Energy Management Practices in FBSS Buildings in Federal Region 9, Number of Buildings, 1993 (Continued)**

| Building Characteristics                                      | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|---|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>Percent of Floorspace Heated</b>                           |               |                                      |   |              |                                     |                              |  |
| Not Heated .....  | 22            | 4                                    | 2   | 7            | 4                                   | 12                           | 11   |
| 1 to 50 .....   | 28            | 6                                    | 6   | 11           | 3                                   | 20                           | 18   |
| 51 to 100 .....   | 276           | 61                                   | 116                                       | 81           | 45                                  | 157                          | 184  |
| <b>Percent of Floorspace Cooled</b>                           |               |                                      |   |              |                                     |                              |  |
| Not Cooled .....  | 40            | 1                                    | 12  | 8            | 4                                   | 19                           | 16   |
| 1 to 50 .....   | 55            | 9                                    | 14  | 13           | 7                                   | 32                           | 39   |
| 51 to 100 .....   | 231           | 61                                   | 98  | 78           | 41                                  | 138                          | 158  |
| <b>Percent Lit When Open</b>                                  |               |                                      |   |              |                                     |                              |  |
| 1 to 50 .....   | 20            | 1                                    | 5   | 6            | 3                                   | 10                           | 12   |
| 51 to 100 .....   | 304           | 70                                   | 119                                       | 93           | 49                                  | 178                          | 201  |
| No Operating Hours .....                                      | 1             | NC                                   | NC  | NC           | NC                                  | 1                            | NC   |
| Don't Know .....  | 1             | NC                                   | NC  | NC           | NC                                  | NC                           | NC   |
| <b>Heating Equipment (more than one may apply)</b>            |               |                                      |   |              |                                     |                              |  |
| Heat Pumps .....  | 40            | 12                                   | 23  | 15           | 3                                   | 21                           | 34   |
| Furnaces .....  | 25            | 2                                    | 9   | 10           | 2                                   | 18                           | 16   |
| Individual Space Heaters .....                                | 33            | 8                                    | 17  | 13           | 3                                   | 24                           | 28   |
| District Heat .....   | 71            | 15                                   | 24  | 20           | 14                                  | 28                           | 41   |
| Boilers .....   | 146           | 40                                   | 67  | 47           | 25                                  | 92                           | 102  |
| Packaged-Heating Units .....                                  | 67            | 13                                   | 34  | 13           | 8                                   | 49                           | 47   |
| <b>Cooling Equipment (more than one may apply)</b>            |               |                                      |   |              |                                     |                              |  |
| Residential-Type Central A/C .....                            | 24            | 4                                    | 9   | 10           | 3                                   | 16                           | 12   |
| Heat Pumps .....  | 32            | 11                                   | 16  | 11           | 3                                   | 17                           | 28   |
| Individual A/C .....  | 52            | 7                                    | 18  | 13           | 4                                   | 35                           | 38   |
| District Chilled Water .....                                  | 31            | 13                                   | 15  | 12           | 10                                  | 7                            | 17   |
| Central Chillers .....  | 139           | 51                                   | 68  | 47           | 25                                  | 81                           | 105  |
| Packaged-A/C Units .....                                      | 151           | 34                                   | 65  | 44           | 27                                  | 99                           | 112  |
| Swamp Coolers .....   | 30            | 8                                    | 10  | 12           | 5                                   | 16                           | 16   |
| <b>Lighting Equipment (more than one may apply)</b>           |               |                                      |   |              |                                     |                              |  |
| Incandescent .....  | 161           | 34                                   | 64  | 48           | 27                                  | 84                           | 106  |
| Standard Fluorescent .....                                    | 309           | 69                                   | 119                                       | 95           | 52                                  | 179                          | 206  |
| Compact Fluorescent .....                                     | 73            | 24                                   | 43  | 24           | 20                                  | 41                           | 70   |
| High-Intensity Discharge .....                                | 75            | 25                                   | 34  | 24           | 17                                  | 40                           | 56   |
| Electronic Ballast .....                                      | 105           | 31                                   | 63  | 45           | 28                                  | 69                           | 95   |
| <b>Water-Heating Equipment (more than one may apply)</b>      |               |                                      |   |              |                                     |                              |  |
| Centralized System .....                                      | 225           | 50                                   | 88  | 73           | 43                                  | 131                          | 148  |
| Distributed System .....                                      | 80            | 17                                   | 34  | 21           | 5                                   | 45                           | 55   |
| Don't Know/<br>Not Ascertained .....                          | 10            | 3                                    | 1   | 3            | 3                                   | 6                            | 6  |
| <b>Energy Conservation Features (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Any Conservation Feature .....                                | 319           | 71                                   | 122                                       | 98           | 52                                  | 186                          | 213  |
| Building Shell .....  | 248           | 59                                   | 99  | 82           | 40                                  | 147                          | 166  |
| HVAC .....  | 307           | 70                                   | 119                                       | 91           | 51                                  | 179                          | 210  |
| Lighting .....  | 217           | 60                                   | 101                                       | 67           | 41                                  | 126                          | 162  |

See footnotes at end of table.

**Table 3.39. Energy Management Practices in FBSS Buildings in Federal Region 9, Number of Buildings, 1993 (Continued)**

| Building Characteristics  | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|---|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Roof or Ceiling   |               |                                      |   |              |                                     |                              |  |
| Insulation .....  | 185           | 51                                   | 78  | 60           | 31                                  | 99                           | 124  |
| Wall Insulation .....   | 113           | 35                                   | 41  | 41           | 18                                  | 59                           | 73   |
| Storm or Multiple   |               |                                      |   |              |                                     |                              |  |
| Glazing .....   | 57            | 18                                   | 30  | 15           | 13                                  | 26                           | 48   |
| Tinted or Reflective Glass or Shading Film .....                      | 133           | 34                                   | 63  | 50           | 24                                  | 78                           | 101  |
| Exterior or Interior Shading or Awnings .....                         | 164           | 41                                   | 73  | 51           | 31                                  | 90                           | 117  |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                                      |   |              |                                     |                              |  |
| VAV System .....  | 75            | 33                                   | 39  | 25           | 18                                  | 37                           | 64   |
| Economizer Cycle .....  | 140           | 45                                   | 79  | 44           | 31                                  | 86                           | 107  |
| HVAC Maintenance .....  | 306           | 69                                   | 118                                       | 91           | 51                                  | 178                          | 209  |
| <b>Lighting Conservation Features (more than one may apply)</b>       |               |                                      |   |              |                                     |                              |  |
| Specular Reflectors .....   | 124           | 26                                   | 75  | 32           | 30                                  | 85                           | 96   |
| Natural Lighting Control  |               |                                      |   |              |                                     |                              |  |
| Sensors .....   | 58            | 15                                   | 26  | 20           | 16                                  | 35                           | 45   |
| Occupancy Sensors .....   | 109           | 38                                   | 48  | 42           | 25                                  | 52                           | 92   |
| Time Clock .....  | 41            | 12                                   | 21  | 19           | 8                                   | 28                           | 34   |
| Manual Dimmer Switches .....  | 78            | 28                                   | 34  | 28           | 21                                  | 29                           | 62   |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.40. Energy Management Practices in FBSS Buildings in Federal Region 3, Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics                         | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit  | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|--|---------------|--------------------------------------|---|---------------|-------------------------------------|------------------------------|--|
| <b>All Buildings</b> .....                       | <b>94,880</b> | <b>61,891</b>                        | <b>59,284</b>                             | <b>37,621</b> | <b>52,924</b>                       | <b>46,595</b>                | <b>81,286</b>                                      |
| <b>Building Floorspace (square feet)</b>         |               |                                      |   |               |                                     |                              |  |
| 10,000 to 50,000 .....                           | 2,564         | 604                                  | 361                                       | 868           | 141                                 | 1,819                        | 1,617  |
| 50,001 to 200,000 .....                          | 13,166        | 5,984                                | 3,395                                     | 3,545         | 4,785                               | 6,455                        | 9,405  |
| Over 200,000 .....                               | 79,149        | 55,303                               | 55,528                                    | 33,208        | 47,998                              | 38,322                       | 70,264   |
| <b>Principal Building Activity</b>               |               |                                      |   |               |                                     |                              |  |
| Education .....                                  | 598           | NC                                   | 171                                       | 298           | NC                                  | 462                          | 264  |
| Health Care .....                                | 14,559        | 12,399                               | 8,137                                     | 1,597         | 6,289                               | 206                          | 13,789   |
| Laboratory .....                                 | 5,165         | 1,827                                | 361                                       | 1,969         | 3,891                               | 2,512                        | 3,238  |
| Lodging .....                                    | 2,558         | 2,157                                | 784                                       | 2,373         | 1,840                               | NC                           | 908  |
| Mercantile and Service .....                     | 7,966         | 6,058                                | 3,124                                     | 1,454         | 2,233                               | 1,300                        | 6,387  |
| Office .....                                     | 56,881        | 36,854                               | 42,364                                    | 28,924        | 37,641                              | 40,781                       | 51,485   |
| All Others .....                                 | 7,152         | 2,596                                | 4,343                                     | 1,006         | 1,030                               | 1,335                        | 5,215  |
| <b>Year Constructed</b>                          |               |                                      |   |               |                                     |                              |  |
| 1959 or Before .....                             | 43,829        | 25,341                               | 29,902                                    | 20,038        | 29,624                              | 23,359                       | 39,006   |
| 1960 to 1969 .....                               | 19,564        | 11,821                               | 11,618                                    | 7,852         | 12,049                              | 11,333                       | 14,706   |
| 1970 to 1979 .....                               | 17,737        | 14,405                               | 10,803                                    | 6,179         | 5,099                               | 8,812                        | 15,377   |
| 1980 to 1989 .....                               | 8,975         | 6,446                                | 5,230                                     | 2,874         | 5,035                               | 2,085                        | 8,308  |
| 1990 to 1993 .....                               | 4,774         | 3,877                                | 1,732                                     | 678           | 1,117                               | 1,006                        | 3,889  |
| <b>Federal Agency</b>                            |               |                                      |   |               |                                     |                              |  |
| Department of Defense .....                      | 13,988        | 11,136                               | 10,164                                    | 9,261         | 10,573                              | 1,615                        | 11,708   |
| General Services Administration .....            | 46,205        | 26,744                               | 35,701                                    | 20,539        | 27,705                              | 35,547                       | 40,941   |
| United States Postal Service .....               | 9,392         | 7,143                                | 2,343                                     | 2,255         | 2,382                               | 2,398                        | 7,910  |
| Veterans Administration .....                    | 13,306        | 10,289                               | 6,427                                     | 1,687         | 6,748                               | 956                          | 11,866   |
| All Others .....                                 | 11,989        | 6,579                                | 4,650                                     | 3,880         | 5,515                               | 6,079                        | 8,861  |
| <b>Energy Sources (more than one may apply)</b>  |               |                                      |   |               |                                     |                              |  |
| Electricity .....                                | 94,161        | 61,172                               | 58,565                                    | 37,621        | 52,924                              | 46,595                       | 80,567   |
| Natural Gas .....                                | 58,674        | 44,873                               | 38,182                                    | 20,605        | 32,344                              | 21,566                       | 51,875   |
| Fuel Oil .....                                   | 39,300        | 30,851                               | 24,941                                    | 16,293        | 20,200                              | 11,751                       | 33,574   |
| District Heat .....                              | 63,991        | 41,010                               | 46,603                                    | 25,813        | 37,204                              | 34,089                       | 58,464   |
| District Chilled Water .....                     | 22,922        | 14,652                               | 15,190                                    | 12,406        | 15,253                              | 8,564                        | 20,544   |
| Propane .....                                    | 941           | NC                                   | NC  | 222           | 148                                 | 793                          | 683  |
| Any Other .....                                  | 4,470         | 3,059                                | 3,462                                     | 2,761         | 4,410                               | 4,273                        | 4,441  |
| <b>Energy End Uses (more than one may apply)</b> |               |                                      |   |               |                                     |                              |  |
| Heating .....                                    | 94,063        | 61,891                               | 59,084                                    | 37,421        | 52,665                              | 46,237                       | 80,919   |
| Air Conditioning .....                           | 93,454        | 61,172                               | 58,313                                    | 37,392        | 52,665                              | 46,376                       | 80,147   |
| Water Heating .....                              | 93,138        | 61,222                               | 58,136                                    | 37,421        | 51,717                              | 45,692                       | 80,336   |
| Cooking .....                                    | 69,947        | 52,300                               | 49,012                                    | 28,107        | 40,466                              | 31,295                       | 62,196   |
| Manufacturing .....                              | 27,041        | 23,953                               | 18,390                                    | 13,925        | 16,741                              | 9,251                        | 23,383   |
| <b>Workers (main shift)</b>                      |               |                                      |   |               |                                     |                              |  |
| Less than 50 .....                               | 4,102         | 816                                  | 1,085                                     | 1,308         | 837                                 | 2,115                        | 1,818  |
| 50 to 99 .....                                   | 1,903         | 501                                  | 248                                       | 687           | 19                                  | 1,198                        | 1,175  |
| 100 to 499 .....                                 | 13,632        | 5,390                                | 2,879                                     | 4,455         | 5,263                               | 6,874                        | 10,165   |
| 500 or More .....                                | 75,243        | 55,184                               | 55,073                                    | 31,171        | 46,804                              | 36,409                       | 68,128   |
| <b>Weekly Operating Hours</b>                    |               |                                      |   |               |                                     |                              |  |
| 48 or Fewer .....                                | 9,694         | 4,600                                | 6,042                                     | 3,534         | 5,139                               | 9,367                        | 8,337  |
| 49 to 60 .....                                   | 25,540        | 14,948                               | 17,947                                    | 12,556        | 15,985                              | 25,233                       | 22,537   |
| 61 to 167 .....                                  | 11,993        | 5,270                                | 6,234                                     | 6,552         | 8,344                               | 11,948                       | 10,868   |
| Open Continuously .....                          | 47,653        | 37,072                               | 29,062                                    | 14,979        | 23,457                              | 47                           | 39,545   |

See footnotes at end of table.

**Table 3.40. Energy Management Practices in FBSS Buildings in Federal Region 3, Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics                                      | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|---|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>Multibuilding Facility</b>                                 |               |                                      |   |              |                                     |                              |  |
| Yes .....   | 43,861        | 25,196                               | 22,808                                    | 16,938       | 21,997                              | 19,405                       | 32,434   |
| No .....  | 51,018        | 36,695                               | 36,476                                    | 20,683       | 30,927                              | 27,190                       | 48,852   |
| <b>Percent of Floorspace Heated</b>                           |               |                                      |   |              |                                     |                              |  |
| Not Heated .....  | 817           | NC                                   | 200                                       | 200          | 259                                 | 359                          | 367  |
| 1 to 50 .....   | 5,787         | 4,358                                | 3,361                                     | NC           | 761                                 | 974                          | 4,913  |
| 51 to 100 .....   | 88,275        | 57,532                               | 55,723                                    | 37,421       | 51,904                              | 45,263                       | 76,006   |
| <b>Percent of Floorspace Cooled</b>                           |               |                                      |   |              |                                     |                              |  |
| Not Cooled .....  | 3,582         | 2,200                                | 1,407                                     | 1,784        | 2,120                               | 286                          | 1,360  |
| 1 to 50 .....   | 9,874         | 4,917                                | 5,325                                     | 3,964        | 2,880                               | 5,171                        | 8,668  |
| 51 to 100 .....   | 81,424        | 54,773                               | 52,552                                    | 31,873       | 47,924                              | 41,138                       | 71,258   |
| <b>Percent Lit When Open</b>                                  |               |                                      |   |              |                                     |                              |  |
| 1 to 50 .....   | 663           | 213                                  | 267                                       | 404          | 199                                 | 497                          | 373  |
| 51 to 100 .....   | 94,070        | 61,677                               | 59,017                                    | 37,218       | 52,725                              | 46,098                       | 80,913   |
| No Operating Hours .....                                      | 147           | NC                                   | NC  | NC           | NC                                  | NC                           | NC   |
| Don't Know .....  | NC            | NC                                   | NC  | NC           | NC                                  | NC                           | NC   |
| <b>Heating Equipment (more than one may apply)</b>            |               |                                      |   |              |                                     |                              |  |
| Heat Pumps .....  | 10,922        | 8,197                                | 6,244                                     | 7,066        | 4,762                               | 8,592                        | 9,016  |
| Furnaces .....  | 1,694         | 107                                  | 24  | 1,233        | 69                                  | 1,452                        | 1,467  |
| Individual Space Heaters .....                                | 34,923        | 26,031                               | 25,674                                    | 20,648       | 22,670                              | 17,774                       | 31,921   |
| District Heat .....   | 67,704        | 45,017                               | 46,194                                    | 27,770       | 40,970                              | 33,405                       | 60,246   |
| Boilers .....   | 20,082        | 14,594                               | 8,858                                     | 7,222        | 9,644                               | 9,068                        | 15,822   |
| Packaged-Heating Units .....                                  | 6,006         | 3,994                                | 2,747                                     | 1,745        | 3,129                               | 2,396                        | 5,406  |
| <b>Cooling Equipment (more than one may apply)</b>            |               |                                      |   |              |                                     |                              |  |
| Residential-Type Central A/C .....                            | 19,073        | 14,532                               | 12,578                                    | 9,461        | 15,674                              | 8,781                        | 17,818   |
| Heat Pumps .....  | 11,388        | 8,283                                | 6,734                                     | 7,113        | 7,283                               | 10,179                       | 10,453   |
| Individual A/C .....  | 28,082        | 16,973                               | 16,389                                    | 13,066       | 16,626                              | 16,959                       | 25,361   |
| District Chilled Water .....                                  | 28,194        | 19,658                               | 17,670                                    | 12,419       | 17,815                              | 9,149                        | 23,639   |
| Central Chillers .....  | 63,914        | 42,987                               | 43,140                                    | 25,333       | 37,532                              | 36,983                       | 57,948   |
| Packaged-A/C Units .....                                      | 56,664        | 40,812                               | 42,232                                    | 26,167       | 34,415                              | 28,362                       | 53,394   |
| Swamp Coolers .....   | 378           | 358                                  | NC  | 358          | 358                                 | 20                           | 378  |
| <b>Lighting Equipment (more than one may apply)</b>           |               |                                      |   |              |                                     |                              |  |
| Incandescent .....  | 64,981        | 42,602                               | 42,505                                    | 28,368       | 39,568                              | 31,825                       | 55,041   |
| Standard Fluorescent .....                                    | 91,986        | 60,750                               | 58,634                                    | 37,421       | 51,125                              | 45,556                       | 79,292   |
| Compact Fluorescent .....                                     | 49,455        | 33,756                               | 37,128                                    | 21,471       | 30,245                              | 26,730                       | 45,161   |
| High-Intensity Discharge .....                                | 52,593        | 35,944                               | 32,936                                    | 22,966       | 29,904                              | 22,390                       | 47,085   |
| Electronic Ballast .....                                      | 65,560        | 46,236                               | 48,576                                    | 30,043       | 40,191                              | 36,741                       | 61,700   |
| <b>Water-Heating Equipment (more than one may apply)</b>      |               |                                      |   |              |                                     |                              |  |
| Centralized System .....                                      | 63,477        | 41,930                               | 41,517                                    | 27,532       | 39,892                              | 33,365                       | 56,221   |
| Distributed System .....                                      | 24,696        | 14,649                               | 13,987                                    | 9,890        | 11,824                              | 11,994                       | 21,429   |
| Don't Know/Not Ascertained .....                              | 4,965         | 4,642                                | 2,632                                     | NC           | NC                                  | 333                          | 2,686  |
| <b>Energy Conservation Features (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Any Conservation Feature .....                                | 94,361        | 61,891                               | 59,024                                    | 37,421       | 52,665                              | 46,595                       | 81,027   |
| Building Shell .....  | 84,557        | 57,447                               | 51,419                                    | 33,287       | 43,488                              | 38,508                       | 73,116   |
| HVAC .....  | 93,543        | 61,891                               | 59,024                                    | 37,421       | 52,665                              | 45,983                       | 80,865   |
| Lighting .....  | 80,953        | 55,202                               | 56,297                                    | 34,439       | 44,519                              | 42,120                       | 73,667   |

See footnotes at end of table.

**Table 3.40. Energy Management Practices in FBSS Buildings in Federal Region 3, Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|---|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Roof or Ceiling Insulation .....                                      | 69,654        | 49,683                               | 42,066                                    | 26,983       | 33,849                              | 29,888                       | 59,342   |
| Wall Insulation .....   | 31,876        | 26,169                               | 16,376                                    | 9,623        | 12,884                              | 14,838                       | 28,026   |
| Storm or Multiple Glazing .....                                       | 46,141        | 33,757                               | 26,289                                    | 15,709       | 20,126                              | 11,659                       | 39,905   |
| Tinted or Reflective Glass or Shading Film .....                      | 46,829        | 36,581                               | 24,607                                    | 15,439       | 25,852                              | 22,644                       | 39,533   |
| Exterior or Interior Shading or Awnings .....                         | 57,183        | 38,723                               | 32,446                                    | 20,681       | 23,889                              | 32,193                       | 47,638   |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                                      |   |              |                                     |                              |  |
| VAV System .....  | 37,611        | 29,150                               | 22,577                                    | 14,320       | 19,649                              | 13,711                       | 33,689   |
| Economizer Cycle .....  | 61,089        | 44,488                               | 40,658                                    | 25,654       | 35,957                              | 29,237                       | 57,386   |
| HVAC Maintenance .....  | 93,402        | 61,891                               | 59,024                                    | 37,421       | 52,665                              | 45,896                       | 80,865   |
| <b>Lighting Conservation Features (more than one may apply)</b>       |               |                                      |   |              |                                     |                              |  |
| Specular Reflectors .....   | 44,741        | 32,503                               | 29,046                                    | 23,785       | 27,006                              | 22,524                       | 39,714   |
| Natural Lighting Control Sensors .....                                | 17,743        | 12,598                               | 12,151                                    | 5,843        | 10,858                              | 9,442                        | 16,630   |
| Occupancy Sensors .....   | 62,261        | 42,365                               | 47,987                                    | 29,458       | 37,976                              | 36,119                       | 57,610   |
| Time Clock .....  | 46,555        | 34,709                               | 32,755                                    | 20,406       | 27,052                              | 25,802                       | 42,629   |
| Manual Dimmer Switches .....  | 49,824        | 37,475                               | 38,239                                    | 23,774       | 29,434                              | 26,104                       | 48,332   |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.41. Energy Management Practices in FBSS Buildings in Federal Region 6, Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics                         | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit  | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|--|---------------|--------------------------------------|---|---------------|-------------------------------------|------------------------------|--|
| <b>All Buildings</b> .....                       | <b>35,816</b> | <b>23,099</b>                        | <b>13,513</b>                             | <b>11,690</b> | <b>15,538</b>                       | <b>14,304</b>                | <b>29,015</b>                                      |
| <b>Building Floorspace (square feet)</b>         |               |                                      |   |               |                                     |                              |  |
| 10,000 to 50,000 .....                           | 2,591         | 638                                  | 430                                       | 626           | 264                                 | 1,783                        | 1,582  |
| 50,001 to 200,000 .....                          | 9,548         | 4,762                                | 1,094                                     | 1,965         | 2,412                               | 4,851                        | 6,105  |
| Over 200,000 .....                               | 23,677        | 17,698                               | 11,989                                    | 9,099         | 12,862                              | 7,670                        | 21,328   |
| <b>Principal Building Activity</b>               |               |                                      |   |               |                                     |                              |  |
| Education .....                                  | 168           | 17                                   | NC  | NC            | 55                                  | 168                          | 63   |
| Health Care .....                                | 12,094        | 11,662                               | 6,935                                     | 2,754         | 6,770                               | 1,435                        | 11,812   |
| Laboratory .....                                 | 3,331         | 1,633                                | 99  | 244           | 72                                  | 979                          | 1,264  |
| Lodging .....                                    | 942           | 369                                  | 270                                       | 535           | 128                                 | NC                           | 597  |
| Mercantile and Service .....                     | 6,236         | 3,528                                | 2,455                                     | 2,559         | 1,625                               | 1,199                        | 5,440  |
| Office .....                                     | 10,799        | 5,607                                | 3,720                                     | 5,237         | 6,615                               | 9,274                        | 8,868  |
| All Others .....                                 | 2,247         | 283                                  | 33  | 361           | 274                                 | 1,250                        | 972  |
| <b>Year Constructed</b>                          |               |                                      |   |               |                                     |                              |  |
| 1959 or Before .....                             | 13,258        | 8,070                                | 3,456                                     | 3,609         | 5,896                               | 5,517                        | 10,053   |
| 1960 to 1969 .....                               | 6,386         | 2,422                                | 2,588                                     | 3,428         | 2,562                               | 3,887                        | 5,759  |
| 1970 to 1979 .....                               | 6,175         | 4,655                                | 3,147                                     | 2,771         | 1,921                               | 1,747                        | 5,459  |
| 1980 to 1989 .....                               | 6,903         | 5,082                                | 1,571                                     | 1,692         | 2,447                               | 2,852                        | 4,941  |
| 1990 to 1993 .....                               | 3,095         | 2,870                                | 2,750                                     | 190           | 2,711                               | 300                          | 2,803  |
| <b>Federal Agency</b>                            |               |                                      |   |               |                                     |                              |  |
| Department of Defense .....                      | 1,668         | 848                                  | 779                                       | 1,129         | 1,133                               | 793                          | 1,277  |
| General Services Administration ...              | 7,888         | 5,034                                | 3,391                                     | 4,819         | 5,570                               | 7,258                        | 7,317  |
| United States Postal Service .....               | 7,027         | 3,692                                | 2,686                                     | 2,791         | 2,000                               | 1,808                        | 5,854  |
| Veterans Administration .....                    | 11,375        | 11,178                               | 6,403                                     | 2,346         | 5,912                               | 1,505                        | 11,127   |
| All Others .....                                 | 7,858         | 2,347                                | 255                                       | 605           | 923                                 | 2,940                        | 3,441  |
| <b>Energy Sources (more than one may apply)</b>  |               |                                      |   |               |                                     |                              |  |
| Electricity .....                                | 35,816        | 23,099                               | 13,513                                    | 11,690        | 15,538                              | 14,304                       | 29,015   |
| Natural Gas .....                                | 24,827        | 17,179                               | 11,257                                    | 10,680        | 11,936                              | 8,809                        | 21,277   |
| Fuel Oil .....                                   | 4,740         | 3,293                                | 2,833                                     | 2,753         | 2,039                               | 2,214                        | 4,581  |
| District Heat .....                              | 13,437        | 9,499                                | 5,031                                     | 1,376         | 5,836                               | 5,034                        | 9,972  |
| District Chilled Water .....                     | 7,980         | 6,984                                | 5,258                                     | 1,818         | 4,647                               | 2,669                        | 7,577  |
| Propane .....                                    | 200           | 135                                  | 24  | NC            | 24                                  | 65                           | 15   |
| Any Other .....                                  | 2,850         | 2,458                                | 1,436                                     | NC            | 1,114                               | 1,022                        | 2,850  |
| <b>Energy End Uses (more than one may apply)</b> |               |                                      |   |               |                                     |                              |  |
| Heating .....                                    | 35,734        | 23,099                               | 13,513                                    | 11,690        | 15,538                              | 14,304                       | 29,015   |
| Air Conditioning .....                           | 35,273        | 22,638                               | 13,052                                    | 11,690        | 15,538                              | 14,304                       | 28,555   |
| Water Heating .....                              | 35,221        | 22,638                               | 13,052                                    | 11,657        | 15,518                              | 14,251                       | 28,535   |
| Cooking .....                                    | 19,213        | 15,694                               | 10,071                                    | 8,148         | 10,470                              | 5,934                        | 18,533   |
| Manufacturing .....                              | 5,335         | 3,545                                | 2,597                                     | 2,957         | 2,378                               | 2,549                        | 5,140  |
| <b>Workers (main shift)</b>                      |               |                                      |   |               |                                     |                              |  |
| Less than 50 .....                               | 2,548         | 415                                  | 204                                       | 498           | 247                                 | 1,291                        | 1,510  |
| 50 to 99 .....                                   | 2,026         | 944                                  | 231                                       | 577           | 566                                 | 1,044                        | 1,241  |
| 100 to 499 .....                                 | 9,029         | 4,647                                | 730                                       | 1,275         | 1,774                               | 4,652                        | 5,211  |
| 500 or More .....                                | 22,213        | 17,093                               | 12,348                                    | 9,341         | 12,951                              | 7,316                        | 21,052   |
| <b>Weekly Operating Hours</b>                    |               |                                      |   |               |                                     |                              |  |
| 48 or Fewer .....                                | 2,740         | 1,111                                | 256                                       | 860           | 1,087                               | 2,600                        | 2,018  |
| 49 to 60 .....                                   | 6,460         | 5,027                                | 1,764                                     | 2,891         | 4,399                               | 6,460                        | 5,375  |
| 61 to 167 .....                                  | 8,051         | 1,898                                | 1,512                                     | 1,557         | 2,148                               | 5,244                        | 4,435  |
| Open Continuously .....                          | 18,565        | 15,063                               | 9,982                                     | 6,381         | 7,904                               | NC                           | 17,189   |

See footnotes at end of table.



**Table 3.41. Energy Management Practices in FBSS Buildings in Federal Region 6, Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics                                      | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|---|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>Multibuilding Facility</b>                                 |               |                                      |   |              |                                     |                              |  |
| Yes .....   | 24,441        | 16,370                               | 9,126                                     | 6,726        | 9,701                               | 9,504                        | 19,477   |
| No .....  | 11,375        | 6,729                                | 4,387                                     | 4,963        | 5,837                               | 4,800                        | 9,539  |
| <b>Percent of Floorspace Heated</b>                           |               |                                      |   |              |                                     |                              |  |
| Not Heated .....  | 82            | NC                                   | NC  | NC           | NC                                  | NC                           | NC   |
| 1 to 50 .....   | 1,288         | 671                                  | 363                                       | 594          | 291                                 | 914                          | 998  |
| 51 to 100 .....   | 34,446        | 22,428                               | 13,150                                    | 11,095       | 15,247                              | 13,390                       | 28,017   |
| <b>Percent of Floorspace Cooled</b>                           |               |                                      |   |              |                                     |                              |  |
| Not Cooled .....  | 554           | 472                                  | 461                                       | NC           | 11                                  | NC                           | 472  |
| 1 to 50 .....   | 1,951         | 524                                  | 74  | 568          | 272                                 | 1,385                        | 1,192  |
| 51 to 100 .....   | 33,312        | 22,103                               | 12,978                                    | 11,122       | 15,254                              | 12,919                       | 27,351   |
| <b>Percent Lit When Open</b>                                  |               |                                      |   |              |                                     |                              |  |
| 1 to 50 .....   | 1,062         | 326                                  | 183                                       | 102          | 272                                 | 742                          | 687  |
| 51 to 100 .....   | 34,672        | 22,773                               | 13,330                                    | 11,587       | 15,265                              | 13,562                       | 28,328   |
| No Operating Hours .....                                      | 82            | NC                                   | NC  | NC           | NC                                  | NC                           | NC   |
| Don't Know .....  | NC            | NC                                   | NC  | NC           | NC                                  | NC                           | NC   |
| <b>Heating Equipment (more than one may apply)</b>            |               |                                      |   |              |                                     |                              |  |
| Heat Pumps .....  | 964           | 199                                  | 100                                       | 618          | 12                                  | 313                          | 877  |
| Furnaces .....  | 791           | 87                                   | 45  | 69           | 202                                 | 633                          | 584  |
| Individual Space Heaters .....                                | 5,408         | 3,592                                | 2,576                                     | 1,610        | 1,881                               | 2,898                        | 4,846  |
| District Heat .....   | 15,205        | 11,254                               | 5,546                                     | 2,221        | 5,867                               | 5,657                        | 11,614   |
| Boilers .....   | 16,718        | 10,580                               | 7,178                                     | 7,806        | 8,854                               | 7,088                        | 14,190   |
| Packaged-Heating Units .....                                  | 7,574         | 4,982                                | 4,016                                     | 3,421        | 4,743                               | 2,044                        | 6,566  |
| <b>Cooling Equipment (more than one may apply)</b>            |               |                                      |   |              |                                     |                              |  |
| Residential-Type Central A/C .....                            | 4,706         | 2,379                                | 2,207                                     | 1,630        | 673                                 | 2,260                        | 4,432  |
| Heat Pumps .....  | 1,549         | 829                                  | 88  | 618          | 162                                 | 462                          | 1,372  |
| Individual A/C .....  | 6,950         | 4,000                                | 1,009                                     | 1,946        | 2,121                               | 1,998                        | 5,338  |
| District Chilled Water .....                                  | 10,856        | 9,349                                | 5,258                                     | 2,347        | 5,840                               | 4,328                        | 9,701  |
| Central Chillers .....  | 21,596        | 13,285                               | 7,116                                     | 8,219        | 9,365                               | 8,337                        | 17,893   |
| Packaged-A/C Units .....                                      | 14,104        | 9,541                                | 6,929                                     | 6,103        | 6,418                               | 5,049                        | 12,808   |
| Swamp Coolers .....   | 2,015         | 1,559                                | 148                                       | 148          | 1,114                               | 1,194                        | 1,725  |
| <b>Lighting Equipment (more than one may apply)</b>           |               |                                      |   |              |                                     |                              |  |
| Incandescent .....  | 20,248        | 10,360                               | 6,777                                     | 5,719        | 7,664                               | 8,096                        | 14,588   |
| Standard Fluorescent .....                                    | 35,057        | 22,511                               | 13,480                                    | 11,251       | 15,376                              | 14,073                       | 28,529   |
| Compact Fluorescent .....                                     | 7,942         | 6,385                                | 3,388                                     | 4,430        | 4,995                               | 4,926                        | 7,516  |
| High-Intensity Discharge .....                                | 16,188        | 11,491                               | 6,805                                     | 6,194        | 6,374                               | 4,651                        | 13,662   |
| Electronic Ballast .....                                      | 15,861        | 12,411                               | 9,798                                     | 5,856        | 9,417                               | 5,353                        | 15,050   |
| <b>Water-Heating Equipment (more than one may apply)</b>      |               |                                      |   |              |                                     |                              |  |
| Centralized System .....                                      | 23,206        | 15,886                               | 8,690                                     | 6,361        | 9,660                               | 9,882                        | 18,644   |
| Distributed System .....                                      | 11,827        | 6,606                                | 4,337                                     | 5,271        | 5,846                               | 4,344                        | 9,855  |
| Don't Know/Not Ascertained .....                              | 188           | 146                                  | 25  | 25           | 11                                  | 25                           | 36   |
| <b>Energy Conservation Features (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Any Conservation Feature .....                                | 35,734        | 23,099                               | 13,513                                    | 11,690       | 15,538                              | 14,304                       | 29,015   |
| Building Shell .....  | 33,946        | 22,678                               | 13,067                                    | 11,231       | 15,092                              | 13,501                       | 27,876   |
| HVAC .....  | 35,425        | 23,099                               | 13,488                                    | 11,643       | 15,396                              | 13,995                       | 28,826   |
| Lighting .....  | 25,654        | 17,983                               | 12,677                                    | 8,781        | 12,576                              | 10,753                       | 24,105   |

See footnotes at end of table.

**Table 3.41. Energy Management Practices in FBSS Buildings in Federal Region 6, Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|---|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Roof or Ceiling   |               |                                      |   |              |                                     |                              |  |
| Insulation .....  | 28,249        | 19,380                               | 11,688                                    | 8,794        | 11,081                              | 10,088                       | 23,169   |
| Wall Insulation .....   | 20,550        | 14,492                               | 9,928                                     | 6,991        | 8,650                               | 5,384                        | 16,527   |
| Storm or Multiple   |               |                                      |   |              |                                     |                              |  |
| Glazing .....   | 17,939        | 14,959                               | 7,870                                     | 5,711        | 9,429                               | 5,920                        | 15,562   |
| Tinted or Reflective Glass  |               |                                      |   |              |                                     |                              |  |
| or Shading Film .....   | 24,768        | 17,244                               | 11,836                                    | 8,557        | 12,800                              | 10,141                       | 21,955   |
| Exterior or Interior Shading  |               |                                      |   |              |                                     |                              |  |
| or Awnings .....  | 26,067        | 19,444                               | 11,662                                    | 9,676        | 14,311                              | 11,197                       | 23,959   |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                                      |   |              |                                     |                              |  |
| VAV System .....  | 18,518        | 14,894                               | 8,839                                     | 6,867        | 11,160                              | 6,306                        | 15,889   |
| Economizer Cycle .....  | 23,542        | 17,962                               | 11,116                                    | 7,928        | 10,448                              | 6,681                        | 20,313   |
| HVAC Maintenance .....  | 35,341        | 23,077                               | 13,425                                    | 11,580       | 15,396                              | 13,932                       | 28,741   |
| <b>Lighting Conservation Features (more than one may apply)</b>       |               |                                      |   |              |                                     |                              |  |
| Specular Reflectors .....   | 18,017        | 12,007                               | 10,434                                    | 6,629        | 9,331                               | 7,294                        | 17,117   |
| Natural Lighting Control  |               |                                      |   |              |                                     |                              |  |
| Sensors .....   | 6,740         | 5,062                                | 4,790                                     | 2,044        | 5,036                               | 1,564                        | 6,473  |
| Occupancy Sensors .....   | 16,435        | 11,571                               | 9,690                                     | 7,220        | 9,031                               | 6,824                        | 15,479   |
| Time Clock .....  | 9,037         | 6,776                                | 6,265                                     | 3,459        | 6,078                               | 3,094                        | 8,529  |
| Manual Dimmer Switches .....  | 13,454        | 10,952                               | 8,056                                     | 4,184        | 7,723                               | 5,764                        | 12,865   |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.42. Energy Management Practices in FBSS Buildings in  
Federal Region 9, Floorspace, 1993**  
(Thousand Square Feet)

| Building Characteristics                         | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit  | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|--|---------------|--------------------------------------|---|---------------|-------------------------------------|------------------------------|--|
| <b>All Buildings</b> .....                       | <b>44,316</b> | <b>18,231</b>                        | <b>24,699</b>                             | <b>17,444</b> | <b>14,570</b>                       | <b>21,974</b>                | <b>34,547</b>                                      |
| <b>Building Floorspace (square feet)</b>         |               |                                      |   |               |                                     |                              |  |
| 10,000 to 50,000 .....                           | 3,858         | 436                                  | 1,386                                     | 1,069         | 300                                 | 2,485                        | 2,297  |
| 50,001 to 200,000 .....                          | 12,680        | 4,094                                | 5,859                                     | 4,233         | 2,738                               | 6,395                        | 9,384  |
| Over 200,000 .....                               | 27,778        | 13,701                               | 17,454                                    | 12,142        | 11,533                              | 13,095                       | 22,867   |
| <b>Principal Building Activity</b>               |               |                                      |   |               |                                     |                              |  |
| Education .....                                  | 628           | NC                                   | 38  | 157           | 21                                  | 388                          | 200  |
| Health Care .....                                | 9,903         | 5,388                                | 5,402                                     | 3,398         | 4,851                               | 1,121                        | 7,886  |
| Laboratory .....                                 | 2,601         | 961                                  | 733                                       | 438           | 198                                 | 862                          | 2,371  |
| Lodging .....                                    | 1,220         | 308                                  | 421                                       | 616           | 59                                  | 29                           | 608  |
| Mercantile and Service .....                     | 8,194         | 5,503                                | 3,193                                     | 4,125         | 2,155                               | 2,210                        | 6,960  |
| Office .....                                     | 16,380        | 3,868                                | 11,694                                    | 6,572         | 6,660                               | 14,700                       | 14,196   |
| All Others .....                                 | 5,390         | 2,203                                | 3,219                                     | 2,138         | 627                                 | 2,664                        | 2,327  |
| <b>Year Constructed</b>                          |               |                                      |   |               |                                     |                              |  |
| 1959 or Before .....                             | 13,553        | 3,502                                | 5,791                                     | 3,575         | 3,030                               | 7,954                        | 9,006  |
| 1960 to 1969 .....                               | 9,082         | 2,592                                | 6,668                                     | 3,934         | 2,470                               | 6,759                        | 7,807  |
| 1970 to 1979 .....                               | 12,041        | 5,705                                | 7,827                                     | 6,295         | 4,538                               | 5,016                        | 9,904  |
| 1980 to 1989 .....                               | 7,955         | 5,825                                | 3,750                                     | 2,818         | 3,570                               | 1,581                        | 6,772  |
| 1990 to 1993 .....                               | 1,684         | 607                                  | 664                                       | 821           | 964                                 | 664                          | 1,058  |
| <b>Federal Agency</b>                            |               |                                      |   |               |                                     |                              |  |
| Department of Defense .....                      | 8,489         | 4,442                                | 4,072                                     | 2,738         | 1,850                               | 3,720                        | 4,555  |
| General Services Administration .....            | 12,505        | 2,654                                | 10,566                                    | 5,688         | 6,245                               | 11,989                       | 11,490   |
| United States Postal Service .....               | 8,387         | 5,667                                | 3,291                                     | 4,169         | 2,221                               | 2,356                        | 7,332  |
| Veterans Administration .....                    | 8,824         | 4,000                                | 3,668                                     | 3,412         | 3,179                               | 1,410                        | 6,664  |
| All Others .....                                 | 6,111         | 1,469                                | 3,104                                     | 1,437         | 1,076                               | 2,500                        | 4,506  |
| <b>Energy Sources (more than one may apply)</b>  |               |                                      |   |               |                                     |                              |  |
| Electricity .....                                | 44,296        | 18,231                               | 24,680                                    | 17,424        | 14,570                              | 21,974                       | 34,527   |
| Natural Gas .....                                | 34,703        | 14,480                               | 21,884                                    | 13,331        | 12,586                              | 19,537                       | 29,791   |
| Fuel Oil .....                                   | 11,127        | 3,891                                | 6,989                                     | 3,202         | 4,972                               | 3,376                        | 10,692   |
| District Heat .....                              | 11,757        | 5,426                                | 5,771                                     | 4,039         | 4,204                               | 3,160                        | 8,528  |
| District Chilled Water .....                     | 6,362         | 3,286                                | 3,259                                     | 1,737         | 4,042                               | 1,073                        | 5,462  |
| Propane .....                                    | 1,117         | 752                                  | 878                                       | 841           | 752                                 | 86                           | 813  |
| Any Other .....                                  | 2,606         | 2,134                                | 1,234                                     | 2,192         | NC                                  | 1,245                        | 1,648  |
| <b>Energy End Uses (more than one may apply)</b> |               |                                      |   |               |                                     |                              |  |
| Heating .....                                    | 41,921        | 16,963                               | 24,668                                    | 16,711        | 13,679                              | 21,377                       | 32,765   |
| Air Conditioning .....                           | 41,907        | 18,231                               | 24,044                                    | 17,169        | 14,403                              | 21,037                       | 33,718   |
| Water Heating .....                              | 42,984        | 17,689                               | 24,395                                    | 17,290        | 14,029                              | 21,651                       | 33,938   |
| Cooking .....                                    | 20,045        | 11,783                               | 14,043                                    | 10,482        | 9,567                               | 7,179                        | 16,241   |
| Manufacturing .....                              | 7,693         | 5,481                                | 4,723                                     | 4,029         | 2,286                               | 1,638                        | 5,395  |
| <b>Workers (main shift)</b>                      |               |                                      |   |               |                                     |                              |  |
| Less than 50 .....                               | 3,684         | 371                                  | 816                                       | 1,371         | 308                                 | 2,001                        | 1,871  |
| 50 to 99 .....                                   | 2,161         | 145                                  | 567                                       | 596           | 61                                  | 1,534                        | 1,294  |
| 100 to 499 .....                                 | 14,017        | 4,852                                | 6,555                                     | 3,828         | 2,400                               | 7,606                        | 10,947   |
| 500 or More .....                                | 24,454        | 12,863                               | 16,762                                    | 11,649        | 11,801                              | 10,833                       | 20,435   |
| <b>Weekly Operating Hours</b>                    |               |                                      |   |               |                                     |                              |  |
| 48 or Fewer .....                                | 4,822         | 949                                  | 1,537                                     | 1,504         | 369                                 | 4,176                        | 1,937  |
| 49 to 60 .....                                   | 13,424        | 3,181                                | 9,623                                     | 5,773         | 5,427                               | 12,945                       | 11,669   |
| 61 to 167 .....                                  | 5,706         | 1,804                                | 3,153                                     | 1,914         | 1,311                               | 4,853                        | 5,019  |
| Open Continuously .....                          | 20,364        | 12,297                               | 10,387                                    | 8,252         | 7,463                               | NC                           | 15,922   |

See footnotes at end of table.

**Table 3.42. Energy Management Practices in FBSS Buildings in Federal Region 9, Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics                                      | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|---|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>Multibuilding Facility</b>                                 |               |                                      |   |              |                                     |                              |  |
| Yes .....   | 26,821        | 13,401                               | 13,884                                    | 11,814       | 8,369                               | 9,385                        | 19,618   |
| No .....  | 17,495        | 4,830                                | 10,816                                    | 5,630        | 6,201                               | 12,589                       | 14,930   |
| <b>Percent of Floorspace Heated</b>                           |               |                                      |   |              |                                     |                              |  |
| Not Heated .....  | 2,394         | 1,268                                | 32  | 733          | 891                                 | 597                          | 1,782  |
| 1 to 50 .....   | 3,751         | 2,120                                | 1,913                                     | 2,011        | 253                                 | 1,923                        | 1,899  |
| 51 to 100 .....   | 38,170        | 14,843                               | 22,755                                    | 14,700       | 13,426                              | 19,453                       | 30,866   |
| <b>Percent of Floorspace Cooled</b>                           |               |                                      |   |              |                                     |                              |  |
| Not Cooled .....  | 2,956         | 193                                  | 942                                       | 455          | 371                                 | 1,293                        | 1,308  |
| 1 to 50 .....   | 7,304         | 3,000                                | 2,539                                     | 1,949        | 995                                 | 2,868                        | 5,383  |
| 51 to 100 .....   | 34,056        | 15,038                               | 21,218                                    | 15,039       | 13,204                              | 17,814                       | 27,857   |
| <b>Percent Lit When Open</b>                                  |               |                                      |   |              |                                     |                              |  |
| 1 to 50 .....   | 1,847         | 260                                  | 604                                       | 848          | 283                                 | 857                          | 952  |
| 51 to 100 .....   | 42,375        | 17,971                               | 24,096                                    | 16,596       | 14,288                              | 21,088                       | 33,595   |
| No Operating Hours .....                                      | 29            | NC                                   | NC  | NC           | NC                                  | 29                           | NC   |
| Don't Know .....  | 64            | NC                                   | NC  | NC           | NC                                  | NC                           | NC   |
| <b>Heating Equipment (more than one may apply)</b>            |               |                                      |   |              |                                     |                              |  |
| Heat Pumps .....  | 3,081         | 1,477                                | 2,456                                     | 894          | 412                                 | 1,414                        | 2,941  |
| Furnaces .....  | 1,204         | 507                                  | 722                                       | 763          | 510                                 | 558                          | 499  |
| Individual Space Heaters .....                                | 4,933         | 1,634                                | 3,373                                     | 2,609        | 1,923                               | 3,201                        | 4,180  |
| District Heat .....   | 12,712        | 6,515                                | 6,866                                     | 4,926        | 3,981                               | 3,194                        | 8,460  |
| Boilers .....   | 24,010        | 9,045                                | 15,566                                    | 11,129       | 8,573                               | 15,082                       | 20,352   |
| Packaged-Heating Units .....                                  | 5,997         | 1,712                                | 4,294                                     | 863          | 1,504                               | 3,783                        | 4,976  |
| <b>Cooling Equipment (more than one may apply)</b>            |               |                                      |   |              |                                     |                              |  |
| Residential-Type Central A/C .....                            | 1,900         | 1,013                                | 1,118                                     | 886          | 677                                 | 954                          | 807  |
| Heat Pumps .....  | 2,724         | 1,433                                | 1,823                                     | 863          | 412                                 | 1,439                        | 2,485  |
| Individual A/C .....  | 5,723         | 1,620                                | 2,404                                     | 1,684        | 726                                 | 3,678                        | 4,953  |
| District Chilled Water .....                                  | 7,647         | 5,146                                | 5,465                                     | 3,138        | 4,034                               | 1,058                        | 4,932  |
| Central Chillers .....  | 27,723        | 13,372                               | 16,944                                    | 12,296       | 9,296                               | 15,384                       | 23,266   |
| Packaged-A/C Units .....                                      | 23,989        | 8,856                                | 14,389                                    | 10,548       | 9,034                               | 13,817                       | 20,197   |
| Swamp Coolers .....   | 3,165         | 1,592                                | 1,636                                     | 1,301        | 1,142                               | 758                          | 2,285  |
| <b>Lighting Equipment (more than one may apply)</b>           |               |                                      |   |              |                                     |                              |  |
| Incandescent .....  | 20,475        | 7,727                                | 11,924                                    | 9,157        | 8,130                               | 9,724                        | 17,342   |
| Standard Fluorescent .....                                    | 42,850        | 17,903                               | 24,511                                    | 16,789       | 14,570                              | 21,289                       | 34,047   |
| Compact Fluorescent .....                                     | 17,339        | 7,441                                | 13,891                                    | 6,254        | 8,282                               | 11,741                       | 16,985   |
| High-Intensity Discharge .....                                | 18,736        | 10,875                               | 10,570                                    | 9,828        | 6,651                               | 7,978                        | 14,352   |
| Electronic Ballast .....                                      | 23,307        | 11,378                               | 16,181                                    | 12,008       | 8,859                               | 12,845                       | 20,703   |
| <b>Water-Heating Equipment (more than one may apply)</b>      |               |                                      |   |              |                                     |                              |  |
| Centralized System .....                                      | 31,069        | 13,213                               | 18,305                                    | 12,457       | 11,891                              | 16,096                       | 25,491   |
| Distributed System .....                                      | 10,750        | 3,696                                | 6,054                                     | 4,312        | 1,955                               | 4,928                        | 7,843  |
| Don't Know/Not Ascertained .....                              | 1,165         | 781                                  | 36  | 521          | 183                                 | 628                          | 604  |
| <b>Energy Conservation Features (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Any Conservation Feature .....                                | 44,023        | 18,231                               | 24,624                                    | 17,432       | 14,570                              | 21,853                       | 34,547   |
| Building Shell .....  | 34,105        | 15,836                               | 19,745                                    | 14,266       | 11,712                              | 15,481                       | 26,983   |
| HVAC .....  | 43,116        | 17,971                               | 24,535                                    | 16,780       | 14,532                              | 21,502                       | 34,455   |
| Lighting .....  | 34,825        | 15,999                               | 20,778                                    | 13,223       | 12,803                              | 17,791                       | 29,501   |

See footnotes at end of table.

**Table 3.42. Energy Management Practices in FBSS Buildings in Federal Region 9, Floorspace, 1993 (Continued)**  
(Thousand Square Feet)

| Building Characteristics  | All Buildings | Energy Management and Control System | Energy Conservation Programs <sup>1</sup> | Energy Audit | HVAC Maintenance Staff <sup>2</sup> | Off-Hour Equipment Reduction | Retrofit or Purchase of Energy Efficient Equipment |
|---|---------------|--------------------------------------|---|--------------|-------------------------------------|------------------------------|--|
| <b>Building Shell Conservation Features (more than one may apply)</b> |               |                                      |   |              |                                     |                              |  |
| Roof or Ceiling   |               |                                      |   |              |                                     |                              |  |
| Insulation .....  | 27,234        | 15,092                               | 16,156                                    | 12,807       | 9,157                               | 9,929                        | 21,217   |
| Wall Insulation .....   | 17,462        | 10,333                               | 10,951                                    | 9,275        | 7,263                               | 5,872                        | 13,563   |
| Storm or Multiple   |               |                                      |   |              |                                     |                              |  |
| Glazing .....   | 10,260        | 4,429                                | 7,098                                     | 3,871        | 5,672                               | 3,397                        | 9,417  |
| Tinted or Reflective Glass or Shading Film .....                      | 22,381        | 10,096                               | 14,637                                    | 9,488        | 8,991                               | 9,823                        | 19,110   |
| Exterior or Interior Shading or Awnings .....                         | 24,370        | 11,233                               | 14,182                                    | 10,337       | 9,080                               | 10,266                       | 20,183   |
| <b>HVAC Conservation Features (more than one may apply)</b>           |               |                                      |   |              |                                     |                              |  |
| VAV System .....  | 15,577        | 7,683                                | 10,148                                    | 6,474        | 8,209                               | 6,212                        | 13,029   |
| Economizer Cycle .....  | 26,367        | 11,661                               | 17,092                                    | 11,957       | 8,690                               | 14,527                       | 22,271   |
| HVAC Maintenance .....  | 43,098        | 17,954                               | 24,517                                    | 16,780       | 14,532                              | 21,484                       | 34,437   |
| <b>Lighting Conservation Features (more than one may apply)</b>       |               |                                      |   |              |                                     |                              |  |
| Specular Reflectors .....   | 21,850        | 7,520                                | 15,832                                    | 5,450        | 10,376                              | 13,481                       | 20,033   |
| Natural Lighting Control  |               |                                      |   |              |                                     |                              |  |
| Sensors .....   | 13,760        | 6,808                                | 8,689                                     | 4,365        | 6,208                               | 6,717                        | 12,187   |
| Occupancy Sensors .....   | 25,245        | 12,584                               | 15,295                                    | 11,847       | 11,003                              | 11,773                       | 22,559   |
| Time Clock .....  | 10,539        | 5,499                                | 8,426                                     | 5,292        | 5,304                               | 5,810                        | 9,778  |
| Manual Dimmer Switches .....  | 14,455        | 7,269                                | 9,461                                     | 5,939        | 7,711                               | 5,206                        | 12,377   |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.43. Consumption and Expenditures for Sum of Major Fuels, Electricity, and Natural Gas in FBSS Buildings in Federal Region 3, 1993**

| Building Characteristics                         | Number of Buildings | Floorspace (thousand square feet) | Sum of Major Fuel Consumption (billion Btu) | Sum of Major Fuel Expenditures (million dollars) | Electricity Consumption (billion Btu) |              | Electricity Expenditures (million dollars) | Natural Gas Consumption (billion Btu) | Natural Gas Expenditures (million dollars) |
|--|---------------------|-----------------------------------|---|--|---------------------------------------|--------------|--|---------------------------------------|--|
|  |                     |                                   |   |  | Primary                               | Site         |  |                                       |  |
| <b>All Buildings</b> .....                       | <b>312</b>          | <b>94,880</b>                     | <b>12,010</b>                               | <b>167</b>                                       | <b>20,445</b>                         | <b>6,772</b> | <b>121</b>                                 | <b>1,968</b>                          | <b>8</b>                                   |
| <b>Building Floorspace (square feet)</b>         |                     |                                   |   |  |                                       |              |  |                                       |  |
| 10,000 to 50,000 .....                           | 94                  | 2,564                             | 477   | 6  | 605                                   | 201          | 3  | 63                                    | (*)  |
| 50,001 to 200,000 .....                          | 117                 | 13,166                            | 2,290                                       | 28   | 3,470                                 | 1,149        | 18   | 304                                   | 1  |
| Over 200,000 .....                               | 101                 | 79,149                            | 9,243                                       | 133  | 16,370                                | 5,422        | 99   | 1,602                                 | 7  |
| <b>Principal Building Activity</b>               |                     |                                   |   |  |                                       |              |  |                                       |  |
| Education .....                                  | 8                   | 598                               | 65  | 1  | 85                                    | 28           | (*)  | 6                                     | (*)  |
| Health Care .....                                | 41                  | 14,559                            | 1,829                                       | 18   | 2,219                                 | 735          | 11   | 599                                   | 2  |
| Laboratory .....                                 | 37                  | 5,165                             | 1,581                                       | 21   | 2,248                                 | 744          | 12   | 58                                    | (*)  |
| Lodging .....                                    | 13                  | 2,558                             | 216   | 3  | 393                                   | 130          | 2  | 35                                    | (*)  |
| Mercantile and Service .....                     | 46                  | 7,966                             | 1,166                                       | 12   | 1,339                                 | 444          | 8  | 635                                   | 3  |
| Office .....                                     | 124                 | 56,881                            | 6,074                                       | 97   | 12,044                                | 3,989        | 75   | 598                                   | 2  |
| All Others .....                                 | 43                  | 7,152                             | 1,080                                       | 16   | 2,118                                 | 702          | 11   | 38                                    | (*)  |
| <b>Year Constructed</b>                          |                     |                                   |   |  |                                       |              |  |                                       |  |
| 1959 or Before .....                             | 142                 | 43,829                            | 5,445                                       | 80   | 8,749                                 | 2,898        | 57   | 949                                   | 4  |
| 1960 to 1969 .....                               | 70                  | 19,564                            | 2,695                                       | 40   | 4,675                                 | 1,548        | 27   | 162                                   | 1  |
| 1970 to 1979 .....                               | 47                  | 17,737                            | 1,929                                       | 28   | 4,516                                 | 1,496        | 23   | 104                                   | (*)  |
| 1980 to 1989 .....                               | 38                  | 8,975                             | 1,494                                       | 14   | 1,732                                 | 574          | 9  | 717                                   | 3  |
| 1990 to 1993 .....                               | 15                  | 4,774                             | 446   | 6  | 773                                   | 256          | 4  | 36                                    | (*)  |
| <b>Federal Agency</b>                            |                     |                                   |   |  |                                       |              |  |                                       |  |
| Department of Defense .....                      | 22                  | 13,988                            | 1,911                                       | 23   | 2,900                                 | 961          | 14   | 448                                   | 2  |
| General Services Administration ..               | 83                  | 46,205                            | 4,607                                       | 82   | 10,082                                | 3,340        | 67   | 184                                   | 1  |
| United States Postal Service .....               | 57                  | 9,392                             | 1,312                                       | 14   | 1,713                                 | 568          | 10   | 649                                   | 3  |
| Veterans Administration .....                    | 56                  | 13,306                            | 1,758                                       | 17   | 2,077                                 | 688          | 11   | 592                                   | 2  |
| All Others .....                                 | 94                  | 11,989                            | 2,423                                       | 31   | 3,673                                 | 1,217        | 19   | 94                                    | 1  |
| <b>Energy Sources (more than one may apply)</b>  |                     |                                   |   |  |                                       |              |  |                                       |  |
| Electricity .....                                | 311                 | 94,161                            | 11,990                                      | 167  | 20,445                                | 6,772        | 121  | 1,949                                 | 8  |
| Natural Gas .....                                | 139                 | 58,674                            | 7,606                                       | 103  | 12,413                                | 4,112        | 75   | 1,968                                 | 8  |
| Fuel Oil .....                                   | 89                  | 39,300                            | 5,008                                       | 63   | 9,111                                 | 3,018        | 46   | 986                                   | 4  |
| District Heat .....                              | 154                 | 63,991                            | 8,106                                       | 126  | 14,023                                | 4,645        | 87   | 425                                   | 2  |
| District Chilled Water .....                     | 57                  | 22,922                            | 3,305                                       | 43   | 4,940                                 | 1,636        | 26   | 384                                   | 1  |
| Propane .....                                    | 5                   | 941                               | 115   | 2  | 179                                   | 59           | 1  | 3                                     | (*)  |
| Any Other .....                                  | 8                   | 4,470                             | 355   | 5  | 770                                   | 255          | 4  | 20                                    | (*)  |
| <b>Energy End Uses (more than one may apply)</b> |                     |                                   |   |  |                                       |              |  |                                       |  |
| Heating .....                                    | 307                 | 94,063                            | 11,991                                      | 167  | 20,390                                | 6,754        | 120  | 1,968                                 | 8  |
| Air Conditioning .....                           | 305                 | 93,454                            | 11,970                                      | 167  | 20,407                                | 6,759        | 120  | 1,947                                 | 8  |
| Water Heating .....                              | 303                 | 93,138                            | 11,924                                      | 166  | 20,246                                | 6,706        | 119  | 1,963                                 | 8  |
| Cooking .....                                    | 108                 | 69,947                            | 8,780                                       | 125  | 15,430                                | 5,111        | 93   | 1,635                                 | 7  |
| Manufacturing .....                              | 50                  | 27,041                            | 3,755                                       | 48   | 6,701                                 | 2,220        | 34   | 583                                   | 2  |
| <b>Workers (main shift)</b>                      |                     |                                   |   |  |                                       |              |  |                                       |  |
| Less than 50 .....                               | 71                  | 4,102                             | 444   | 5  | 548                                   | 181          | 3  | 61                                    | (*)  |
| 50 to 99 .....                                   | 39                  | 1,903                             | 319   | 3  | 336                                   | 111          | 2  | 53                                    | (*)  |
| 100 to 499 .....                                 | 107                 | 13,632                            | 2,321                                       | 29   | 3,460                                 | 1,146        | 18   | 358                                   | 2  |
| 500 or More .....                                | 95                  | 75,243                            | 8,926                                       | 130  | 16,100                                | 5,333        | 97   | 1,496                                 | 6  |
| <b>Weekly Operating Hours</b>                    |                     |                                   |   |  |                                       |              |  |                                       |  |
| 48 or Fewer .....                                | 51                  | 9,694                             | 854   | 21   | 1,310                                 | 434          | 16   | 40                                    | (*)  |
| 49 to 60 .....                                   | 76                  | 25,540                            | 2,496                                       | 41   | 4,935                                 | 1,635        | 30   | 76                                    | (*)  |
| 61 to 167 .....                                  | 60                  | 11,993                            | 1,308                                       | 18   | 2,650                                 | 878          | 15   | 131                                   | (*)  |
| Open Continuously .....                          | 125                 | 47,653                            | 7,352                                       | 88   | 11,550                                | 3,826        | 60   | 1,722                                 | 7  |

See footnotes at end of table.

**Table 3.43. Consumption and Expenditures for Sum of Major Fuels, Electricity, and Natural Gas in FBSS Buildings in Federal Region 3, 1993 (Continued)**

| Building Characteristics                                 | Number of Buildings | Floorspace (thousand square feet) | Sum of Major Fuel Consumption (billion Btu) | Sum of Major Fuel Expenditures (million dollars) | Electricity Consumption (billion Btu) |       | Electricity Expenditures (million dollars) | Natural Gas Consumption (billion Btu) | Natural Gas Expenditures (million dollars) |
|--|---------------------|-----------------------------------|---|--|---------------------------------------|-------|--|---------------------------------------|--|
|  |                     |                                   |   |  | Primary                               | Site  |  |                                       |  |
| <b>Multibuilding Facility</b>                            |                     |                                   |   |  |                                       |       |  |                                       |  |
| Yes .....  | 176                 | 43,861                            | 5,572                                       | 71   | 9,379                                 | 3,107 | 50   | 787                                   | 3  |
| No .....   | 136                 | 51,018                            | 6,437                                       | 96   | 11,066                                | 3,666 | 71   | 1,182                                 | 5  |
| <b>Percent of Floorspace Heated</b>                      |                     |                                   |   |  |                                       |       |  |                                       |  |
| Not Heated .....   | 5                   | 817                               | 18  | (*)  | 55                                    | 18    | (*)  | NC                                    | NC   |
| 1 to 50 .....  | 12                  | 5,787                             | 395   | 6  | 722                                   | 239   | 4  | 17                                    | (*)  |
| 51 to 100 .....  | 295                 | 88,275                            | 11,596                                      | 161  | 19,668                                | 6,515 | 116  | 1,951                                 | 8  |
| <b>Percent of Floorspace Cooled</b>                      |                     |                                   |   |  |                                       |       |  |                                       |  |
| Not Cooled .....   | 13                  | 3,582                             | 180   | 2  | 334                                   | 111   | 2  | 39                                    | (*)  |
| 1 to 50 .....  | 30                  | 9,874                             | 870   | 13   | 1,617                                 | 536   | 9  | 36                                    | (*)  |
| 51 to 100 .....  | 269                 | 81,424                            | 10,960                                      | 152  | 18,494                                | 6,126 | 109  | 1,894                                 | 8  |
| <b>Percent Lit When Open</b>                             |                     |                                   |   |  |                                       |       |  |                                       |  |
| 1 to 50 .....  | 11                  | 663                               | 46  | 1  | 77                                    | 26    | 1  | 9                                     | (*)  |
| 51 to 100 .....  | 300                 | 94,070                            | 11,939                                      | 167  | 20,340                                | 6,737 | 120  | 1,944                                 | 8  |
| No Operating Hours .....                                 | 1                   | 147                               | 26  | (*)  | 28                                    | 9     | (*)  | 16                                    | (*)  |
| Don't Know .....   | NC                  | NC                                | NC  | NC   | NC                                    | NC    | NC   | NC                                    | NC   |
| <b>Percent Lit When Closed</b>                           |                     |                                   |   |  |                                       |       |  |                                       |  |
| Not Lit .....  | 39                  | 5,149                             | 449   | 7  | 879                                   | 291   | 5  | 44                                    | (*)  |
| 1 to 50 .....  | 194                 | 57,953                            | 6,919                                       | 107  | 11,770                                | 3,899 | 78   | 1,006                                 | 5  |
| 51 to 100 .....  | 42                  | 17,412                            | 2,786                                       | 32   | 4,134                                 | 1,369 | 20   | 655                                   | 2  |
| No Off Hours .....                                       | 37                  | 14,366                            | 1,856                                       | 22   | 3,662                                 | 1,213 | 17   | 263                                   | 1  |
| Don't Know .....   | NC                  | NC                                | NC  | NC   | NC                                    | NC    | NC   | NC                                    | NC   |
| <b>Heating Equipment (more than one may apply)</b>       |                     |                                   |   |  |                                       |       |  |                                       |  |
| Heat Pumps .....   | 34                  | 10,922                            | 935   | 13   | 2,168                                 | 718   | 11   | 34                                    | (*)  |
| Furnaces .....   | 16                  | 1,694                             | 93  | 1  | 128                                   | 42    | 1  | 34                                    | (*)  |
| Individual Space Heaters .....                           | 75                  | 34,923                            | 4,433                                       | 57   | 6,910                                 | 2,289 | 39   | 1,164                                 | 5  |
| District Heat .....                                      | 167                 | 67,704                            | 8,711                                       | 131  | 14,899                                | 4,935 | 91   | 749                                   | 3  |
| Boilers .....  | 93                  | 20,082                            | 2,640                                       | 26   | 3,950                                 | 1,308 | 20   | 1,111                                 | 5  |
| Packaged-Heating Units .....                             | 25                  | 6,006                             | 1,162                                       | 12   | 1,206                                 | 399   | 7  | 659                                   | 3  |
| <b>Cooling Equipment (more than one may apply)</b>       |                     |                                   |   |  |                                       |       |  |                                       |  |
| Residential-Type Central A/C .....                       | 30                  | 19,073                            | 2,655                                       | 43   | 4,292                                 | 1,422 | 31   | 471                                   | 2  |
| Heat Pumps .....   | 37                  | 11,388                            | 987   | 15   | 2,234                                 | 740   | 13   | 11                                    | (*)  |
| Individual A/C .....                                     | 80                  | 28,082                            | 3,276                                       | 44   | 5,084                                 | 1,684 | 31   | 914                                   | 4  |
| District Chilled Water .....                             | 72                  | 28,194                            | 4,102                                       | 51   | 6,319                                 | 2,093 | 32   | 586                                   | 2  |
| Central Chillers .....                                   | 158                 | 63,914                            | 7,621                                       | 113  | 13,867                                | 4,593 | 86   | 1,246                                 | 6  |
| Packaged-A/C Units .....                                 | 127                 | 56,664                            | 6,677                                       | 98   | 11,321                                | 3,750 | 72   | 1,481                                 | 6  |
| Swamp Coolers .....                                      | 3                   | 378                               | 99  | 1  | 195                                   | 65    | 1  | 35                                    | (*)  |
| <b>Lighting Equipment (more than one may apply)</b>      |                     |                                   |   |  |                                       |       |  |                                       |  |
| Incandescent .....                                       | 184                 | 64,981                            | 8,811                                       | 122  | 14,418                                | 4,776 | 85   | 1,487                                 | 7  |
| Standard Fluorescent .....                               | 300                 | 91,986                            | 11,709                                      | 162  | 19,860                                | 6,578 | 117  | 1,946                                 | 8  |
| Compact Fluorescent .....                                | 80                  | 49,455                            | 5,583                                       | 84   | 10,301                                | 3,412 | 63   | 826                                   | 3  |
| High-Intensity Discharge .....                           | 111                 | 52,593                            | 6,889                                       | 88   | 11,695                                | 3,874 | 62   | 1,445                                 | 6  |
| Electronic Ballast .....                                 | 135                 | 65,560                            | 7,548                                       | 112  | 13,264                                | 4,394 | 82   | 1,192                                 | 5  |
| <b>Water-Heating Equipment (more than one may apply)</b> |                     |                                   |   |  |                                       |       |  |                                       |  |
| Centralized System .....                                 | 223                 | 63,477                            | 8,916                                       | 116  | 14,310                                | 4,740 | 80   | 1,730                                 | 7  |
| Distributed System .....                                 | 71                  | 24,696                            | 2,438                                       | 44   | 4,653                                 | 1,541 | 34   | 206                                   | 1  |
| Don't Know/<br>Not Ascertained .....                     | 9                   | 4,965                             | 571   | 6  | 1,283                                 | 425   | 5  | 28                                    | (*)  |

See footnotes at end of table.

**Table 3.43. Consumption and Expenditures for Sum of Major Fuels, Electricity, and Natural Gas in FBSS Buildings in Federal Region 3, 1993 (Continued)**

| Building Characteristics   | Number of Buildings | Floorspace (thousand square feet) | Sum of Major Fuel Consumption (billion Btu) | Sum of Major Fuel Expenditures (million dollars) | Electricity Consumption (billion Btu) |       | Electricity Expenditures (million dollars) | Natural Gas Consumption (billion Btu) | Natural Gas Expenditures (million dollars) |
|--|---------------------|-----------------------------------|---|--|---------------------------------------|-------|--|---------------------------------------|--|
|  |                     |                                   |   |  | Primary                               | Site  |  |                                       |  |
| <b>Commercial Refrigeration Equipment (more than one may apply)</b>                          |                     |                                   |   |  |                                       |       |  |                                       |  |
| Any Equipment .....  | 109                 | 61,731                            | 8,358                                       | 116  | 14,116                                | 4,676 | 84   | 1,633                                 | 7  |
| Walk-in Units .....  | 78                  | 54,223                            | 7,473                                       | 105  | 12,314                                | 4,079 | 75   | 1,543                                 | 7  |
| Cases and Cabinets .....   | 87                  | 53,454                            | 7,508                                       | 105  | 12,534                                | 4,152 | 76   | 1,519                                 | 6  |
| None .....   | 203                 | 33,149                            | 3,652                                       | 51   | 6,329                                 | 2,096 | 36   | 336                                   | 1  |
| <b>Retrofit or Purchase of any Equipment Within Last Ten Years (more than one may apply)</b> |                     |                                   |   |  |                                       |       |  |                                       |  |
| Retrofit and/or Purchase .....   | 229                 | 81,286                            | 9,984                                       | 142  | 16,613                                | 5,503 | 102  | 1,843                                 | 8  |
| Retrofit .....   | 79                  | 43,128                            | 4,664                                       | 67   | 8,449                                 | 2,799 | 48   | 718                                   | 3  |
| Purchase .....   | 188                 | 62,995                            | 8,180                                       | 113  | 13,081                                | 4,333 | 81   | 1,722                                 | 7  |
| No Retrofit or Purchase .....  | 83                  | 13,594                            | 2,025                                       | 26   | 3,832                                 | 1,269 | 18   | 125                                   | 1  |
| <b>Energy Conservation Features (more than one may apply)</b>                                |                     |                                   |   |  |                                       |       |  |                                       |  |
| Any Conservation Feature .....   | 309                 | 94,361                            | 11,986                                      | 167  | 20,407                                | 6,760 | 120  | 1,968                                 | 8  |
| Building Shell .....   | 290                 | 84,557                            | 11,201                                      | 147  | 18,863                                | 6,248 | 103  | 1,871                                 | 8  |
| HVAC .....   | 303                 | 93,543                            | 11,922                                      | 166  | 20,330                                | 6,734 | 120  | 1,951                                 | 8  |
| Lighting .....   | 210                 | 80,953                            | 9,866                                       | 140  | 17,200                                | 5,697 | 103  | 1,652                                 | 7  |
| <b>HVAC Conservation Features (more than one may apply)</b>                                  |                     |                                   |   |  |                                       |       |  |                                       |  |
| VAV System .....   | 84                  | 37,611                            | 4,764                                       | 59   | 8,153                                 | 2,700 | 43   | 1,130                                 | 5  |
| Economizer Cycle .....   | 156                 | 61,089                            | 8,255                                       | 110  | 14,240                                | 4,717 | 79   | 1,582                                 | 7  |
| HVAC Maintenance .....   | 301                 | 93,402                            | 11,917                                      | 166  | 20,316                                | 6,729 | 120  | 1,951                                 | 8  |
| <b>Lighting Conservation Features (more than one may apply)</b>                              |                     |                                   |   |  |                                       |       |  |                                       |  |
| Specular Reflectors .....  | 124                 | 44,741                            | 5,880                                       | 73   | 9,465                                 | 3,135 | 51   | 1,346                                 | 6  |
| Natural Lighting Control   |                     |                                   |   |  |                                       |       |  |                                       |  |
| Sensors .....  | 29                  | 17,743                            | 1,830                                       | 32   | 3,312                                 | 1,097 | 26   | 311                                   | 1  |
| Occupancy Sensors .....  | 95                  | 62,261                            | 6,564                                       | 103  | 12,728                                | 4,216 | 79   | 749                                   | 3  |
| Time Clock .....   | 74                  | 46,555                            | 5,309                                       | 80   | 9,750                                 | 3,229 | 60   | 633                                   | 2  |
| Manual Dimmer Switches .....   | 93                  | 49,824                            | 5,521                                       | 85   | 9,856                                 | 3,265 | 62   | 752                                   | 3  |
| <b>Energy Management Practices (more than one may apply)</b>                                 |                     |                                   |   |  |                                       |       |  |                                       |  |
| Energy Management and Control System .....   | 132                 | 61,891                            | 7,959                                       | 109  | 13,645                                | 4,520 | 81   | 1,692                                 | 7  |
| Energy Conservation Programs <sup>1</sup> .....  | 99                  | 59,284                            | 7,021                                       | 105  | 12,129                                | 4,018 | 77   | 1,375                                 | 6  |
| Energy Audit .....   | 99                  | 37,621                            | 4,388                                       | 60   | 7,990                                 | 2,647 | 44   | 585                                   | 2  |
| HVAC Maintenance Staff <sup>2</sup> .....  | 97                  | 52,924                            | 6,266                                       | 97   | 11,252                                | 3,727 | 72   | 930                                   | 4  |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>                            |                     |                                   |   |  |                                       |       |  |                                       |  |
| Heating .....  | 144                 | 43,828                            | 4,127                                       | 73   | 8,085                                 | 2,678 | 56   | 199                                   | 1  |
| Cooling .....  | 145                 | 43,757                            | 4,129                                       | 73   | 8,083                                 | 2,677 | 56   | 198                                   | 1  |
| Hot Water .....  | 77                  | 26,018                            | 2,407                                       | 45   | 4,552                                 | 1,508 | 35   | 115                                   | 1  |
| Lighting .....   | 162                 | 44,717                            | 4,316                                       | 75   | 8,302                                 | 2,750 | 58   | 230                                   | 1  |
| <b>Sponsor of Program (more than one may apply)</b>  |                     |                                   |   |  |                                       |       |  |                                       |  |
| FEMP .....   | 3                   | 1,848                             | 208   | 3  | 339                                   | 112   | 2  | 7                                     | (*)  |
| Electric Utility .....   | 29                  | 20,357                            | 2,466                                       | 33   | 4,103                                 | 1,359 | 24   | 687                                   | 3  |
| Natural Gas Utility .....  | NC                  | NC                                | NC  | NC   | NC                                    | NC    | NC   | NC                                    | NC   |
| In-house .....   | 33                  | 26,265                            | 3,221                                       | 45   | 5,606                                 | 1,857 | 32   | 510                                   | 2  |
| Third Party .....  | 5                   | 4,322                             | 443   | 6  | 882                                   | 292   | 5  | 110                                   | (*)  |

See footnotes at end of table.



**Table 3.43. Consumption and Expenditures for Sum of Major Fuels, Electricity, and Natural Gas in FBSS Buildings in Federal Region 3, 1993 (Continued)**

| Building Characteristics                                 | Number of Buildings | Floorspace (thousand square feet) | Sum of Major Fuel Consumption (billion Btu) | Sum of Major Fuel Expenditures (million dollars) | Electricity Consumption (billion Btu) |       | Electricity Expenditures (million dollars) | Natural Gas Consumption (billion Btu) | Natural Gas Expenditures (million dollars) |
|--|---------------------|-----------------------------------|---|--|---------------------------------------|-------|--|---------------------------------------|--|
|  |                     |                                   |   |  | Primary                               | Site  |  |                                       |  |
| <b>Type of Assistance (more than one may apply)</b>      |                     |                                   |   |  |                                       |       |  |                                       |  |
| Federal Energy Efficiency Fund .....                     | 4                   | 962                               | 128   | 1  | 123                                   | 41    | 1  | 9                                     | (*)  |
| General Information .....                                | 7                   | 6,729                             | 573   | 8  | 1,135                                 | 376   | 6  | 109                                   | (*)  |
| Site-Specific Information .....                          | 9                   | 16,219                            | 2,292                                       | 30   | 4,028                                 | 1,334 | 20   | 486                                   | 2  |
| Incentives .....   | 18                  | 12,755                            | 1,066                                       | 19   | 2,313                                 | 766   | 14   | 10                                    | (*)  |
| Alternate Rates .....                                    | 8                   | 7,707                             | 1,100                                       | 12   | 1,176                                 | 389   | 8  | 567                                   | 3  |
| Fuel Switching .....                                     | 4                   | 2,154                             | 185   | 3  | 373                                   | 123   | 2  | 12                                    | (*)  |
| <b>Building Generates Electricity</b>                    |                     |                                   |   |  |                                       |       |  |                                       |  |
| Yes .....  | 55                  | 31,984                            | 4,282                                       | 53   | 7,462                                 | 2,472 | 37   | 724                                   | 3  |
| No .....   | 257                 | 62,896                            | 7,728                                       | 115  | 12,983                                | 4,301 | 83   | 1,244                                 | 6  |
| <b>Natural Gas Transported for the Account of Others</b> |                     |                                   |   |  |                                       |       |  |                                       |  |
| Used in Building .....                                   | 11                  | 4,270                             | 394   | 4  | 573                                   | 190   | 3  | 142                                   | 1  |
| Not Used in Building .....                               | 124                 | 52,636                            | 6,973                                       | 96   | 11,240                                | 3,723 | 70   | 1,805                                 | 8  |
| Don't Know/  |                     |                                   |   |  |                                       |       |  |                                       |  |
| Not Ascertained .....                                    | 4                   | 1,768                             | 239   | 2  | 601                                   | 199   | 2  | 21                                    | (*)  |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

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

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • Site electricity is the amount of electricity delivered to commercial buildings. Primary electricity is site electricity plus the conversion losses in the electric generation process at the utility plant. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.44. Consumption and Expenditures for Sum of Major Fuels, Electricity, and Natural Gas in FBSS Buildings in Federal Region 6, 1993**

| Building Characteristics                         | Number of Buildings | Floorspace (thousand square feet) | Sum of Major Fuel Consumption (billion Btu) | Sum of Major Fuel Expenditures (million dollars) | Electricity Consumption (billion Btu) |              | Electricity Expenditures (million dollars) | Natural Gas Consumption (billion Btu) | Natural Gas Expenditures (million dollars) |
|--|---------------------|-----------------------------------|---|--|---------------------------------------|--------------|--|---------------------------------------|--|
|  |                     |                                   |   |  | Primary                               | Site         |  |                                       |  |
| <b>All Buildings</b> .....                       | <b>243</b>          | <b>35,816</b>                     | <b>5,318</b>                                | <b>65</b>  | <b>10,046</b>                         | <b>3,328</b> | <b>51</b>                                  | <b>1,002</b>                          | <b>3</b>                                   |
| <b>Building Floorspace (square feet)</b>         |                     |                                   |   |  |                                       |              |  |                                       |  |
| 10,000 to 50,000 .....                           | 107                 | 2,591                             | 515   | 5  | 814                                   | 270          | 4  | 150                                   | (*)  |
| 50,001 to 200,000 .....                          | 86                  | 9,548                             | 1,780                                       | 22   | 3,109                                 | 1,030        | 16   | 354                                   | 1  |
| Over 200,000 .....                               | 50                  | 23,677                            | 3,023                                       | 38   | 6,123                                 | 2,028        | 31   | 498                                   | 2  |
| <b>Principal Building Activity</b>               |                     |                                   |   |  |                                       |              |  |                                       |  |
| Education .....                                  | 6                   | 168                               | 21  | (*)  | 24                                    | 8            | (*)  | 8                                     | (*)  |
| Health Care .....                                | 35                  | 12,094                            | 1,659                                       | 17   | 2,255                                 | 747          | 12   | 636                                   | 2  |
| Laboratory .....                                 | 29                  | 3,331                             | 1,340                                       | 19   | 2,471                                 | 819          | 13   | 58                                    | (*)  |
| Lodging .....                                    | 16                  | 942                               | 109   | 1  | 155                                   | 51           | 1  | 33                                    | (*)  |
| Mercantile and Service .....                     | 49                  | 6,236                             | 486   | 7  | 1,378                                 | 456          | 7  | 29                                    | (*)  |
| Office .....                                     | 76                  | 10,799                            | 1,208                                       | 16   | 2,712                                 | 898          | 14   | 159                                   | 1  |
| All Others .....                                 | 32                  | 2,247                             | 495   | 5  | 1,051                                 | 348          | 4  | 79                                    | (*)  |
| <b>Year Constructed</b>                          |                     |                                   |   |  |                                       |              |  |                                       |  |
| 1959 or Before .....                             | 103                 | 13,258                            | 2,360                                       | 25   | 4,032                                 | 1,336        | 18   | 451                                   | 1  |
| 1960 to 1969 .....                               | 38                  | 6,386                             | 849   | 12   | 1,852                                 | 613          | 10   | 130                                   | 1  |
| 1970 to 1979 .....                               | 34                  | 6,175                             | 879   | 10   | 1,941                                 | 643          | 9  | 180                                   | 1  |
| 1980 to 1989 .....                               | 57                  | 6,903                             | 1,003                                       | 15   | 1,848                                 | 612          | 13   | 198                                   | 1  |
| 1990 to 1993 .....                               | 11                  | 3,095                             | 227   | 3  | 373                                   | 124          | 2  | 43                                    | (*)  |
| <b>Federal Agency</b>                            |                     |                                   |   |  |                                       |              |  |                                       |  |
| Department of Defense .....                      | 22                  | 1,668                             | 302   | 3  | 421                                   | 140          | 2  | 148                                   | (*)  |
| General Services Administration ..               | 35                  | 7,888                             | 556   | 9  | 1,256                                 | 416          | 8  | 94                                    | (*)  |
| United States Postal Service .....               | 61                  | 7,027                             | 528   | 8  | 1,493                                 | 495          | 8  | 33                                    | (*)  |
| Veterans Administration .....                    | 36                  | 11,375                            | 1,425                                       | 15   | 1,919                                 | 636          | 10   | 501                                   | 2  |
| All Others .....                                 | 89                  | 7,858                             | 2,507                                       | 31   | 4,956                                 | 1,642        | 23   | 226                                   | 1  |
| <b>Energy Sources (more than one may apply)</b>  |                     |                                   |   |  |                                       |              |  |                                       |  |
| Electricity .....                                | 243                 | 35,816                            | 5,318                                       | 65   | 10,046                                | 3,328        | 51   | 1,002                                 | 3  |
| Natural Gas .....                                | 168                 | 24,827                            | 3,212                                       | 36   | 5,992                                 | 1,985        | 31   | 1,002                                 | 3  |
| Fuel Oil .....                                   | 18                  | 4,740                             | 531   | 7  | 929                                   | 308          | 6  | 155                                   | 1  |
| District Heat .....                              | 68                  | 13,437                            | 2,563                                       | 34   | 4,482                                 | 1,485        | 23   | 93                                    | (*)  |
| District Chilled Water .....                     | 30                  | 7,980                             | 911   | 12   | 1,423                                 | 471          | 8  | 95                                    | (*)  |
| Propane .....                                    | 5                   | 200                               | 57  | (*)  | 62                                    | 21           | (*)  | 29                                    | (*)  |
| Any Other .....                                  | 8                   | 2,850                             | 449   | 5  | 792                                   | 262          | 4  | 127                                   | (*)  |
| <b>Energy End Uses (more than one may apply)</b> |                     |                                   |   |  |                                       |              |  |                                       |  |
| Heating .....                                    | 242                 | 35,734                            | 5,317                                       | 65   | 10,045                                | 3,327        | 51   | 1,002                                 | 3  |
| Air Conditioning .....                           | 241                 | 35,273                            | 5,256                                       | 64   | 9,861                                 | 3,266        | 50   | 1,002                                 | 3  |
| Water Heating .....                              | 238                 | 35,221                            | 5,254                                       | 64   | 9,857                                 | 3,265        | 50   | 1,001                                 | 3  |
| Cooking .....                                    | 63                  | 19,213                            | 2,207                                       | 26   | 3,940                                 | 1,305        | 22   | 634                                   | 2  |
| Manufacturing .....                              | 28                  | 5,335                             | 425   | 6  | 1,025                                 | 339          | 6  | 73                                    | (*)  |
| <b>Workers (main shift)</b>                      |                     |                                   |   |  |                                       |              |  |                                       |  |
| Less than 50 .....                               | 70                  | 2,548                             | 569   | 6  | 1,143                                 | 379          | 5  | 93                                    | (*)  |
| 50 to 99 .....                                   | 44                  | 2,026                             | 257   | 3  | 475                                   | 157          | 2  | 73                                    | (*)  |
| 100 to 499 .....                                 | 80                  | 9,029                             | 1,911                                       | 24   | 3,251                                 | 1,077        | 17   | 335                                   | 1  |
| 500 or More .....                                | 49                  | 22,213                            | 2,580                                       | 33   | 5,177                                 | 1,715        | 27   | 501                                   | 2  |
| <b>Weekly Operating Hours</b>                    |                     |                                   |   |  |                                       |              |  |                                       |  |
| 48 or Fewer .....                                | 39                  | 2,740                             | 385   | 5  | 596                                   | 197          | 3  | 81                                    | (*)  |
| 49 to 60 .....                                   | 46                  | 6,460                             | 636   | 8  | 957                                   | 317          | 6  | 88                                    | (*)  |
| 61 to 167 .....                                  | 78                  | 8,051                             | 1,770                                       | 22   | 4,022                                 | 1,332        | 18   | 113                                   | (*)  |
| Open Continuously .....                          | 80                  | 18,565                            | 2,526                                       | 30   | 4,471                                 | 1,481        | 24   | 720                                   | 2  |

See footnotes at end of table.

**Table 3.44. Consumption and Expenditures for Sum of Major Fuels, Electricity, and Natural Gas in FBSS Buildings in Federal Region 6, 1993 (Continued)**

| Building Characteristics                                 | Number of Buildings | Floorspace (thousand square feet) | Sum of Major Fuel Consumption (billion Btu) | Sum of Major Fuel Expenditures (million dollars) | Electricity Consumption (billion Btu) |       | Electricity Expenditures (million dollars) | Natural Gas Consumption (billion Btu) | Natural Gas Expenditures (million dollars) |
|--|---------------------|-----------------------------------|---|--|---------------------------------------|-------|--|---------------------------------------|--|
|  |                     |                                   |   |  | Primary                               | Site  |  |                                       |  |
| <b>Multibuilding Facility</b>                            |                     |                                   |   |  |                                       |       |  |                                       |  |
| Yes .....  | 148                 | 24,441                            | 4,151                                       | 50   | 7,527                                 | 2,493 | 37   | 677                                   | 2  |
| No .....   | 95                  | 11,375                            | 1,167                                       | 15   | 2,519                                 | 834   | 14   | 325                                   | 1  |
| <b>Percent of Floorspace Heated</b>                      |                     |                                   |   |  |                                       |       |  |                                       |  |
| Not Heated .....   | 1                   | 82                                | (*)   | (*)  | 1                                     | (*)   | (*)  | NC                                    | NC   |
| 1 to 50 .....  | 11                  | 1,288                             | 104   | 1  | 228                                   | 76    | 1  | 24                                    | (*)  |
| 51 to 100 .....  | 231                 | 34,446                            | 5,213                                       | 64   | 9,817                                 | 3,252 | 50   | 978                                   | 3  |
| <b>Percent of Floorspace Cooled</b>                      |                     |                                   |   |  |                                       |       |  |                                       |  |
| Not Cooled .....   | 3                   | 554                               | 70  | 1  | 186                                   | 62    | 1  | 8                                     | (*)  |
| 1 to 50 .....  | 26                  | 1,951                             | 373   | 4  | 769                                   | 255   | 3  | 41                                    | (*)  |
| 51 to 100 .....  | 214                 | 33,312                            | 4,875                                       | 60   | 9,091                                 | 3,011 | 47   | 953                                   | 3  |
| <b>Percent Lit When Open</b>                             |                     |                                   |   |  |                                       |       |  |                                       |  |
| 1 to 50 .....  | 15                  | 1,062                             | 83  | 1  | 190                                   | 63    | 1  | 13                                    | (*)  |
| 51 to 100 .....  | 227                 | 34,672                            | 5,234                                       | 64   | 9,855                                 | 3,264 | 50   | 989                                   | 3  |
| No Operating Hours .....                                 | 1                   | 82                                | (*)   | (*)  | 1                                     | (*)   | (*)  | NC                                    | NC   |
| Don't Know .....   | NC                  | NC                                | NC  | NC   | NC                                    | NC    | NC   | NC                                    | NC   |
| <b>Percent Lit When Closed</b>                           |                     |                                   |   |  |                                       |       |  |                                       |  |
| Not Lit .....  | 33                  | 2,691                             | 192   | 2  | 348                                   | 115   | 2  | 59                                    | (*)  |
| 1 to 50 .....  | 165                 | 20,495                            | 3,709                                       | 46   | 7,142                                 | 2,366 | 36   | 588                                   | 2  |
| 51 to 100 .....  | 25                  | 8,029                             | 797   | 9  | 1,400                                 | 464   | 7  | 192                                   | 1  |
| No Off Hours .....                                       | 20                  | 4,601                             | 619   | 7  | 1,156                                 | 383   | 6  | 163                                   | 1  |
| Don't Know .....   | NC                  | NC                                | NC  | NC   | NC                                    | NC    | NC   | NC                                    | NC   |
| <b>Heating Equipment (more than one may apply)</b>       |                     |                                   |   |  |                                       |       |  |                                       |  |
| Heat Pumps .....   | 10                  | 964                               | 149   | 2  | 330                                   | 109   | 2  | 33                                    | (*)  |
| Furnaces .....   | 18                  | 791                               | 90  | 1  | 113                                   | 37    | 1  | 53                                    | (*)  |
| Individual Space Heaters .....                           | 30                  | 5,408                             | 700   | 12   | 1,274                                 | 422   | 10   | 165                                   | 1  |
| District Heat .....                                      | 82                  | 15,205                            | 2,831                                       | 36   | 4,707                                 | 1,559 | 24   | 293                                   | 1  |
| Boilers .....  | 102                 | 16,718                            | 2,121                                       | 24   | 4,329                                 | 1,434 | 22   | 644                                   | 2  |
| Packaged-Heating Units .....                             | 59                  | 7,574                             | 1,099                                       | 13   | 2,049                                 | 679   | 11   | 338                                   | 1  |
| <b>Cooling Equipment (more than one may apply)</b>       |                     |                                   |   |  |                                       |       |  |                                       |  |
| Residential-Type Central A/C .....                       | 29                  | 4,706                             | 454   | 6  | 984                                   | 326   | 6  | 92                                    | (*)  |
| Heat Pumps .....   | 11                  | 1,549                             | 204   | 2  | 407                                   | 135   | 2  | 62                                    | (*)  |
| Individual A/C .....                                     | 50                  | 6,950                             | 1,246                                       | 13   | 2,482                                 | 822   | 10   | 226                                   | 1  |
| District Chilled Water .....                             | 44                  | 10,856                            | 1,404                                       | 19   | 1,971                                 | 653   | 14   | 268                                   | 1  |
| Central Chillers .....                                   | 122                 | 21,596                            | 3,059                                       | 36   | 6,266                                 | 2,076 | 30   | 638                                   | 2  |
| Packaged-A/C Units .....                                 | 97                  | 14,104                            | 1,852                                       | 22   | 3,478                                 | 1,152 | 19   | 502                                   | 2  |
| Swamp Coolers .....                                      | 12                  | 2,015                             | 234   | 3  | 398                                   | 132   | 2  | 28                                    | (*)  |
| <b>Lighting Equipment (more than one may apply)</b>      |                     |                                   |   |  |                                       |       |  |                                       |  |
| Incandescent .....                                       | 135                 | 20,248                            | 3,539                                       | 44   | 7,068                                 | 2,341 | 34   | 556                                   | 2  |
| Standard Fluorescent .....                               | 235                 | 35,057                            | 5,283                                       | 65   | 9,966                                 | 3,301 | 51   | 994                                   | 3  |
| Compact Fluorescent .....                                | 29                  | 7,942                             | 741   | 11   | 1,467                                 | 486   | 9  | 173                                   | 1  |
| High-Intensity Discharge .....                           | 64                  | 16,188                            | 2,515                                       | 27   | 5,332                                 | 1,766 | 23   | 480                                   | 2  |
| Electronic Ballast .....                                 | 59                  | 15,861                            | 1,649                                       | 20   | 2,873                                 | 952   | 16   | 505                                   | 2  |
| <b>Water-Heating Equipment (more than one may apply)</b> |                     |                                   |   |  |                                       |       |  |                                       |  |
| Centralized System .....                                 | 163                 | 23,206                            | 3,448                                       | 41   | 5,924                                 | 1,962 | 31   | 801                                   | 3  |
| Distributed System .....                                 | 71                  | 11,827                            | 1,744                                       | 22   | 3,864                                 | 1,280 | 19   | 164                                   | 1  |
| Don't Know/<br>Not Ascertained .....                     | 4                   | 188                               | 63  | 1  | 69                                    | 23    | (*)  | 37                                    | (*)  |

See footnotes at end of table.

**Table 3.44. Consumption and Expenditures for Sum of Major Fuels, Electricity, and Natural Gas in FBSS Buildings in Federal Region 6, 1993 (Continued)**

| Building Characteristics   | Number of Buildings | Floorspace (thousand square feet) | Sum of Major Fuel Consumption (billion Btu) | Sum of Major Fuel Expenditures (million dollars) | Electricity Consumption (billion Btu) |       | Electricity Expenditures (million dollars) | Natural Gas Consumption (billion Btu) | Natural Gas Expenditures (million dollars) |
|--|---------------------|-----------------------------------|---|--|---------------------------------------|-------|--|---------------------------------------|--|
|  |                     |                                   |   |  | Primary                               | Site  |  |                                       |  |
| <b>Commercial Refrigeration Equipment (more than one may apply)</b>                          |                     |                                   |   |  |                                       |       |  |                                       |  |
| Any Equipment .....  | 70                  | 17,917                            | 2,529                                       | 33   | 4,198                                 | 1,390 | 26   | 648                                   | 2  |
| Walk-in Units .....  | 40                  | 12,381                            | 1,783                                       | 19   | 2,808                                 | 930   | 15   | 591                                   | 2  |
| Cases and Cabinets .....   | 44                  | 14,125                            | 1,782                                       | 19   | 2,828                                 | 937   | 15   | 596                                   | 2  |
| None .....   | 173                 | 17,899                            | 2,789                                       | 32   | 5,848                                 | 1,937 | 25   | 354                                   | 1  |
| <b>Retrofit or Purchase of any Equipment Within Last Ten Years (more than one may apply)</b> |                     |                                   |   |  |                                       |       |  |                                       |  |
| Retrofit and/or Purchase .....   | 162                 | 29,015                            | 3,517                                       | 43   | 6,462                                 | 2,140 | 34   | 832                                   | 3  |
| Retrofit .....   | 63                  | 15,029                            | 1,542                                       | 20   | 2,772                                 | 918   | 16   | 307                                   | 1  |
| Purchase .....   | 126                 | 21,409                            | 2,732                                       | 32   | 5,039                                 | 1,669 | 27   | 725                                   | 2  |
| No Retrofit or Purchase .....  | 81                  | 6,801                             | 1,801                                       | 22   | 3,584                                 | 1,187 | 17   | 170                                   | 1  |
| <b>Energy Conservation Features (more than one may apply)</b>                                |                     |                                   |   |  |                                       |       |  |                                       |  |
| Any Conservation Feature .....   | 242                 | 35,734                            | 5,317                                       | 65   | 10,045                                | 3,327 | 51   | 1,002                                 | 3  |
| Building Shell .....   | 228                 | 33,946                            | 5,092                                       | 62   | 9,688                                 | 3,209 | 49   | 997                                   | 3  |
| HVAC .....   | 236                 | 35,425                            | 5,287                                       | 65   | 9,973                                 | 3,303 | 51   | 996                                   | 3  |
| Lighting .....   | 136                 | 25,654                            | 2,997                                       | 38   | 5,341                                 | 1,769 | 30   | 729                                   | 2  |
| <b>HVAC Conservation Features (more than one may apply)</b>                                  |                     |                                   |   |  |                                       |       |  |                                       |  |
| VAV System .....   | 65                  | 18,518                            | 2,319                                       | 29   | 4,292                                 | 1,422 | 23   | 500                                   | 2  |
| Economizer Cycle .....   | 123                 | 23,542                            | 3,459                                       | 38   | 6,629                                 | 2,196 | 30   | 704                                   | 2  |
| HVAC Maintenance .....   | 234                 | 35,341                            | 5,274                                       | 65   | 9,955                                 | 3,297 | 51   | 992                                   | 3  |
| <b>Lighting Conservation Features (more than one may apply)</b>                              |                     |                                   |   |  |                                       |       |  |                                       |  |
| Specular Reflectors .....  | 92                  | 18,017                            | 2,263                                       | 29   | 4,064                                 | 1,346 | 23   | 533                                   | 2  |
| Natural Lighting Control Sensors .....   | 27                  | 6,740                             | 652   | 8  | 1,075                                 | 356   | 6  | 227                                   | 1  |
| Occupancy Sensors .....  | 58                  | 16,435                            | 1,639                                       | 21   | 3,246                                 | 1,075 | 18   | 397                                   | 1  |
| Time Clock .....   | 36                  | 9,037                             | 861   | 11   | 1,559                                 | 516   | 9  | 172                                   | 1  |
| Manual Dimmer Switches .....   | 44                  | 13,454                            | 1,475                                       | 19   | 2,532                                 | 839   | 15   | 366                                   | 1  |
| <b>Energy Management Practices (more than one may apply)</b>                                 |                     |                                   |   |  |                                       |       |  |                                       |  |
| Energy Management and Control System .....   | 96                  | 23,099                            | 2,889                                       | 35   | 4,727                                 | 1,566 | 26   | 708                                   | 2  |
| Energy Conservation Programs <sup>1</sup> .....  | 48                  | 13,513                            | 1,481                                       | 18   | 2,670                                 | 884   | 15   | 401                                   | 1  |
| Energy Audit .....   | 64                  | 11,690                            | 1,177                                       | 17   | 2,496                                 | 827   | 15   | 281                                   | 1  |
| HVAC Maintenance Staff <sup>2</sup> .....  | 57                  | 15,538                            | 1,542                                       | 20   | 3,002                                 | 994   | 17   | 351                                   | 1  |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>                            |                     |                                   |   |  |                                       |       |  |                                       |  |
| Heating .....  | 123                 | 13,162                            | 1,356                                       | 22   | 2,326                                 | 770   | 17   | 197                                   | 1  |
| Cooling .....  | 124                 | 13,864                            | 1,413                                       | 23   | 2,436                                 | 807   | 18   | 197                                   | 1  |
| Hot Water .....  | 33                  | 4,554                             | 401   | 6  | 856                                   | 284   | 5  | 40                                    | (*)  |
| Lighting .....   | 120                 | 12,847                            | 1,383                                       | 22   | 2,391                                 | 792   | 17   | 228                                   | 1  |
| <b>Sponsor of Program (more than one may apply)</b>  |                     |                                   |   |  |                                       |       |  |                                       |  |
| FEMP .....   | 4                   | 1,286                             | 77  | 2  | 148                                   | 49    | 1  | 29                                    | (*)  |
| Electric Utility .....   | 4                   | 1,257                             | 63  | 1  | 111                                   | 37    | 1  | 14                                    | (*)  |
| Natural Gas Utility .....  | NC                  | NC                                | NC  | NC   | NC                                    | NC    | NC   | NC                                    | NC   |
| In-house .....   | 19                  | 6,915                             | 741   | 9  | 1,277                                 | 423   | 8  | 181                                   | 1  |
| Third Party .....  | 2                   | 340                               | 27  | (*)  | 62                                    | 20    | (*)  | 6                                     | (*)  |

See footnotes at end of table.

**Table 3.44. Consumption and Expenditures for Sum of Major Fuels, Electricity, and Natural Gas in FBSS Buildings in Federal Region 6, 1993 (Continued)**

| Building Characteristics                                 | Number of Buildings | Floorspace (thousand square feet) | Sum of Major Fuel Consumption (billion Btu) | Sum of Major Fuel Expenditures (million dollars) | Electricity Consumption (billion Btu) |       | Electricity Expenditures (million dollars) | Natural Gas Consumption (billion Btu) | Natural Gas Expenditures (million dollars) |
|--|---------------------|-----------------------------------|---|--|---------------------------------------|-------|--|---------------------------------------|--|
|  |                     |                                   |   |  | Primary                               | Site  |  |                                       |  |
| <b>Type of Assistance (more than one may apply)</b>      |                     |                                   |   |  |                                       |       |  |                                       |  |
| Federal Energy Efficiency Fund .....                     | 4                   | 1,564                             | 90  | 2  | 177                                   | 59    | 2  | 32                                    | (*)  |
| General Information .....                                | 3                   | 100                               | 13  | (*)  | 27                                    | 9     | (*)  | 4                                     | (*)  |
| Site-Specific Information .....                          | 5                   | 423                               | 64  | 1  | 108                                   | 36    | 1  | 24                                    | (*)  |
| Incentives .....   | 4                   | 296                               | 35  | (*)  | 59                                    | 19    | (*)  | 4                                     | (*)  |
| Alternate Rates .....                                    | NC                  | NC                                | NC  | NC   | NC                                    | NC    | NC   | NC                                    | NC   |
| Fuel Switching .....                                     | 1                   | 772                               | 104   | 1  | 186                                   | 61    | 1  | 5                                     | (*)  |
| <b>Building Generates Electricity</b>                    |                     |                                   |   |  |                                       |       |  |                                       |  |
| Yes .....  | 32                  | 10,295                            | 1,086                                       | 12   | 1,668                                 | 553   | 9  | 377                                   | 1  |
| No .....   | 211                 | 25,521                            | 4,232                                       | 53   | 8,378                                 | 2,775 | 42   | 625                                   | 2  |
| <b>Natural Gas Transported for the Account of Others</b> |                     |                                   |   |  |                                       |       |  |                                       |  |
| Used in Building .....                                   | 5                   | 631                               | 160   | 1  | 160                                   | 53    | 1  | 69                                    | (*)  |
| Not Used in Building .....                               | 140                 | 22,202                            | 2,377                                       | 28   | 4,230                                 | 1,401 | 24   | 853                                   | 3  |
| Don't Know/Not Ascertained .....                         | 23                  | 1,994                             | 675   | 7  | 1,602                                 | 530   | 6  | 80                                    | (*)  |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

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

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • Site electricity is the amount of electricity delivered to commercial buildings. Primary electricity is site electricity plus the conversion losses in the electric generation process at the utility plant. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.45. Consumption and Expenditures for Sum of Major Fuels, Electricity, and Natural Gas in FBSS Buildings in Federal Region 9, 1993**

| Building Characteristics                         | Number of Buildings | Floorspace (thousand square feet) | Sum of Major Fuel Consumption (billion Btu) | Sum of Major Fuel Expenditures (million dollars) | Electricity Consumption (billion Btu) |              | Electricity Expenditures (million dollars) | Natural Gas Consumption (billion Btu) | Natural Gas Expenditures (million dollars) |
|--|---------------------|-----------------------------------|---|--|---------------------------------------|--------------|--|---------------------------------------|--|
|  |                     |                                   |   |  | Primary                               | Site         |  |                                       |  |
| <b>All Buildings</b>                             | <b>326</b>          | <b>44,316</b>                     | <b>4,687</b>                                | <b>76</b>  | <b>8,281</b>                          | <b>2,743</b> | <b>62</b>                                  | <b>1,082</b>                          | <b>5</b>                                   |
| <b>Building Floorspace (square feet)</b>         |                     |                                   |   |  |                                       |              |  |                                       |  |
| 10,000 to 50,000                                 | 148                 | 3,858                             | 475   | 8  | 807                                   | 267          | 6  | 113                                   | 1  |
| 50,001 to 200,000                                | 123                 | 12,680                            | 1,713                                       | 26   | 2,775                                 | 919          | 20   | 423                                   | 2  |
| Over 200,000                                     | 55                  | 27,778                            | 2,499                                       | 42   | 4,700                                 | 1,557        | 35   | 546                                   | 2  |
| <b>Principal Building Activity</b>               |                     |                                   |   |  |                                       |              |  |                                       |  |
| Education  | 12                  | 628                               | 58  | 1  | 63                                    | 21           | (*)  | 19                                    | (*)  |
| Health Care                                      | 48                  | 9,903                             | 1,500                                       | 18   | 1,723                                 | 571          | 12   | 412                                   | 2  |
| Laboratory                                       | 31                  | 2,601                             | 518   | 9  | 971                                   | 322          | 7  | 99                                    | (*)  |
| Lodging  | 22                  | 1,220                             | 115   | 2  | 145                                   | 48           | 1  | 23                                    | (*)  |
| Mercantile and Service                           | 63                  | 8,194                             | 499   | 10   | 1,316                                 | 436          | 10   | 56                                    | (*)  |
| Office   | 92                  | 16,380                            | 1,217                                       | 25   | 2,574                                 | 852          | 23   | 308                                   | 1  |
| All Others                                       | 58                  | 5,390                             | 781   | 12   | 1,490                                 | 494          | 9  | 165                                   | 1  |
| <b>Year Constructed</b>                          |                     |                                   |   |  |                                       |              |  |                                       |  |
| 1959 or Before                                   | 130                 | 13,553                            | 1,586                                       | 26   | 2,888                                 | 957          | 22   | 395                                   | 1  |
| 1960 to 1969                                     | 55                  | 9,082                             | 913   | 14   | 1,471                                 | 487          | 11   | 281                                   | 1  |
| 1970 to 1979                                     | 62                  | 12,041                            | 1,246                                       | 22   | 2,069                                 | 685          | 17   | 224                                   | 1  |
| 1980 to 1989                                     | 65                  | 7,955                             | 834   | 13   | 1,596                                 | 529          | 11   | 160                                   | 1  |
| 1990 to 1993                                     | 14                  | 1,684                             | 108   | 2  | 257                                   | 85           | 2  | 22                                    | (*)  |
| <b>Federal Agency</b>                            |                     |                                   |   |  |                                       |              |  |                                       |  |
| Department of Defense                            | 78                  | 8,489                             | 979   | 17   | 1,924                                 | 637          | 14   | 167                                   | 1  |
| General Services Administration                  | 39                  | 12,505                            | 757   | 15   | 1,485                                 | 492          | 13   | 231                                   | 1  |
| United States Postal Service                     | 63                  | 8,387                             | 533   | 11   | 1,429                                 | 473          | 11   | 60                                    | (*)  |
| Veterans Administration                          | 56                  | 8,824                             | 1,397                                       | 18   | 1,547                                 | 512          | 11   | 355                                   | 1  |
| All Others                                       | 90                  | 6,111                             | 1,021                                       | 16   | 1,896                                 | 628          | 13   | 269                                   | 1  |
| <b>Energy Sources (more than one may apply)</b>  |                     |                                   |   |  |                                       |              |  |                                       |  |
| Electricity                                      | 325                 | 44,296                            | 4,681                                       | 76   | 8,281                                 | 2,743        | 62   | 1,082                                 | 5  |
| Natural Gas                                      | 225                 | 34,703                            | 3,624                                       | 56   | 6,117                                 | 2,026        | 46   | 1,082                                 | 5  |
| Fuel Oil   | 54                  | 11,127                            | 1,459                                       | 21   | 2,283                                 | 756          | 17   | 513                                   | 2  |
| District Heat                                    | 74                  | 11,757                            | 1,743                                       | 25   | 1,998                                 | 662          | 14   | 246                                   | 1  |
| District Chilled Water                           | 27                  | 6,362                             | 862   | 11   | 1,093                                 | 362          | 7  | 151                                   | 1  |
| Propane  | 10                  | 1,117                             | 179   | 3  | 271                                   | 90           | 2  | 74                                    | (*)  |
| Any Other  | 5                   | 2,606                             | 279   | 4  | 379                                   | 125          | 3  | 75                                    | (*)  |
| <b>Energy End Uses (more than one may apply)</b> |                     |                                   |   |  |                                       |              |  |                                       |  |
| Heating  | 304                 | 41,921                            | 4,505                                       | 73   | 7,744                                 | 2,565        | 59   | 1,079                                 | 5  |
| Air Conditioning                                 | 292                 | 41,907                            | 4,458                                       | 71   | 7,963                                 | 2,638        | 59   | 1,046                                 | 4  |
| Water Heating                                    | 315                 | 42,984                            | 4,548                                       | 73   | 8,016                                 | 2,655        | 59   | 1,079                                 | 5  |
| Cooking  | 70                  | 20,045                            | 2,148                                       | 32   | 3,581                                 | 1,186        | 24   | 481                                   | 2  |
| Manufacturing                                    | 30                  | 7,693                             | 802   | 13   | 1,621                                 | 537          | 11   | 98                                    | (*)  |
| <b>Workers (main shift)</b>                      |                     |                                   |   |  |                                       |              |  |                                       |  |
| Less than 50                                     | 93                  | 3,684                             | 341   | 6  | 592                                   | 196          | 5  | 80                                    | (*)  |
| 50 to 99   | 49                  | 2,161                             | 279   | 5  | 530                                   | 176          | 4  | 74                                    | (*)  |
| 100 to 499                                       | 134                 | 14,017                            | 1,799                                       | 27   | 2,691                                 | 891          | 20   | 450                                   | 2  |
| 500 or More                                      | 50                  | 24,454                            | 2,268                                       | 39   | 4,468                                 | 1,480        | 34   | 477                                   | 2  |
| <b>Weekly Operating Hours</b>                    |                     |                                   |   |  |                                       |              |  |                                       |  |
| 48 or Fewer                                      | 80                  | 4,822                             | 491   | 7  | 764                                   | 253          | 5  | 154                                   | 1  |
| 49 to 60   | 65                  | 13,424                            | 1,058                                       | 19   | 1,848                                 | 612          | 16   | 268                                   | 1  |
| 61 to 167  | 68                  | 5,706                             | 542   | 10   | 1,053                                 | 349          | 8  | 154                                   | 1  |
| Open Continuously                                | 113                 | 20,364                            | 2,595                                       | 40   | 4,616                                 | 1,529        | 32   | 506                                   | 2  |

See footnotes at end of table.

**Table 3.45. Consumption and Expenditures for Sum of Major Fuels, Electricity, and Natural Gas in FBSS Buildings in Federal Region 9, 1993 (Continued)**

| Building Characteristics                                 | Number of Buildings | Floorspace (thousand square feet) | Sum of Major Fuel Consumption (billion Btu) | Sum of Major Fuel Expenditures (million dollars) | Electricity Consumption (billion Btu) |       | Electricity Expenditures (million dollars) | Natural Gas Consumption (billion Btu) | Natural Gas Expenditures (million dollars) |
|--|---------------------|-----------------------------------|---|--|---------------------------------------|-------|--|---------------------------------------|--|
|  |                     |                                   |   |  | Primary                               | Site  |  |                                       |  |
| <b>Multibuilding Facility</b>                            |                     |                                   |   |  |                                       |       |  |                                       |  |
| Yes .....  | 200                 | 26,821                            | 3,165                                       | 47   | 5,002                                 | 1,657 | 36   | 744                                   | 3  |
| No .....   | 126                 | 17,495                            | 1,522                                       | 29   | 3,280                                 | 1,086 | 26   | 338                                   | 1  |
| <b>Percent of Floorspace Heated</b>                      |                     |                                   |   |  |                                       |       |  |                                       |  |
| Not Heated .....   | 22                  | 2,394                             | 182   | 3  | 538                                   | 178   | 3  | 3                                     | (*)  |
| 1 to 50 .....  | 28                  | 3,751                             | 462   | 9  | 1,119                                 | 371   | 8  | 78                                    | (*)  |
| 51 to 100 .....  | 276                 | 38,170                            | 4,043                                       | 64   | 6,625                                 | 2,194 | 51   | 1,000                                 | 4  |
| <b>Percent of Floorspace Cooled</b>                      |                     |                                   |   |  |                                       |       |  |                                       |  |
| Not Cooled .....   | 40                  | 2,956                             | 283   | 5  | 415                                   | 137   | 4  | 43                                    | (*)  |
| 1 to 50 .....  | 55                  | 7,304                             | 920   | 13   | 1,396                                 | 462   | 9  | 240                                   | 1  |
| 51 to 100 .....  | 231                 | 34,056                            | 3,484                                       | 58   | 6,471                                 | 2,143 | 49   | 798                                   | 3  |
| <b>Percent Lit When Open</b>                             |                     |                                   |   |  |                                       |       |  |                                       |  |
| 1 to 50 .....  | 20                  | 1,847                             | 157   | 2  | 221                                   | 73    | 2  | 56                                    | (*)  |
| 51 to 100 .....  | 304                 | 42,375                            | 4,523                                       | 74   | 8,050                                 | 2,667 | 60   | 1,023                                 | 4  |
| No Operating Hours .....                                 | 1                   | 29                                | (*)   | (*)  | (*)                                   | (*)   | (*)  | NC                                    | NC   |
| Don't Know .....   | 1                   | 64                                | 7   | (*)  | 10                                    | 3     | (*)  | 3                                     | (*)  |
| <b>Percent Lit When Closed</b>                           |                     |                                   |   |  |                                       |       |  |                                       |  |
| Not Lit .....  | 35                  | 1,664                             | 189   | 3  | 337                                   | 112   | 3  | 47                                    | (*)  |
| 1 to 50 .....  | 205                 | 25,288                            | 2,222                                       | 37   | 3,854                                 | 1,276 | 31   | 643                                   | 3  |
| 51 to 100 .....  | 44                  | 8,109                             | 929   | 15   | 1,652                                 | 547   | 12   | 168                                   | 1  |
| No Off Hours .....                                       | 41                  | 9,190                             | 1,340                                       | 21   | 2,429                                 | 804   | 17   | 220                                   | 1  |
| Don't Know .....   | 1                   | 64                                | 7   | (*)  | 10                                    | 3     | (*)  | 3                                     | (*)  |
| <b>Heating Equipment (more than one may apply)</b>       |                     |                                   |   |  |                                       |       |  |                                       |  |
| Heat Pumps .....   | 40                  | 3,081                             | 364   | 6  | 703                                   | 233   | 5  | 78                                    | (*)  |
| Furnaces .....   | 25                  | 1,204                             | 76  | 1  | 161                                   | 53    | 1  | 23                                    | (*)  |
| Individual Space Heaters .....                           | 33                  | 4,933                             | 418   | 7  | 843                                   | 279   | 7  | 137                                   | 1  |
| District Heat .....                                      | 71                  | 12,712                            | 1,861                                       | 26   | 2,437                                 | 807   | 16   | 265                                   | 1  |
| Boilers .....  | 146                 | 24,010                            | 2,203                                       | 38   | 4,338                                 | 1,437 | 34   | 637                                   | 3  |
| Packaged-Heating Units .....                             | 67                  | 5,997                             | 675   | 9  | 1,054                                 | 349   | 7  | 273                                   | 1  |
| <b>Cooling Equipment (more than one may apply)</b>       |                     |                                   |   |  |                                       |       |  |                                       |  |
| Residential-Type Central A/C .....                       | 24                  | 1,900                             | 231   | 3  | 347                                   | 115   | 3  | 63                                    | (*)  |
| Heat Pumps .....   | 32                  | 2,724                             | 345   | 6  | 645                                   | 214   | 5  | 72                                    | (*)  |
| Individual A/C .....                                     | 52                  | 5,723                             | 629   | 10   | 1,035                                 | 343   | 8  | 165                                   | 1  |
| District Chilled Water .....                             | 31                  | 7,647                             | 1,044                                       | 14   | 1,751                                 | 580   | 10   | 157                                   | 1  |
| Central Chillers .....                                   | 139                 | 27,723                            | 2,710                                       | 45   | 5,139                                 | 1,702 | 39   | 675                                   | 3  |
| Packaged-A/C Units .....                                 | 151                 | 23,989                            | 2,436                                       | 39   | 4,287                                 | 1,420 | 32   | 629                                   | 3  |
| Swamp Coolers .....                                      | 30                  | 3,165                             | 299   | 4  | 442                                   | 146   | 3  | 107                                   | (*)  |
| <b>Lighting Equipment (more than one may apply)</b>      |                     |                                   |   |  |                                       |       |  |                                       |  |
| Incandescent .....                                       | 161                 | 20,475                            | 2,093                                       | 33   | 3,650                                 | 1,209 | 27   | 593                                   | 3  |
| Standard Fluorescent .....                               | 309                 | 42,850                            | 4,520                                       | 71   | 7,862                                 | 2,604 | 58   | 1,063                                 | 5  |
| Compact Fluorescent .....                                | 73                  | 17,339                            | 1,609                                       | 29   | 3,054                                 | 1,012 | 25   | 432                                   | 2  |
| High-Intensity Discharge .....                           | 75                  | 18,736                            | 1,699                                       | 28   | 3,392                                 | 1,123 | 23   | 319                                   | 1  |
| Electronic Ballast .....                                 | 105                 | 23,307                            | 2,308                                       | 37   | 4,041                                 | 1,339 | 31   | 585                                   | 2  |
| <b>Water-Heating Equipment (more than one may apply)</b> |                     |                                   |   |  |                                       |       |  |                                       |  |
| Centralized System .....                                 | 225                 | 31,069                            | 3,304                                       | 51   | 5,220                                 | 1,729 | 40   | 847                                   | 4  |
| Distributed System .....                                 | 80                  | 10,750                            | 1,098                                       | 19   | 2,468                                 | 817   | 17   | 196                                   | 1  |
| Don't Know/<br>Not Ascertained .....                     | 10                  | 1,165                             | 145   | 2  | 328                                   | 109   | 2  | 37                                    | (*)  |

See footnotes at end of table.

**Table 3.45. Consumption and Expenditures for Sum of Major Fuels, Electricity, and Natural Gas in FBSS Buildings in Federal Region 9, 1993 (Continued)**

| Building Characteristics   | Number of Buildings | Floorspace (thousand square feet) | Sum of Major Fuel Consumption (billion Btu) | Sum of Major Fuel Expenditures (million dollars) | Electricity Consumption (billion Btu) |       | Electricity Expenditures (million dollars) | Natural Gas Consumption (billion Btu) | Natural Gas Expenditures (million dollars) |
|--|---------------------|-----------------------------------|---|--|---------------------------------------|-------|--|---------------------------------------|--|
|  |                     |                                   |   |  | Primary                               | Site  |  |                                       |  |
| <b>Commercial Refrigeration Equipment (more than one may apply)</b>                          |                     |                                   |   |  |                                       |       |  |                                       |  |
| Any Equipment .....  | 63                  | 18,781                            | 2,016                                       | 31   | 3,565                                 | 1,181 | 24   | 397                                   | 2  |
| Walk-in Units .....  | 44                  | 12,536                            | 1,506                                       | 22   | 2,397                                 | 794   | 16   | 315                                   | 1  |
| Cases and Cabinets .....   | 50                  | 14,928                            | 1,589                                       | 25   | 2,558                                 | 847   | 19   | 345                                   | 2  |
| None .....   | 263                 | 25,535                            | 2,670                                       | 45   | 4,716                                 | 1,562 | 38   | 685                                   | 3  |
| <b>Retrofit or Purchase of any Equipment Within Last Ten Years (more than one may apply)</b> |                     |                                   |   |  |                                       |       |  |                                       |  |
| Retrofit and/or Purchase .....   | 213                 | 34,547                            | 3,592                                       | 59   | 6,291                                 | 2,084 | 49   | 905                                   | 4  |
| Retrofit .....   | 103                 | 22,610                            | 2,298                                       | 35   | 3,560                                 | 1,179 | 28   | 665                                   | 3  |
| Purchase .....   | 148                 | 19,642                            | 2,263                                       | 39   | 4,276                                 | 1,416 | 33   | 511                                   | 2  |
| No Retrofit or Purchase .....  | 113                 | 9,769                             | 1,094                                       | 17   | 1,991                                 | 659   | 13   | 177                                   | 1  |
| <b>Energy Conservation Features (more than one may apply)</b>                                |                     |                                   |   |  |                                       |       |  |                                       |  |
| Any Conservation Feature .....   | 319                 | 44,023                            | 4,676                                       | 76   | 8,262                                 | 2,737 | 62   | 1,080                                 | 5  |
| Building Shell .....   | 248                 | 34,105                            | 3,858                                       | 60   | 6,537                                 | 2,165 | 48   | 921                                   | 4  |
| HVAC .....   | 307                 | 43,116                            | 4,610                                       | 74   | 8,112                                 | 2,687 | 61   | 1,063                                 | 5  |
| Lighting .....   | 217                 | 34,825                            | 3,665                                       | 57   | 6,250                                 | 2,070 | 47   | 940                                   | 4  |
| <b>HVAC Conservation Features (more than one may apply)</b>                                  |                     |                                   |   |  |                                       |       |  |                                       |  |
| VAV System .....   | 75                  | 15,577                            | 1,690                                       | 27   | 3,013                                 | 998   | 22   | 403                                   | 2  |
| Economizer Cycle .....   | 140                 | 26,367                            | 2,642                                       | 42   | 4,438                                 | 1,470 | 34   | 696                                   | 3  |
| HVAC Maintenance .....   | 306                 | 43,098                            | 4,607                                       | 74   | 8,108                                 | 2,686 | 61   | 1,062                                 | 5  |
| <b>Lighting Conservation Features (more than one may apply)</b>                              |                     |                                   |   |  |                                       |       |  |                                       |  |
| Specular Reflectors .....  | 124                 | 21,850                            | 2,085                                       | 32   | 3,417                                 | 1,132 | 26   | 555                                   | 2  |
| Natural Lighting Control   |                     |                                   |   |  |                                       |       |  |                                       |  |
| Sensors .....  | 58                  | 13,760                            | 1,174                                       | 19   | 1,919                                 | 636   | 16   | 298                                   | 1  |
| Occupancy Sensors .....  | 109                 | 25,245                            | 2,618                                       | 42   | 4,594                                 | 1,522 | 35   | 568                                   | 3  |
| Time Clock .....   | 41                  | 10,539                            | 953   | 14   | 1,450                                 | 480   | 11   | 278                                   | 1  |
| Manual Dimmer Switches .....   | 78                  | 14,455                            | 1,808                                       | 26   | 2,766                                 | 916   | 21   | 586                                   | 2  |
| <b>Energy Management Practices (more than one may apply)</b>                                 |                     |                                   |   |  |                                       |       |  |                                       |  |
| Energy Management and Control System .....   | 71                  | 18,231                            | 1,942                                       | 30   | 3,827                                 | 1,268 | 25   | 372                                   | 2  |
| Energy Conservation Programs <sup>1</sup> .....  | 124                 | 24,699                            | 2,623                                       | 41   | 4,616                                 | 1,529 | 33   | 677                                   | 3  |
| Energy Audit .....   | 99                  | 17,444                            | 1,737                                       | 29   | 3,377                                 | 1,118 | 24   | 356                                   | 2  |
| HVAC Maintenance Staff <sup>2</sup> .....  | 52                  | 14,570                            | 1,473                                       | 22   | 2,509                                 | 831   | 18   | 383                                   | 2  |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b>                            |                     |                                   |   |  |                                       |       |  |                                       |  |
| Heating .....  | 151                 | 19,631                            | 1,547                                       | 26   | 2,777                                 | 920   | 22   | 468                                   | 2  |
| Cooling .....  | 157                 | 19,219                            | 1,484                                       | 25   | 2,698                                 | 894   | 22   | 447                                   | 2  |
| Hot Water .....  | 68                  | 13,614                            | 922   | 17   | 1,796                                 | 595   | 15   | 279                                   | 1  |
| Lighting .....   | 172                 | 21,155                            | 1,692                                       | 28   | 3,022                                 | 1,001 | 24   | 528                                   | 2  |
| <b>Sponsor of Program (more than one may apply)</b>  |                     |                                   |   |  |                                       |       |  |                                       |  |
| FEMP .....   | 1                   | 317                               | 20  | (*)  | 54                                    | 18    | (*)  | 2                                     | (*)  |
| Electric Utility .....   | 21                  | 6,670                             | 657   | 10   | 1,074                                 | 356   | 8  | 247                                   | 1  |
| Natural Gas Utility .....  | 2                   | 482                               | 19  | (*)  | 44                                    | 14    | (*)  | 5                                     | (*)  |
| In-house .....   | 35                  | 6,695                             | 841   | 12   | 1,341                                 | 444   | 9  | 194                                   | 1  |
| Third Party .....  | 3                   | 136                               | 18  | (*)  | 19                                    | 6     | (*)  | (*)                                   | (*)  |

See footnotes at end of table.



**Table 3.45. Consumption and Expenditures for Sum of Major Fuels, Electricity, and Natural Gas in FBSS Buildings in Federal Region 9, 1993 (Continued)**

| Building Characteristics                                 | Number of Buildings | Floorspace (thousand square feet) | Sum of Major Fuel Consumption (billion Btu) | Sum of Major Fuel Expenditures (million dollars) | Electricity Consumption (billion Btu) |       | Electricity Expenditures (million dollars) | Natural Gas Consumption (billion Btu) | Natural Gas Expenditures (million dollars) |
|--|---------------------|-----------------------------------|---|--|---------------------------------------|-------|--|---------------------------------------|--|
|  |                     |                                   |   |  | Primary                               | Site  |  |                                       |  |
| <b>Type of Assistance (more than one may apply)</b>      |                     |                                   |   |  |                                       |       |  |                                       |  |
| Federal Energy Efficiency Fund .....                     | 3                   | 1,725                             | 236   | 4  | 695                                   | 230   | 4  | 6                                     | (*)  |
| General Information .....                                | 3                   | 2,013                             | 227   | 4  | 429                                   | 142   | 3  | 32                                    | (*)  |
| Site-Specific Information .....                          | 15                  | 2,099                             | 350   | 6  | 598                                   | 198   | 4  | 107                                   | 1  |
| Incentives .....   | 14                  | 3,131                             | 269   | 5  | 499                                   | 165   | 4  | 103                                   | (*)  |
| Alternate Rates .....                                    | 13                  | 3,071                             | 273   | 3  | 408                                   | 135   | 2  | 76                                    | (*)  |
| Fuel Switching .....                                     | 1                   | 164                               | 6   | (*)  | 10                                    | 3     | (*)  | 2                                     | (*)  |
| <b>Building Generates Electricity</b>                    |                     |                                   |   |  |                                       |       |  |                                       |  |
| Yes .....  | 52                  | 14,283                            | 1,884                                       | 31   | 3,613                                 | 1,197 | 27   | 438                                   | 2  |
| No .....   | 274                 | 30,032                            | 2,802                                       | 44   | 4,669                                 | 1,546 | 35   | 644                                   | 3  |
| <b>Natural Gas Transported for the Account of Others</b> |                     |                                   |   |  |                                       |       |  |                                       |  |
| Used in Building .....                                   | 24                  | 5,201                             | 659   | 9  | 821                                   | 272   | 6  | 230                                   | 1  |
| Not Used in Building .....                               | 174                 | 26,787                            | 2,595                                       | 42   | 4,706                                 | 1,559 | 35   | 760                                   | 3  |
| Don't Know/Not Ascertained .....                         | 25                  | 2,631                             | 353   | 6  | 575                                   | 190   | 4  | 88                                    | (*)  |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

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

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • Site electricity is the amount of electricity delivered to commercial buildings. Primary electricity is site electricity plus the conversion losses in the electric generation process at the utility plant. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.46. Electricity Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 3, 1993**

| Building Characteristics                         | Electricity Consumption |                             |                       |                           |  |             |                 | Electricity Expenditures        |                           |                   |
|--|-------------------------|-----------------------------|-----------------------|---------------------------|--|-------------|-----------------|---------------------------------|---------------------------|-------------------|
|  | Total (million kWh)     | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | Distribution of Building-Level Intensities (kWh/square foot) |             |                 | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) |
|  |                         |                             |                       |                           | 25th Percentile  | Median      | 75th Percentile |                                 |                           |                   |
| <b>All Buildings</b> .....                       | <b>1,985</b>            | <b>6,382</b>                | <b>21.1</b>           | <b>6.4</b>                | <b>11.8</b>  | <b>17.3</b> | <b>27.4</b>     | <b>387.5</b>                    | <b>1.28</b>               | <b>0.06</b>       |
| <b>Building Floorspace (square feet)</b>         |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| 10,000 to 50,000 .....                           | 59                      | 625                         | 22.9                  | 9.5                       | 12.0   | 17.1        | 25.5            | 37.0                            | 1.36                      | .06               |
| 50,001 to 200,000 .....                          | 337                     | 2,879                       | 25.6                  | 11.3                      | 11.4   | 18.1        | 31.7            | 156.5                           | 1.39                      | .05               |
| Over 200,000 .....                               | 1,589                   | 15,892                      | 20.3                  | 5.8                       | 12.4   | 17.0        | 23.4            | 987.3                           | 1.26                      | .06               |
| <b>Principal Building Activity</b>               |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Education .....                                  | 8                       | 1,026                       | 13.7                  | 7.8                       | 6.7  | 12.2        | 28.3            | 51.8                            | .69                       | .05               |
| Health Care .....                                | 215                     | 5,255                       | 14.8                  | 9.2                       | 11.8   | 13.2        | 18.1            | 280.4                           | .79                       | .05               |
| Laboratory .....                                 | 218                     | 5,897                       | 42.2                  | 22.5                      | 31.7   | 39.2        | 49.7            | 321.5                           | 2.30                      | .05               |
| Lodging .....                                    | 38                      | 2,933                       | 14.9                  | 31.4                      | 12.0   | 18.5        | 22.0            | 152.7                           | .78                       | .05               |
| Mercantile and Service .....                     | 130                     | 2,889                       | 17.9                  | 2.5                       | 7.7  | 12.8        | 18.3            | 174.7                           | 1.08                      | .06               |
| Office .....                                     | 1,169                   | 9,429                       | 20.6                  | 5.7                       | 12.1   | 16.9        | 25.7            | 608.0                           | 1.33                      | .06               |
| All Others .....                                 | 206                     | 4,781                       | 28.7                  | 12.0                      | 13.2   | 18.8        | 28.0            | 267.0                           | 1.61                      | .06               |
| <b>Year Constructed</b>                          |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| 1959 or Before .....                             | 849                     | 5,981                       | 19.4                  | 4.4                       | 11.4   | 14.4        | 20.9            | 403.7                           | 1.31                      | .07               |
| 1960 to 1969 .....                               | 454                     | 6,483                       | 23.2                  | 10.0                      | 17.3   | 24.2        | 38.4            | 383.8                           | 1.37                      | .06               |
| 1970 to 1979 .....                               | 438                     | 9,532                       | 25.8                  | 10.0                      | 12.0   | 19.1        | 28.0            | 497.2                           | 1.34                      | .05               |
| 1980 to 1989 .....                               | 168                     | 4,425                       | 18.7                  | 7.0                       | 13.1   | 18.1        | 23.4            | 241.8                           | 1.02                      | .05               |
| 1990 to 1993 .....                               | 75                      | 5,003                       | 15.7                  | 11.2                      | 12.5   | 14.3        | 18.5            | 284.4                           | .89                       | .06               |
| <b>Federal Agency</b>                            |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Department of Defense .....                      | 282                     | 12,797                      | 20.1                  | 6.5                       | 11.2   | 13.9        | 22.0            | 636.9                           | 1.00                      | .05               |
| General Services Administration .....            | 979                     | 11,792                      | 21.2                  | 5.9                       | 10.5   | 15.8        | 23.2            | 803.6                           | 1.44                      | .07               |
| United States Postal Service .....               | 166                     | 2,970                       | 19.2                  | 3.0                       | 7.8  | 14.5        | 21.5            | 176.0                           | 1.14                      | .06               |
| Veterans Administration .....                    | 202                     | 3,600                       | 15.2                  | 10.4                      | 11.5   | 13.4        | 18.6            | 190.9                           | .80                       | .05               |
| All Others .....                                 | 357                     | 3,793                       | 29.7                  | 14.2                      | 16.9   | 31.1        | 40.2            | 205.0                           | 1.61                      | .05               |
| <b>Energy Sources (more than one may apply)</b>  |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Electricity .....                                | 1,985                   | 6,382                       | 21.1                  | 6.4                       | 11.8   | 17.3        | 27.4            | 387.5                           | 1.28                      | .06               |
| Natural Gas .....                                | 1,205                   | 8,732                       | 20.8                  | 5.2                       | 11.2   | 16.5        | 22.9            | 544.3                           | 1.30                      | .06               |
| Fuel Oil .....                                   | 885                     | 9,938                       | 22.5                  | 9.1                       | 11.7   | 18.2        | 23.9            | 521.7                           | 1.18                      | .05               |
| District Heat .....                              | 1,361                   | 8,840                       | 21.3                  | 5.6                       | 12.5   | 18.3        | 31.7            | 564.8                           | 1.36                      | .06               |
| District Chilled Water .....                     | 480                     | 8,413                       | 20.9                  | 7.4                       | 13.2   | 22.4        | 38.4            | 447.9                           | 1.11                      | .05               |
| Propane .....                                    | 17                      | 3,483                       | 18.5                  | 19.1                      | 12.7   | 21.0        | 22.3            | 298.3                           | 1.58                      | .09               |
| Any Other .....                                  | 75                      | 9,346                       | 16.7                  | 6.3                       | 11.7   | 16.3        | 24.8            | 539.9                           | .97                       | .06               |
| <b>Energy End Uses (more than one may apply)</b> |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Heating .....                                    | 1,979                   | 6,469                       | 21.2                  | 6.4                       | 12.0   | 17.5        | 27.5            | 392.5                           | 1.29                      | .06               |
| Air Conditioning .....                           | 1,981                   | 6,495                       | 21.2                  | 6.4                       | 12.3   | 17.6        | 27.5            | 394.3                           | 1.29                      | .06               |
| Water Heating .....                              | 1,965                   | 6,508                       | 21.3                  | 6.4                       | 12.0   | 17.6        | 27.5            | 394.6                           | 1.29                      | .06               |
| Cooking .....                                    | 1,498                   | 13,870                      | 21.4                  | 5.9                       | 12.8   | 17.9        | 27.1            | 857.7                           | 1.32                      | .06               |
| Manufacturing .....                              | 651                     | 13,010                      | 24.1                  | 6.5                       | 12.7   | 18.9        | 28.5            | 686.3                           | 1.27                      | .05               |
| <b>Workers (main shift)</b>                      |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Less than 50 .....                               | 53                      | 749                         | 13.0                  | 33.6                      | 10.0   | 13.2        | 19.6            | 44.7                            | .77                       | .06               |
| 50 to 99 .....                                   | 33                      | 837                         | 17.2                  | 12.4                      | 11.4   | 18.0        | 31.7            | 48.3                            | .99                       | .06               |
| 100 to 499 .....                                 | 336                     | 3,140                       | 24.6                  | 12.8                      | 12.3   | 19.8        | 34.7            | 171.7                           | 1.35                      | .05               |
| 500 or More .....                                | 1,563                   | 16,628                      | 21.0                  | 5.6                       | 13.1   | 17.7        | 26.2            | 1,033.0                         | 1.30                      | .06               |
| <b>Weekly Operating Hours</b>                    |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| 48 or Fewer .....                                | 127                     | 2,493                       | 13.1                  | 6.2                       | 11.3   | 14.3        | 21.0            | 323.4                           | 1.70                      | .13               |
| 49 to 60 .....                                   | 479                     | 6,304                       | 18.8                  | 7.1                       | 12.3   | 16.4        | 27.5            | 391.8                           | 1.17                      | .06               |
| 61 to 167 .....                                  | 257                     | 4,287                       | 21.4                  | 9.3                       | 9.4  | 17.4        | 25.2            | 244.6                           | 1.22                      | .06               |
| Open Continuously .....                          | 1,121                   | 9,043                       | 23.9                  | 5.7                       | 12.6   | 18.5        | 34.0            | 480.5                           | 1.27                      | .05               |

See footnotes at end of table.

**Table 3.46. Electricity Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 3, 1993 (Continued)**

| Building Characteristics                           | Electricity Consumption |                             |                       |                           |  |        |                 | Electricity Expenditures        |                           |                   |
|--|-------------------------|-----------------------------|-----------------------|---------------------------|--|--------|-----------------|---------------------------------|---------------------------|-------------------|
|  | Total (million kWh)     | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | Distribution of Building-Level Intensities (kWh/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) |
|  |                         |                             |                       |                           | 25th Percentile  | Median | 75th Percentile |                                 |                           |                   |
| <b>Multibuilding Facility</b>                      |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Yes .....  | 910                     | 5,203                       | 21.1                  | 7.5                       | 12.5   | 18.6   | 33.4            | 283.5                           | 1.15                      | 0.05              |
| No .....   | 1,074                   | 7,899                       | 21.1                  | 5.7                       | 10.1   | 15.8   | 22.0            | 521.4                           | 1.39                      | .07               |
| <b>Space-Heating Energy Source</b>                 |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 403                     | 5,757                       | 21.8                  | 7.5                       | 13.4   | 17.8   | 25.4            | 351.1                           | 1.33                      | .06               |
| Electricity Main .....                             | 158                     | 4,380                       | 23.2                  | 7.1                       | 13.8   | 19.1   | 29.2            | 262.3                           | 1.39                      | .06               |
| Electricity Secondary .....                        | 245                     | 7,214                       | 21.0                  | 7.8                       | 11.5   | 17.0   | 22.0            | 445.1                           | 1.30                      | .06               |
| Other Excluding Electricity .....                  | 1,577                   | 6,680                       | 21.1                  | 6.1                       | 11.8   | 17.3   | 28.0            | 404.7                           | 1.28                      | .06               |
| Building Not Heated .....                          | 5                       | 1,063                       | 6.5                   | 13.9                      | 1.2  | 3.6    | 10.2            | 86.9                            | .53                       | .08               |
| <b>Cooling Energy Source</b>                       |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 1,738                   | 6,788                       | 21.5                  | 6.2                       | 11.9   | 17.2   | 24.5            | 415.3                           | 1.31                      | .06               |
| Other Excluding Electricity .....                  | 243                     | 4,969                       | 19.3                  | 8.0                       | 13.1   | 22.4   | 38.9            | 284.8                           | 1.11                      | .06               |
| A/C Not Performed .....                            | 4                       | 618                         | 5.2                   | 18.6                      | 1.2  | 5.8    | 10.2            | 41.7                            | .35                       | .07               |
| <b>Water-Heating Energy Source</b>                 |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 403                     | 4,287                       | 21.2                  | 9.1                       | 13.3   | 18.2   | 28.0            | 238.3                           | 1.18                      | .06               |
| Other Excluding Electricity .....                  | 1,562                   | 7,512                       | 21.3                  | 5.9                       | 11.4   | 17.0   | 27.1            | 465.2                           | 1.32                      | .06               |
| Water Heating Not Performed .....                  | 19                      | 2,150                       | 11.1                  | 6.8                       | 3.6  | 10.2   | 13.4            | 152.0                           | .79                       | .07               |
| <b>Cooking Energy Source</b>                       |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 914                     | 13,440                      | 22.1                  | 5.2                       | 12.9   | 17.5   | 27.5            | 862.9                           | 1.42                      | .06               |
| Other Excluding Electricity .....                  | 584                     | 14,600                      | 20.5                  | 7.6                       | 12.8   | 18.8   | 26.0            | 848.9                           | 1.19                      | .06               |
| Cooking Not Performed .....                        | 487                     | 2,398                       | 20.1                  | 8.6                       | 11.4   | 16.8   | 28.0            | 137.4                           | 1.15                      | .06               |
| <b>Manufacturing Energy Source</b>                 |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 513                     | 11,933                      | 25.0                  | 5.8                       | 12.7   | 19.0   | 28.5            | 643.7                           | 1.35                      | .05               |
| Other Excluding Electricity .....                  | 137                     | 19,627                      | 21.1                  | 11.8                      | 12.5   | 15.8   | 31.7            | 947.7                           | 1.02                      | .05               |
| Manufacturing Not Performed .....                  | 1,334                   | 5,112                       | 19.9                  | 6.3                       | 11.5   | 16.9   | 26.1            | 330.3                           | 1.28                      | .06               |
| <b>Percent of Floorspace Heated</b>                |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Not Heated .....                                   | 5                       | 1,063                       | 6.5                   | 13.9                      | 1.2  | 3.6    | 10.2            | 86.9                            | .53                       | .08               |
| 1 to 50 .....                                      | 70                      | 5,845                       | 12.1                  | 9.0                       | 3.1  | 13.0   | 16.8            | 324.4                           | .67                       | .06               |
| 51 to 100 .....                                    | 1,909                   | 6,494                       | 21.8                  | 6.3                       | 12.2   | 17.9   | 27.9            | 395.2                           | 1.33                      | .06               |
| <b>Percent of Floorspace Cooled</b>                |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Not Cooled .....                                   | 32                      | 2,702                       | 11.3                  | 19.4                      | 4.7  | 11.5   | 19.7            | 154.6                           | .65                       | .06               |
| 1 to 50 .....                                      | 157                     | 5,234                       | 15.9                  | 9.7                       | 11.3   | 13.6   | 24.4            | 308.5                           | .94                       | .06               |
| 51 to 100 .....                                    | 1,795                   | 6,674                       | 22.0                  | 6.1                       | 12.4   | 18.0   | 27.5            | 406.8                           | 1.34                      | .06               |
| <b>Percent Lit When Open</b>                       |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| 1 to 50 .....                                      | 7                       | 680                         | 11.3                  | 12.7                      | 5.2  | 13.2   | 21.0            | 50.4                            | .84                       | .07               |
| 51 to 100 .....                                    | 1,975                   | 6,604                       | 21.2                  | 6.4                       | 11.9   | 17.3   | 27.9            | 400.8                           | 1.28                      | .06               |
| No Operating Hours .....                           | 3                       | 2,739                       | 18.6                  | 6.8                       | 18.6   | 18.6   | 18.6            | 135.9                           | .92                       | .05               |
| Don't Know .....                                   | NC                      | NC                          | NC                    | NC                        | NC   | NC     | NC              | NC                              | NC                        | NC                |
| <b>Percent Lit When Closed</b>                     |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Not Lit .....                                      | 85                      | 2,188                       | 16.6                  | 2.1                       | 10.6   | 14.4   | 23.3            | 135.5                           | 1.03                      | .06               |
| 1 to 50 .....                                      | 1,143                   | 5,890                       | 19.7                  | 6.0                       | 11.8   | 17.5   | 28.3            | 401.5                           | 1.34                      | .07               |
| 51 to 100 .....                                    | 401                     | 9,789                       | 24.0                  | 8.2                       | 12.8   | 18.5   | 28.5            | 497.4                           | 1.22                      | .05               |
| No Off Hours .....                                 | 356                     | 9,609                       | 24.7                  | 11.6                      | 12.8   | 17.5   | 22.4            | 458.5                           | 1.18                      | .05               |
| Don't Know .....                                   | NC                      | NC                          | NC                    | NC                        | NC   | NC     | NC              | NC                              | NC                        | NC                |
| <b>Heating Equipment (more than one may apply)</b> |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Heat Pumps .....                                   | 210                     | 6,378                       | 20.6                  | 7.9                       | 13.2   | 16.3   | 23.0            | 337.2                           | 1.09                      | .05               |
| Furnaces .....                                     | 12                      | 779                         | 7.4                   | 6.3                       | 5.6  | 11.2   | 17.1            | 49.2                            | .46                       | .06               |
| Individual Space Heaters .....                     | 671                     | 9,065                       | 19.6                  | 6.9                       | 13.4   | 18.6   | 23.0            | 521.7                           | 1.13                      | .06               |
| District Heat .....                                | 1,446                   | 8,661                       | 21.4                  | 5.9                       | 12.5   | 18.5   | 31.7            | 546.7                           | 1.35                      | .06               |
| Boilers .....                                      | 383                     | 4,168                       | 19.8                  | 7.7                       | 9.9  | 13.7   | 21.7            | 216.9                           | 1.03                      | .05               |
| Packaged-Heating Units .....                       | 117                     | 4,681                       | 19.5                  | 6.8                       | 14.8   | 16.9   | 21.7            | 287.1                           | 1.20                      | .06               |

See footnotes at end of table.

**Table 3.46. Electricity Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 3, 1993 (Continued)**

| Building Characteristics   | Electricity Consumption |                             |                       |                           |  |        |                 | Electricity Expenditures        |                           |                   |
|--|-------------------------|-----------------------------|-----------------------|---------------------------|--|--------|-----------------|---------------------------------|---------------------------|-------------------|
|  | Total (million kWh)     | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | Distribution of Building-Level Intensities (kWh/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) |
|  |                         |                             |                       |                           | 25th Percentile  | Median | 75th Percentile |                                 |                           |                   |
| <b>Cooling Equipment (more than one may apply)</b>   |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Residential-Type Central A/C .....   | 417                     | 13,890                      | 21.8                  | 3.2                       | 10.5   | 15.1   | 17.6            | 1,031.4                         | 1.62                      | 0.07              |
| Heat Pumps .....   | 217                     | 5,862                       | 19.0                  | 7.7                       | 10.6   | 15.1   | 23.0            | 339.2                           | 1.10                      | .06               |
| Individual A/C .....   | 494                     | 6,169                       | 17.6                  | 3.5                       | 11.4   | 15.6   | 21.0            | 393.6                           | 1.12                      | .06               |
| District Chilled Water .....   | 613                     | 8,520                       | 21.8                  | 7.8                       | 13.2   | 19.0   | 38.3            | 444.0                           | 1.13                      | .05               |
| Central Chillers .....   | 1,346                   | 8,520                       | 21.1                  | 5.7                       | 12.0   | 16.9   | 25.8            | 546.3                           | 1.35                      | .06               |
| Packaged-A/C Units .....   | 1,099                   | 8,654                       | 19.4                  | 4.9                       | 12.0   | 17.6   | 22.7            | 567.0                           | 1.27                      | .07               |
| Swamp Coolers .....  | 19                      | 6,319                       | 50.2                  | 22.2                      | 41.0   | 49.7   | 51.8            | 431.9                           | 3.43                      | .07               |
| <b>Lighting Equipment (more than one may apply)</b>  |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Incandescent .....   | 1,400                   | 7,607                       | 21.5                  | 6.7                       | 11.8   | 17.2   | 31.6            | 460.6                           | 1.30                      | .06               |
| Standard Fluorescent .....   | 1,928                   | 6,448                       | 21.1                  | 6.9                       | 11.8   | 16.9   | 27.5            | 389.7                           | 1.28                      | .06               |
| Compact Fluorescent .....  | 1,000                   | 12,501                      | 20.2                  | 5.5                       | 11.5   | 16.5   | 23.2            | 787.1                           | 1.27                      | .06               |
| High-Intensity Discharge .....   | 1,135                   | 10,321                      | 21.9                  | 5.2                       | 13.4   | 18.6   | 28.3            | 564.6                           | 1.20                      | .05               |
| Electronic Ballast .....   | 1,288                   | 9,610                       | 19.9                  | 5.9                       | 12.4   | 16.8   | 23.4            | 612.7                           | 1.27                      | .06               |
| <b>Water-Heating Equipment (more than one may apply)</b>                                     |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Centralized System .....   | 1,389                   | 6,230                       | 21.9                  | 6.0                       | 11.7   | 16.9   | 27.4            | 356.7                           | 1.25                      | .06               |
| Distributed System .....   | 452                     | 6,453                       | 18.8                  | 6.9                       | 12.8   | 18.7   | 27.5            | 491.9                           | 1.44                      | .08               |
| Don't Know/<br>Not Ascertained .....   | 125                     | 13,834                      | 25.1                  | 12.0                      | 12.8   | 21.8   | 42.7            | 576.2                           | 1.04                      | .04               |
| <b>Commercial Refrigeration Equipment (more than one may apply)</b>                          |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Any Equipment .....  | 1,370                   | 12,689                      | 22.5                  | 5.8                       | 12.9   | 19.4   | 33.0            | 780.3                           | 1.38                      | .06               |
| Walk-in Units .....  | 1,195                   | 15,526                      | 22.3                  | 5.6                       | 13.5   | 20.4   | 32.0            | 969.7                           | 1.40                      | .06               |
| Cases and Cabinets .....   | 1,217                   | 14,149                      | 23.1                  | 8.9                       | 13.1   | 20.3   | 33.4            | 885.4                           | 1.44                      | .06               |
| None .....   | 614                     | 3,027                       | 18.5                  | 8.2                       | 11.4   | 16.3   | 24.4            | 178.6                           | 1.09                      | .06               |
| <b>Retrofit or Purchase of any Equipment Within Last Ten Years (more than one may apply)</b> |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Retrofit and/or Purchase .....   | 1,613                   | 7,074                       | 20.0                  | 5.6                       | 11.9   | 16.7   | 24.1            | 447.9                           | 1.27                      | .06               |
| Retrofit .....   | 820                     | 10,516                      | 19.3                  | 6.8                       | 11.9   | 16.6   | 26.1            | 610.5                           | 1.12                      | .06               |
| Purchase .....   | 1,270                   | 6,791                       | 20.4                  | 5.5                       | 11.4   | 16.8   | 23.3            | 434.0                           | 1.30                      | .06               |
| No Retrofit or Purchase .....  | 372                     | 4,482                       | 27.4                  | 14.5                      | 11.5   | 18.8   | 38.2            | 221.8                           | 1.35                      | .05               |
| <b>HVAC Conservation Features (more than one may apply)</b>                                  |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| VAV System .....   | 791                     | 9,536                       | 21.5                  | 5.9                       | 12.8   | 18.1   | 28.3            | 518.0                           | 1.17                      | .05               |
| Economizer Cycle .....   | 1,382                   | 8,862                       | 22.6                  | 5.8                       | 12.4   | 18.1   | 25.5            | 506.3                           | 1.29                      | .06               |
| HVAC Maintenance .....   | 1,972                   | 6,574                       | 21.3                  | 6.4                       | 12.2   | 17.5   | 27.8            | 399.6                           | 1.29                      | .06               |
| <b>Lighting Conservation Features (more than one may apply)</b>                              |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Specular Reflectors .....  | 919                     | 7,470                       | 20.9                  | 5.6                       | 11.4   | 14.8   | 22.0            | 413.2                           | 1.15                      | .06               |
| Natural Lighting Control<br>Sensors .....  | 322                     | 11,087                      | 18.1                  | 6.6                       | 10.6   | 15.8   | 18.8            | 882.7                           | 1.44                      | .08               |
| Occupancy Sensors .....  | 1,236                   | 13,145                      | 20.1                  | 5.9                       | 10.8   | 15.3   | 22.5            | 836.2                           | 1.28                      | .06               |
| Time Clock .....   | 947                     | 12,791                      | 20.3                  | 5.7                       | 11.9   | 16.3   | 23.4            | 808.3                           | 1.28                      | .06               |
| Manual Dimmer Switches .....   | 957                     | 10,400                      | 19.5                  | 5.4                       | 12.6   | 18.7   | 24.6            | 671.5                           | 1.26                      | .06               |

See footnotes at end of table.

**Table 3.46. Electricity Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 3, 1993 (Continued)**

| Building Characteristics  | Electricity Consumption |                                |                          |                              |   |        |                 | Electricity Expenditures           |                              |                      |
|---|-------------------------|--------------------------------|--------------------------|------------------------------|---|--------|-----------------|------------------------------------|------------------------------|----------------------|
|   | Total<br>(million kWh)  | per Building<br>(thousand kWh) | per Square Foot<br>(kWh) | per Worker<br>(thousand kWh) | Distribution of Building-Level Intensities<br>(kWh/square foot) |        |                 | per Building<br>(thousand dollars) | per Square Foot<br>(dollars) | per kWh<br>(dollars) |
|   |                         |                                |                          |                              | 25th Percentile   | Median | 75th Percentile |                                    |                              |                      |
| <b>Energy Management Practices<br/>(more than one may apply)</b>  |                         |                                |                          |                              |   |        |                 |                                    |                              |                      |
| Energy Management and Control System .....                        | 1,325                   | 10,112                         | 21.7                     | 5.6                          | 12.2  | 17.6   | 26.2            | 615.5                              | 1.32                         | 0.06                 |
| Energy Conservation Programs <sup>1</sup> .....                   | 1,177                   | 12,015                         | 20.1                     | 5.6                          | 11.8  | 15.7   | 21.7            | 790.7                              | 1.32                         | .07                  |
| Energy Audit .....  | 776                     | 7,835                          | 20.6                     | 8.4                          | 11.4  | 15.1   | 23.4            | 439.4                              | 1.16                         | .06                  |
| HVAC Maintenance Staff <sup>2</sup> .....                         | 1,092                   | 11,262                         | 20.6                     | 5.0                          | 13.5  | 18.8   | 28.6            | 741.3                              | 1.36                         | .07                  |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b> |                         |                                |                          |                              |   |        |                 |                                    |                              |                      |
| Heating .....   | 785                     | 5,451                          | 17.9                     | 7.2                          | 11.3  | 15.8   | 22.4            | 390.8                              | 1.28                         | .07                  |
| Cooling .....   | 785                     | 5,412                          | 17.9                     | 7.2                          | 11.4  | 15.9   | 22.7            | 389.1                              | 1.29                         | .07                  |
| Hot Water .....   | 442                     | 5,738                          | 17.0                     | 7.1                          | 10.1  | 14.8   | 22.9            | 459.0                              | 1.36                         | .08                  |
| Lighting .....  | 806                     | 4,975                          | 18.0                     | 7.5                          | 11.3  | 15.6   | 23.1            | 356.2                              | 1.29                         | .07                  |
| <b>Building Generates Electricity</b>                             |                         |                                |                          |                              |   |        |                 |                                    |                              |                      |
| Yes .....   | 724                     | 13,170                         | 22.6                     | 5.8                          | 11.3  | 16.4   | 22.4            | 677.7                              | 1.17                         | .05                  |
| No .....  | 1,260                   | 4,924                          | 20.3                     | 6.8                          | 11.9  | 17.9   | 27.8            | 325.2                              | 1.34                         | .07                  |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • KWH = Kilowatthour. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.47. Electricity Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 6, 1993**

| Building Characteristics                         | Electricity Consumption |                             |                       |                           |  |             |                 | Electricity Expenditures        |                           |                   |
|--|-------------------------|-----------------------------|-----------------------|---------------------------|--|-------------|-----------------|---------------------------------|---------------------------|-------------------|
|  | Total (million kWh)     | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | Distribution of Building-Level Intensities (kWh/square foot) |             |                 | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) |
|  |                         |                             |                       |                           | 25th Percentile  | Median      | 75th Percentile |                                 |                           |                   |
| <b>All Buildings</b> .....                       | <b>975</b>              | <b>4,013</b>                | <b>27.2</b>           | <b>12.0</b>               | <b>11.1</b>  | <b>16.8</b> | <b>35.3</b>     | <b>210.4</b>                    | <b>1.43</b>               | <b>0.05</b>       |
| <b>Building Floorspace (square feet)</b>         |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| 10,000 to 50,000 .....                           | 79                      | 738                         | 30.5                  | 13.3                      | 11.0   | 15.3        | 31.9            | 36.6                            | 1.51                      | .05               |
| 50,001 to 200,000 .....                          | 302                     | 3,509                       | 31.6                  | 16.4                      | 10.9   | 18.7        | 38.9            | 186.9                           | 1.68                      | .05               |
| Over 200,000 .....                               | 594                     | 11,889                      | 25.1                  | 10.4                      | 11.2   | 18.1        | 29.4            | 622.7                           | 1.32                      | .05               |
| <b>Principal Building Activity</b>               |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Education .....                                  | 2                       | 386                         | 13.8                  | 9.1                       | 11.0   | 13.6        | 14.8            | 17.6                            | .63                       | .05               |
| Health Care .....                                | 219                     | 6,255                       | 18.1                  | 10.5                      | 13.0   | 17.7        | 25.0            | 346.2                           | 1.00                      | .06               |
| Laboratory .....                                 | 240                     | 8,273                       | 72.0                  | 55.6                      | 38.9   | 52.0        | 112.6           | 450.5                           | 3.92                      | .05               |
| Lodging .....                                    | 15                      | 941                         | 16.0                  | 24.2                      | 11.3   | 16.4        | 19.5            | 61.0                            | 1.04                      | .06               |
| Mercantile and Service .....                     | 134                     | 2,729                       | 21.4                  | 6.8                       | 9.7  | 13.4        | 15.8            | 144.1                           | 1.13                      | .05               |
| Office .....                                     | 263                     | 3,464                       | 24.4                  | 8.1                       | 10.2   | 18.2        | 31.9            | 184.7                           | 1.30                      | .05               |
| All Others .....                                 | 102                     | 3,189                       | 45.4                  | 32.4                      | 9.3  | 20.4        | 98.9            | 117.5                           | 1.67                      | .04               |
| <b>Year Constructed</b>                          |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| 1959 or Before .....                             | 391                     | 3,801                       | 29.5                  | 15.6                      | 10.9   | 15.4        | 31.5            | 170.2                           | 1.32                      | .04               |
| 1960 to 1969 .....                               | 180                     | 4,731                       | 28.2                  | 7.6                       | 9.5  | 20.9        | 40.2            | 275.2                           | 1.64                      | .06               |
| 1970 to 1979 .....                               | 188                     | 5,542                       | 30.5                  | 12.7                      | 12.8   | 18.8        | 42.8            | 252.5                           | 1.39                      | .05               |
| 1980 to 1989 .....                               | 179                     | 3,147                       | 26.0                  | 12.5                      | 11.4   | 15.2        | 25.1            | 223.4                           | 1.84                      | .07               |
| 1990 to 1993 .....                               | 36                      | 3,295                       | 11.7                  | 9.6                       | 9.6  | 13.4        | 34.6            | 165.0                           | .59                       | .05               |
| <b>Federal Agency</b>                            |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Department of Defense .....                      | 41                      | 1,859                       | 24.5                  | 12.6                      | 7.7  | 15.0        | 23.6            | 108.6                           | 1.43                      | .06               |
| General Services Administration .....            | 122                     | 3,484                       | 15.5                  | 5.1                       | 8.5  | 12.6        | 19.1            | 226.0                           | 1.00                      | .06               |
| United States Postal Service .....               | 145                     | 2,377                       | 20.6                  | 6.9                       | 9.7  | 13.5        | 16.3            | 127.4                           | 1.11                      | .05               |
| Veterans Administration .....                    | 186                     | 5,175                       | 16.4                  | 9.9                       | 12.4   | 14.6        | 23.9            | 287.7                           | .91                       | .06               |
| All Others .....                                 | 481                     | 5,406                       | 61.2                  | 33.3                      | 19.1   | 36.8        | 110.8           | 255.0                           | 2.89                      | .05               |
| <b>Energy Sources (more than one may apply)</b>  |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Electricity .....                                | 975                     | 4,013                       | 27.2                  | 12.0                      | 11.1   | 16.8        | 35.3            | 210.4                           | 1.43                      | .05               |
| Natural Gas .....                                | 582                     | 3,462                       | 23.4                  | 10.3                      | 10.2   | 15.0        | 24.2            | 182.6                           | 1.24                      | .05               |
| Fuel Oil .....                                   | 90                      | 5,009                       | 19.0                  | 6.0                       | 13.0   | 20.5        | 32.5            | 311.4                           | 1.18                      | .06               |
| District Heat .....                              | 435                     | 6,399                       | 32.4                  | 17.7                      | 12.8   | 29.4        | 42.4            | 337.2                           | 1.71                      | .05               |
| District Chilled Water .....                     | 138                     | 4,603                       | 17.3                  | 8.1                       | 7.7  | 13.0        | 23.3            | 261.1                           | .98                       | .06               |
| Propane .....                                    | 6                       | 1,209                       | 30.2                  | 11.9                      | 3.7  | 32.5        | 37.2            | 74.1                            | 1.85                      | .06               |
| Any Other .....                                  | 77                      | 9,606                       | 27.0                  | 13.0                      | 24.0   | 34.1        | 58.3            | 470.6                           | 1.32                      | .05               |
| <b>Energy End Uses (more than one may apply)</b> |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Heating .....                                    | 975                     | 4,030                       | 27.3                  | 11.9                      | 11.2   | 16.9        | 35.3            | 211.2                           | 1.43                      | .05               |
| Air Conditioning .....                           | 957                     | 3,972                       | 27.1                  | 11.9                      | 11.2   | 16.8        | 34.9            | 208.9                           | 1.43                      | .05               |
| Water Heating .....                              | 957                     | 4,021                       | 27.2                  | 11.9                      | 11.2   | 17.2        | 35.3            | 211.4                           | 1.43                      | .05               |
| Cooking .....                                    | 383                     | 6,072                       | 19.9                  | 8.3                       | 11.3   | 19.1        | 29.4            | 345.0                           | 1.13                      | .06               |
| Manufacturing .....                              | 99                      | 3,552                       | 18.6                  | 6.2                       | 10.5   | 14.0        | 24.0            | 213.0                           | 1.12                      | .06               |
| <b>Workers (main shift)</b>                      |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Less than 50 .....                               | 111                     | 1,585                       | 43.5                  | 75.9                      | 9.7  | 15.7        | 36.2            | 65.6                            | 1.80                      | .04               |
| 50 to 99 .....                                   | 46                      | 1,047                       | 22.7                  | 14.2                      | 11.1   | 13.9        | 23.6            | 47.2                            | 1.03                      | .05               |
| 100 to 499 .....                                 | 316                     | 3,945                       | 35.0                  | 19.2                      | 10.7   | 20.0        | 36.6            | 216.2                           | 1.92                      | .05               |
| 500 or More .....                                | 503                     | 10,257                      | 22.6                  | 8.3                       | 12.5   | 18.9        | 34.9            | 554.2                           | 1.22                      | .05               |
| <b>Weekly Operating Hours</b>                    |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| 48 or Fewer .....                                | 58                      | 1,484                       | 21.1                  | 12.3                      | 11.0   | 17.7        | 27.5            | 78.5                            | 1.12                      | .05               |
| 49 to 60 .....                                   | 93                      | 2,019                       | 14.4                  | 6.5                       | 8.6  | 15.2        | 30.5            | 124.9                           | .89                       | .06               |
| 61 to 167 .....                                  | 390                     | 5,006                       | 48.5                  | 20.0                      | 10.6   | 16.8        | 110.8           | 232.1                           | 2.25                      | .05               |
| Open Continuously .....                          | 434                     | 5,426                       | 23.4                  | 10.1                      | 12.4   | 17.7        | 29.4            | 302.7                           | 1.30                      | .06               |

See footnotes at end of table.

**Table 3.47. Electricity Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 6, 1993 (Continued)**

| Building Characteristics                           | Electricity Consumption |                             |                       |                           |  |        |                 | Electricity Expenditures        |                           |                   |
|--|-------------------------|-----------------------------|-----------------------|---------------------------|--|--------|-----------------|---------------------------------|---------------------------|-------------------|
|  | Total (million kWh)     | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | Distribution of Building-Level Intensities (kWh/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) |
|  |                         |                             |                       |                           | 25th Percentile  | Median | 75th Percentile |                                 |                           |                   |
| <b>Multibuilding Facility</b>                      |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Yes .....  | 731                     | 4,937                       | 29.9                  | 13.9                      | 13.1   | 23.0   | 41.8            | 252.9                           | 1.53                      | 0.05              |
| No .....   | 245                     | 2,574                       | 21.5                  | 8.5                       | 9.6  | 13.2   | 20.1            | 144.2                           | 1.20                      | .06               |
| <b>Space-Heating Energy Source</b>                 |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 360                     | 5,450                       | 36.5                  | 13.6                      | 12.5   | 16.8   | 38.8            | 227.9                           | 1.53                      | .04               |
| Electricity Main .....                             | 121                     | 3,896                       | 26.0                  | 8.6                       | 13.3   | 16.8   | 32.4            | 202.3                           | 1.35                      | .05               |
| Electricity Secondary .....                        | 239                     | 6,826                       | 45.8                  | 19.2                      | 9.7  | 16.9   | 108.5           | 250.6                           | 1.68                      | .04               |
| Other Excluding Electricity .....                  | 615                     | 3,497                       | 23.8                  | 11.2                      | 10.8   | 17.6   | 33.1            | 205.0                           | 1.39                      | .06               |
| Building Not Heated .....                          | (*)                     | 81                          | 1.0                   | ( <sup>1</sup> )          | 1.0  | 1.0    | 1.0             | 5.9                             | .07                       | .07               |
| <b>Cooling Energy Source</b>                       |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 850                     | 3,880                       | 30.3                  | 12.7                      | 11.4   | 17.4   | 35.8            | 202.0                           | 1.58                      | .05               |
| Other Excluding Electricity .....                  | 108                     | 4,893                       | 14.9                  | 8.1                       | 7.7  | 12.8   | 20.4            | 276.9                           | .84                       | .06               |
| A/C Not Performed .....                            | 18                      | 8,987                       | 33.1                  | 15.0                      | 1.0  | 19.9   | 38.8            | 395.2                           | 1.46                      | .04               |
| <b>Water-Heating Energy Source</b>                 |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 285                     | 4,595                       | 23.2                  | 9.2                       | 9.5  | 14.5   | 31.9            | 244.7                           | 1.24                      | .05               |
| Other Excluding Electricity .....                  | 672                     | 3,819                       | 29.3                  | 13.6                      | 12.4   | 19.0   | 35.6            | 199.7                           | 1.53                      | .05               |
| Water Heating Not Performed .....                  | 18                      | 3,659                       | 30.7                  | 14.3                      | 1.9  | 5.0    | 13.9            | 162.7                           | 1.37                      | .04               |
| <b>Cooking Energy Source</b>                       |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 182                     | 4,916                       | 17.9                  | 6.5                       | 11.2   | 16.7   | 25.1            | 279.4                           | 1.02                      | .06               |
| Other Excluding Electricity .....                  | 201                     | 7,718                       | 22.2                  | 11.0                      | 17.7   | 23.6   | 32.5            | 438.2                           | 1.26                      | .06               |
| Cooking Not Performed .....                        | 593                     | 3,293                       | 35.7                  | 16.8                      | 10.3   | 15.2   | 36.7            | 163.3                           | 1.77                      | .05               |
| <b>Manufacturing Energy Source</b>                 |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 80                      | 3,096                       | 16.6                  | 5.4                       | 10.3   | 13.6   | 20.8            | 197.1                           | 1.06                      | .06               |
| Other Excluding Electricity .....                  | 19                      | 9,489                       | 38.1                  | 15.3                      | 29.4   | 34.1   | 38.8            | 419.3                           | 1.69                      | .04               |
| Manufacturing Not Performed .....                  | 876                     | 4,073                       | 28.7                  | 13.4                      | 11.2   | 17.4   | 35.8            | 210.0                           | 1.48                      | .05               |
| <b>Percent of Floorspace Heated</b>                |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Not Heated .....                                   | (*)                     | 81                          | 1.0                   | ( <sup>1</sup> )          | 1.0  | 1.0    | 1.0             | 5.9                             | .07                       | .07               |
| 1 to 50 .....                                      | 22                      | 2,013                       | 17.2                  | 10.1                      | 8.2  | 13.5   | 21.0            | 119.9                           | 1.02                      | .06               |
| 51 to 100 .....                                    | 953                     | 4,126                       | 27.7                  | 12.0                      | 11.2   | 17.6   | 35.3            | 215.6                           | 1.45                      | .05               |
| <b>Percent of Floorspace Cooled</b>                |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Not Cooled .....                                   | 18                      | 6,021                       | 32.6                  | 13.4                      | 1.0  | 8.2    | 38.8            | 265.6                           | 1.44                      | .04               |
| 1 to 50 .....                                      | 75                      | 2,870                       | 38.3                  | 22.9                      | 10.9   | 22.3   | 111.0           | 110.4                           | 1.47                      | .04               |
| 51 to 100 .....                                    | 883                     | 4,124                       | 26.5                  | 11.5                      | 11.2   | 16.1   | 32.4            | 221.8                           | 1.42                      | .05               |
| <b>Percent Lit When Open</b>                       |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| 1 to 50 .....                                      | 18                      | 1,228                       | 17.4                  | 14.4                      | 8.7  | 11.4   | 21.0            | 71.4                            | 1.01                      | .06               |
| 51 to 100 .....                                    | 957                     | 4,215                       | 27.6                  | 11.9                      | 11.4   | 17.6   | 35.7            | 220.5                           | 1.44                      | .05               |
| No Operating Hours .....                           | (*)                     | 81                          | 1.0                   | ( <sup>1</sup> )          | 1.0  | 1.0    | 1.0             | 5.9                             | .07                       | .07               |
| Don't Know .....                                   | NC                      | NC                          | NC                    | NC                        | NC   | NC     | NC              | NC                              | NC                        | NC                |
| <b>Percent Lit When Closed</b>                     |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Not Lit .....                                      | 34                      | 1,025                       | 12.6                  | 5.6                       | 7.5  | 13.9   | 16.9            | 64.8                            | .79                       | .06               |
| 1 to 50 .....                                      | 693                     | 4,202                       | 33.8                  | 15.5                      | 12.0   | 19.1   | 38.9            | 218.1                           | 1.76                      | .05               |
| 51 to 100 .....                                    | 136                     | 5,435                       | 16.9                  | 6.8                       | 11.4   | 15.4   | 23.9            | 288.6                           | .90                       | .05               |
| No Off Hours .....                                 | 112                     | 5,611                       | 24.4                  | 10.3                      | 11.6   | 19.4   | 30.4            | 289.2                           | 1.26                      | .05               |
| Don't Know .....                                   | NC                      | NC                          | NC                    | NC                        | NC   | NC     | NC              | NC                              | NC                        | NC                |
| <b>Heating Equipment (more than one may apply)</b> |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Heat Pumps .....                                   | 32                      | 3,205                       | 33.2                  | 8.8                       | 14.2   | 25.5   | 32.4            | 164.3                           | 1.70                      | .05               |
| Furnaces .....                                     | 11                      | 610                         | 13.9                  | 7.9                       | 6.8  | 14.9   | 19.1            | 35.0                            | .80                       | .06               |
| Individual Space Heaters .....                     | 124                     | 4,121                       | 22.9                  | 6.9                       | 8.7  | 12.8   | 29.4            | 349.3                           | 1.94                      | .08               |
| District Heat .....                                | 457                     | 5,572                       | 30.1                  | 16.0                      | 13.0   | 21.0   | 38.9            | 295.2                           | 1.59                      | .05               |
| Boilers .....                                      | 420                     | 4,120                       | 25.1                  | 10.0                      | 10.8   | 18.2   | 36.1            | 213.7                           | 1.30                      | .05               |
| Packaged-Heating Units .....                       | 199                     | 3,371                       | 26.3                  | 10.1                      | 9.8  | 14.8   | 25.0            | 194.3                           | 1.51                      | .06               |

See footnotes at end of table.

**Table 3.47. Electricity Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 6, 1993 (Continued)**

| Building Characteristics   | Electricity Consumption |                             |                       |                           |  |        |                 | Electricity Expenditures        |                           |                   |
|--|-------------------------|-----------------------------|-----------------------|---------------------------|--|--------|-----------------|---------------------------------|---------------------------|-------------------|
|  | Total (million kWh)     | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | Distribution of Building-Level Intensities (kWh/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) |
|  |                         |                             |                       |                           | 25th Percentile  | Median | 75th Percentile |                                 |                           |                   |
| <b>Cooling Equipment (more than one may apply)</b>   |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Residential-Type Central A/C .....   | 96                      | 3,294                       | 20.3                  | 6.4                       | 9.7  | 13.0   | 20.3            | 193.4                           | 1.19                      | 0.06              |
| Heat Pumps .....   | 39                      | 3,588                       | 25.5                  | 8.2                       | 13.0   | 23.6   | 32.5            | 187.3                           | 1.33                      | .05               |
| Individual A/C .....   | 241                     | 4,819                       | 34.7                  | 15.4                      | 12.5   | 20.2   | 57.3            | 206.5                           | 1.49                      | .04               |
| District Chilled Water .....   | 191                     | 4,349                       | 17.6                  | 8.7                       | 9.7  | 14.6   | 28.6            | 315.8                           | 1.28                      | .07               |
| Central Chillers .....   | 608                     | 4,986                       | 28.2                  | 11.0                      | 12.4   | 18.8   | 38.9            | 247.2                           | 1.40                      | .05               |
| Packaged-A/C Units .....   | 338                     | 3,481                       | 23.9                  | 9.0                       | 10.9   | 15.2   | 24.2            | 191.6                           | 1.32                      | .06               |
| Swamp Coolers .....  | 39                      | 3,221                       | 19.2                  | 10.6                      | 11.2   | 16.1   | 31.0            | 162.6                           | .97                       | .05               |
| <b>Lighting Equipment (more than one may apply)</b>  |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Incandescent .....   | 686                     | 5,083                       | 33.9                  | 13.3                      | 11.4   | 20.1   | 42.8            | 255.5                           | 1.70                      | .05               |
| Standard Fluorescent .....   | 967                     | 4,117                       | 27.6                  | 11.9                      | 11.4   | 17.6   | 35.7            | 215.6                           | 1.45                      | .05               |
| Compact Fluorescent .....  | 142                     | 4,910                       | 17.9                  | 7.2                       | 10.6   | 14.8   | 20.4            | 320.5                           | 1.17                      | .07               |
| High-Intensity Discharge .....   | 518                     | 8,088                       | 32.0                  | 12.6                      | 12.3   | 20.3   | 107.6           | 356.5                           | 1.41                      | .04               |
| Electronic Ballast .....   | 279                     | 4,727                       | 17.6                  | 7.1                       | 9.9  | 15.0   | 23.9            | 272.3                           | 1.01                      | .06               |
| <b>Water-Heating Equipment (more than one may apply)</b>                                     |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Centralized System .....   | 575                     | 3,528                       | 24.8                  | 12.0                      | 11.1   | 17.4   | 31.5            | 192.9                           | 1.35                      | .05               |
| Distributed System .....   | 375                     | 5,283                       | 31.7                  | 11.8                      | 11.9   | 16.8   | 46.4            | 261.0                           | 1.57                      | .05               |
| Don't Know/<br>Not Ascertained .....   | 7                       | 1,687                       | 35.9                  | 9.7                       | 9.4  | 22.9   | 93.0            | 86.1                            | 1.83                      | .05               |
| <b>Commercial Refrigeration Equipment (more than one may apply)</b>                          |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Any Equipment .....  | 408                     | 5,821                       | 22.7                  | 10.2                      | 13.0   | 23.9   | 36.1            | 372.7                           | 1.46                      | .06               |
| Walk-in Units .....  | 273                     | 6,815                       | 22.0                  | 11.2                      | 13.5   | 23.9   | 35.9            | 370.3                           | 1.20                      | .05               |
| Cases and Cabinets .....   | 275                     | 6,240                       | 19.4                  | 8.8                       | 12.6   | 19.7   | 29.4            | 345.7                           | 1.08                      | .06               |
| None .....   | 568                     | 3,282                       | 31.7                  | 13.6                      | 10.3   | 15.0   | 33.3            | 144.7                           | 1.40                      | .04               |
| <b>Retrofit or Purchase of any Equipment Within Last Ten Years (more than one may apply)</b> |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Retrofit and/or Purchase .....   | 627                     | 3,872                       | 21.6                  | 9.0                       | 10.8   | 15.2   | 24.0            | 211.3                           | 1.18                      | .05               |
| Retrofit .....   | 269                     | 4,271                       | 17.9                  | 7.5                       | 10.4   | 15.2   | 23.8            | 247.0                           | 1.04                      | .06               |
| Purchase .....   | 489                     | 3,883                       | 22.9                  | 9.1                       | 11.1   | 15.1   | 24.0            | 213.0                           | 1.25                      | .05               |
| No Retrofit or Purchase .....  | 348                     | 4,295                       | 51.2                  | 29.0                      | 11.9   | 26.7   | 108.5           | 208.6                           | 2.48                      | .05               |
| <b>HVAC Conservation Features (more than one may apply)</b>                                  |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| VAV System .....   | 417                     | 6,410                       | 22.5                  | 10.5                      | 12.2   | 17.7   | 32.5            | 353.2                           | 1.24                      | .06               |
| Economizer Cycle .....   | 644                     | 5,232                       | 27.3                  | 12.0                      | 12.3   | 18.9   | 38.1            | 243.6                           | 1.27                      | .05               |
| HVAC Maintenance .....   | 966                     | 4,130                       | 27.3                  | 12.0                      | 11.2   | 16.9   | 35.7            | 217.0                           | 1.44                      | .05               |
| <b>Lighting Conservation Features (more than one may apply)</b>                              |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Specular Reflectors .....  | 395                     | 4,289                       | 21.9                  | 8.6                       | 10.0   | 18.4   | 33.1            | 247.9                           | 1.27                      | .06               |
| Natural Lighting Control<br>Sensors .....  | 104                     | 3,865                       | 15.5                  | 9.2                       | 10.6   | 16.7   | 21.7            | 223.6                           | .90                       | .06               |
| Occupancy Sensors .....  | 315                     | 5,433                       | 19.2                  | 7.2                       | 10.1   | 14.5   | 23.9            | 306.1                           | 1.08                      | .06               |
| Time Clock .....   | 151                     | 4,204                       | 16.7                  | 8.2                       | 10.2   | 15.1   | 21.5            | 245.8                           | .98                       | .06               |
| Manual Dimmer Switches .....   | 246                     | 5,586                       | 18.3                  | 8.2                       | 10.0   | 15.7   | 29.1            | 340.3                           | 1.11                      | .06               |

See footnotes at end of table.



**Table 3.47. Electricity Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 6, 1993 (Continued)**

| Building Characteristics  | Electricity Consumption |                             |                       |                           |  |        |                 | Electricity Expenditures        |                           |                   |
|---|-------------------------|-----------------------------|-----------------------|---------------------------|--|--------|-----------------|---------------------------------|---------------------------|-------------------|
|   | Total (million kWh)     | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | Distribution of Building-Level Intensities (kWh/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) |
|   |                         |                             |                       |                           | 25th Percentile  | Median | 75th Percentile |                                 |                           |                   |
| <b>Energy Management Practices (more than one may apply)</b>      |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Energy Management and Control System .....                        | 459                     | 4,780                       | 19.9                  | 9.2                       | 10.4   | 15.1   | 25.0            | 273.9                           | 1.14                      | 0.06              |
| Energy Conservation Programs <sup>1</sup> .....                   | 259                     | 5,399                       | 19.2                  | 7.1                       | 12.7   | 17.9   | 28.9            | 307.7                           | 1.09                      | .06               |
| Energy Audit .....  | 242                     | 3,785                       | 20.7                  | 7.1                       | 11.2   | 15.0   | 23.9            | 232.6                           | 1.27                      | .06               |
| HVAC Maintenance Staff <sup>2</sup> .....                         | 291                     | 5,112                       | 18.8                  | 8.5                       | 9.5  | 13.3   | 21.7            | 298.3                           | 1.09                      | .06               |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b> |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Heating .....   | 226                     | 1,836                       | 17.2                  | 7.3                       | 9.5  | 13.7   | 23.6            | 138.5                           | 1.29                      | .08               |
| Cooling .....   | 236                     | 1,907                       | 17.1                  | 7.1                       | 9.5  | 13.8   | 23.4            | 142.0                           | 1.27                      | .07               |
| Hot Water .....   | 83                      | 2,518                       | 18.2                  | 7.2                       | 9.5  | 12.8   | 30.5            | 152.9                           | 1.11                      | .06               |
| Lighting .....  | 232                     | 1,934                       | 18.1                  | 7.2                       | 9.6  | 14.7   | 23.4            | 144.3                           | 1.35                      | .07               |
| <b>Building Generates Electricity</b>                             |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Yes .....   | 162                     | 5,061                       | 15.7                  | 7.6                       | 10.9   | 17.5   | 25.9            | 281.5                           | .87                       | .06               |
| No .....  | 813                     | 3,855                       | 31.9                  | 13.5                      | 11.2   | 16.8   | 35.8            | 199.6                           | 1.65                      | .05               |

<sup>1</sup> Data or computation error.

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • KWH = Kilowatthour. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.48. Electricity Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 9, 1993**

| Building Characteristics                         | Electricity Consumption |                             |                       |                           |  |             |                 | Electricity Expenditures        |                           |                   |
|--|-------------------------|-----------------------------|-----------------------|---------------------------|--|-------------|-----------------|---------------------------------|---------------------------|-------------------|
|  | Total (million kWh)     | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | Distribution of Building-Level Intensities (kWh/square foot) |             |                 | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) |
|  |                         |                             |                       |                           | 25th Percentile  | Median      | 75th Percentile |                                 |                           |                   |
| <b>All Buildings</b> .....                       | <b>804</b>              | <b>2,474</b>                | <b>18.1</b>           | <b>8.2</b>                | <b>9.5</b>   | <b>15.9</b> | <b>23.0</b>     | <b>190.9</b>                    | <b>1.40</b>               | <b>0.08</b>       |
| <b>Building Floorspace (square feet)</b>         |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| 10,000 to 50,000 .....                           | 78                      | 533                         | 20.4                  | 8.5                       | 9.2  | 15.3        | 22.9            | 42.7                            | 1.63                      | .08               |
| 50,001 to 200,000 .....                          | 269                     | 2,190                       | 21.2                  | 10.4                      | 9.8  | 19.1        | 24.4            | 165.7                           | 1.61                      | .08               |
| Over 200,000 .....                               | 456                     | 8,296                       | 16.4                  | 7.3                       | 8.5  | 13.0        | 18.0            | 643.1                           | 1.27                      | .08               |
| <b>Principal Building Activity</b>               |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Education .....                                  | 6                       | 512                         | 9.8                   | 9.6                       | 1.4  | 3.8         | 8.8             | 31.0                            | .59                       | .06               |
| Health Care .....                                | 167                     | 3,484                       | 16.9                  | 7.7                       | 12.3   | 17.1        | 20.8            | 243.5                           | 1.18                      | .07               |
| Laboratory .....                                 | 94                      | 3,041                       | 36.2                  | 24.8                      | 20.2   | 26.6        | 47.6            | 229.5                           | 2.74                      | .08               |
| Lodging .....                                    | 14                      | 640                         | 11.5                  | 21.6                      | 2.9  | 13.7        | 18.7            | 53.6                            | .97                       | .08               |
| Mercantile and Service .....                     | 128                     | 2,027                       | 15.6                  | 5.2                       | 9.4  | 13.9        | 19.3            | 153.3                           | 1.18                      | .08               |
| Office .....                                     | 250                     | 2,716                       | 15.3                  | 6.4                       | 8.7  | 15.1        | 21.9            | 246.0                           | 1.38                      | .09               |
| All Others .....                                 | 145                     | 2,538                       | 26.9                  | 19.5                      | 10.1   | 18.5        | 25.3            | 164.7                           | 1.75                      | .06               |
| <b>Year Constructed</b>                          |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| 1959 or Before .....                             | 280                     | 2,173                       | 20.7                  | 11.6                      | 8.3  | 17.1        | 24.4            | 167.8                           | 1.60                      | .08               |
| 1960 to 1969 .....                               | 143                     | 2,597                       | 15.7                  | 7.0                       | 8.3  | 15.9        | 23.9            | 197.7                           | 1.20                      | .08               |
| 1970 to 1979 .....                               | 201                     | 3,240                       | 16.7                  | 6.9                       | 9.5  | 15.0        | 20.4            | 268.7                           | 1.38                      | .08               |
| 1980 to 1989 .....                               | 155                     | 2,384                       | 19.5                  | 7.5                       | 10.8   | 16.2        | 22.9            | 166.1                           | 1.36                      | .07               |
| 1990 to 1993 .....                               | 25                      | 1,784                       | 14.8                  | 8.0                       | 13.7   | 17.0        | 24.1            | 147.1                           | 1.22                      | .08               |
| <b>Federal Agency</b>                            |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Department of Defense .....                      | 187                     | 2,426                       | 22.1                  | 13.5                      | 6.6  | 13.0        | 18.7            | 186.2                           | 1.69                      | .08               |
| General Services Administration .....            | 144                     | 3,698                       | 11.5                  | 5.0                       | 7.2  | 10.6        | 16.2            | 339.5                           | 1.06                      | .09               |
| United States Postal Service .....               | 139                     | 2,203                       | 16.5                  | 5.7                       | 9.2  | 15.2        | 19.6            | 168.6                           | 1.27                      | .08               |
| Veterans Administration .....                    | 150                     | 2,682                       | 17.0                  | 7.7                       | 14.4   | 18.3        | 21.8            | 193.7                           | 1.23                      | .07               |
| All Others .....                                 | 184                     | 2,045                       | 30.1                  | 17.0                      | 12.7   | 23.6        | 32.1            | 144.3                           | 2.12                      | .07               |
| <b>Energy Sources (more than one may apply)</b>  |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Electricity .....                                | 804                     | 2,474                       | 18.1                  | 8.2                       | 9.5  | 15.9        | 23.0            | 190.9                           | 1.40                      | .08               |
| Natural Gas .....                                | 594                     | 2,639                       | 17.1                  | 7.9                       | 9.6  | 15.9        | 23.9            | 203.9                           | 1.32                      | .08               |
| Fuel Oil .....                                   | 222                     | 4,103                       | 19.9                  | 9.7                       | 12.0   | 17.1        | 31.4            | 321.5                           | 1.56                      | .08               |
| District Heat .....                              | 194                     | 2,657                       | 16.5                  | 8.4                       | 12.3   | 17.2        | 20.7            | 198.0                           | 1.23                      | .07               |
| District Chilled Water .....                     | 106                     | 3,929                       | 16.7                  | 8.3                       | 15.3   | 20.3        | 25.0            | 262.4                           | 1.11                      | .07               |
| Propane .....                                    | 26                      | 2,633                       | 23.6                  | 12.2                      | .7   | 4.8         | 16.3            | 212.5                           | 1.90                      | .08               |
| Any Other .....                                  | 37                      | 7,350                       | 14.1                  | 6.8                       | .8   | 14.2        | 14.4            | 526.8                           | 1.01                      | .07               |
| <b>Energy End Uses (more than one may apply)</b> |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Heating .....                                    | 752                     | 2,481                       | 17.9                  | 8.5                       | 9.5  | 16.0        | 23.4            | 193.9                           | 1.40                      | .08               |
| Air Conditioning .....                           | 773                     | 2,647                       | 18.4                  | 8.3                       | 10.7   | 16.8        | 23.9            | 201.7                           | 1.41                      | .08               |
| Water Heating .....                              | 778                     | 2,478                       | 18.1                  | 8.3                       | 9.4  | 16.0        | 23.4            | 189.3                           | 1.38                      | .08               |
| Cooking .....                                    | 348                     | 4,967                       | 17.3                  | 7.5                       | 9.1  | 14.6        | 19.8            | 349.3                           | 1.22                      | .07               |
| Manufacturing .....                              | 157                     | 5,245                       | 20.5                  | 8.9                       | 12.3   | 15.8        | 23.0            | 372.5                           | 1.45                      | .07               |
| <b>Workers (main shift)</b>                      |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| Less than 50 .....                               | 57                      | 624                         | 15.7                  | 37.2                      | 5.2  | 13.3        | 23.0            | 50.1                            | 1.26                      | .08               |
| 50 to 99 .....                                   | 51                      | 1,051                       | 23.8                  | 14.1                      | 9.5  | 16.2        | 24.3            | 80.9                            | 1.83                      | .08               |
| 100 to 499 .....                                 | 261                     | 1,950                       | 18.6                  | 9.8                       | 11.1   | 16.9        | 23.4            | 148.5                           | 1.42                      | .08               |
| 500 or More .....                                | 434                     | 8,676                       | 17.7                  | 6.6                       | 10.4   | 15.8        | 20.7            | 671.1                           | 1.37                      | .08               |
| <b>Weekly Operating Hours</b>                    |                         |                             |                       |                           |  |             |                 |                                 |                           |                   |
| 48 or Fewer .....                                | 74                      | 927                         | 15.4                  | 9.8                       | 7.8  | 14.8        | 24.4            | 66.5                            | 1.10                      | .07               |
| 49 to 60 .....                                   | 179                     | 2,760                       | 13.4                  | 5.6                       | 7.7  | 13.0        | 18.7            | 246.0                           | 1.19                      | .09               |
| 61 to 167 .....                                  | 102                     | 1,504                       | 17.9                  | 9.6                       | 9.3  | 15.7        | 23.4            | 123.8                           | 1.48                      | .08               |
| Open Continuously .....                          | 448                     | 4,001                       | 22.0                  | 9.5                       | 12.0   | 18.5        | 24.3            | 288.4                           | 1.59                      | .07               |

See footnotes at end of table.

**Table 3.48. Electricity Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 9, 1993 (Continued)**

| Building Characteristics                           | Electricity Consumption |                             |                       |                           |  |        |                 | Electricity Expenditures        |                           |                   |
|--|-------------------------|-----------------------------|-----------------------|---------------------------|--|--------|-----------------|---------------------------------|---------------------------|-------------------|
|  | Total (million kWh)     | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | Distribution of Building-Level Intensities (kWh/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) |
|  |                         |                             |                       |                           | 25th Percentile  | Median | 75th Percentile |                                 |                           |                   |
| <b>Multibuilding Facility</b>                      |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Yes .....  | 486                     | 2,440                       | 18.1                  | 8.6                       | 9.7  | 15.9   | 22.9            | 179.2                           | 1.33                      | .07               |
| No .....   | 318                     | 2,527                       | 18.2                  | 7.8                       | 9.1  | 16.0   | 24.2            | 209.2                           | 1.51                      | .08               |
| <b>Space-Heating Energy Source</b>                 |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 212                     | 2,824                       | 22.5                  | 10.6                      | 9.6  | 16.6   | 24.1            | 232.6                           | 1.85                      | .08               |
| Electricity Main .....                             | 141                     | 3,208                       | 32.6                  | 14.9                      | 10.3   | 19.7   | 25.1            | 246.2                           | 2.50                      | .08               |
| Electricity Secondary .....                        | 71                      | 2,279                       | 13.8                  | 6.7                       | 7.5  | 13.8   | 20.1            | 213.3                           | 1.30                      | .09               |
| Other Excluding Electricity .....                  | 540                     | 2,368                       | 16.6                  | 7.9                       | 9.4  | 16.0   | 23.0            | 181.2                           | 1.27                      | .08               |
| Building Not Heated .....                          | 52                      | 2,373                       | 21.8                  | 5.9                       | 8.3  | 12.7   | 19.5            | 148.3                           | 1.36                      | .06               |
| <b>Cooling Energy Source</b>                       |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 683                     | 2,578                       | 18.7                  | 8.2                       | 10.6   | 16.5   | 23.6            | 199.0                           | 1.44                      | .08               |
| Other Excluding Electricity .....                  | 90                      | 3,333                       | 16.8                  | 8.5                       | 12.3   | 20.3   | 25.0            | 227.7                           | 1.15                      | .07               |
| A/C Not Performed .....                            | 31                      | 937                         | 12.9                  | 7.9                       | 2.0  | 9.0    | 10.2            | 95.1                            | 1.31                      | .10               |
| <b>Water-Heating Energy Source</b>                 |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 189                     | 2,911                       | 26.2                  | 10.3                      | 8.0  | 13.1   | 21.1            | 214.5                           | 1.93                      | .07               |
| Other Excluding Electricity .....                  | 589                     | 2,365                       | 16.5                  | 7.8                       | 10.1   | 16.5   | 23.8            | 182.7                           | 1.27                      | .08               |
| Water Heating Not Performed .....                  | 26                      | 2,345                       | 19.4                  | 7.6                       | 9.7  | 10.6   | 20.8            | 235.3                           | 1.94                      | .10               |
| <b>Cooking Energy Source</b>                       |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 239                     | 5,569                       | 17.6                  | 8.0                       | 10.1   | 15.3   | 19.5            | 390.2                           | 1.23                      | .07               |
| Other Excluding Electricity .....                  | 108                     | 4,008                       | 16.8                  | 6.5                       | 7.6  | 12.3   | 21.5            | 284.1                           | 1.19                      | .07               |
| Cooking Not Performed .....                        | 456                     | 1,789                       | 18.8                  | 8.9                       | 9.6  | 16.6   | 23.9            | 147.4                           | 1.55                      | .08               |
| <b>Manufacturing Energy Source</b>                 |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Electricity .....                                  | 136                     | 5,433                       | 21.9                  | 9.5                       | 12.7   | 18.0   | 23.0            | 386.8                           | 1.56                      | .07               |
| Other Excluding Electricity .....                  | 22                      | 4,307                       | 14.5                  | 6.2                       | 12.3   | 15.6   | 16.0            | 301.0                           | 1.01                      | .07               |
| Manufacturing Not Performed .....                  | 647                     | 2,192                       | 17.7                  | 8.1                       | 9.2  | 15.9   | 23.2            | 172.4                           | 1.39                      | .08               |
| <b>Percent of Floorspace Heated</b>                |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Not Heated .....                                   | 52                      | 2,373                       | 21.8                  | 5.9                       | 8.3  | 12.7   | 19.5            | 148.3                           | 1.36                      | .06               |
| 1 to 50 .....                                      | 109                     | 3,879                       | 29.0                  | 20.9                      | 3.8  | 19.8   | 25.6            | 295.1                           | 2.20                      | .08               |
| 51 to 100 .....                                    | 643                     | 2,339                       | 16.9                  | 7.7                       | 9.6  | 15.9   | 22.9            | 183.6                           | 1.32                      | .08               |
| <b>Percent of Floorspace Cooled</b>                |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Not Cooled .....                                   | 40                      | 1,032                       | 13.7                  | 9.7                       | 2.0  | 9.0    | 13.5            | 96.2                            | 1.28                      | .09               |
| 1 to 50 .....                                      | 136                     | 2,464                       | 18.6                  | 9.4                       | 10.2   | 15.3   | 19.2            | 168.2                           | 1.27                      | .07               |
| 51 to 100 .....                                    | 628                     | 2,719                       | 18.4                  | 8.0                       | 11.1   | 17.6   | 24.3            | 212.2                           | 1.44                      | .08               |
| <b>Percent Lit When Open</b>                       |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| 1 to 50 .....                                      | 21                      | 1,072                       | 11.6                  | 11.7                      | 1.1  | 11.2   | 17.2            | 78.0                            | .84                       | .07               |
| 51 to 100 .....                                    | 782                     | 2,579                       | 18.5                  | 8.2                       | 9.8  | 16.2   | 23.4            | 199.3                           | 1.43                      | .08               |
| No Operating Hours .....                           | (*)                     | 3                           | .1                    | NC                        | .1   | .1     | .1              | .1                              | (*)                       | .03               |
| Don't Know .....                                   | 1                       | 982                         | 15.3                  | 31.7                      | 15.3   | 15.3   | 15.3            | 83.7                            | 1.30                      | .09               |
| <b>Percent Lit When Closed</b>                     |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Not Lit .....                                      | 33                      | 935                         | 19.7                  | 15.8                      | 6.6  | 13.4   | 24.3            | 72.3                            | 1.52                      | .08               |
| 1 to 50 .....                                      | 374                     | 1,834                       | 14.8                  | 6.9                       | 9.2  | 15.2   | 20.9            | 149.7                           | 1.21                      | .08               |
| 51 to 100 .....                                    | 160                     | 3,645                       | 19.8                  | 9.0                       | 12.6   | 21.6   | 41.6            | 275.3                           | 1.49                      | .08               |
| No Off Hours .....                                 | 236                     | 5,751                       | 25.7                  | 10.2                      | 10.6   | 17.3   | 22.1            | 408.8                           | 1.82                      | .07               |
| Don't Know .....                                   | 1                       | 982                         | 15.3                  | 31.7                      | 15.3   | 15.3   | 15.3            | 83.7                            | 1.30                      | .09               |
| <b>Heating Equipment (more than one may apply)</b> |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Heat Pumps .....                                   | 68                      | 1,705                       | 22.1                  | 9.4                       | 11.4   | 19.4   | 24.1            | 134.2                           | 1.74                      | .08               |
| Furnaces .....                                     | 16                      | 624                         | 13.0                  | 5.6                       | 8.2  | 12.7   | 17.8            | 51.8                            | 1.07                      | .08               |
| Individual Space Heaters .....                     | 82                      | 2,480                       | 16.6                  | 7.5                       | 9.1  | 13.0   | 19.8            | 203.5                           | 1.36                      | .08               |
| District Heat .....                                | 237                     | 3,380                       | 18.6                  | 9.8                       | 12.0   | 16.3   | 20.3            | 227.5                           | 1.25                      | .07               |
| Boilers .....                                      | 421                     | 2,884                       | 17.5                  | 7.8                       | 10.1   | 17.5   | 24.4            | 232.8                           | 1.42                      | .08               |
| Packaged-Heating Units .....                       | 102                     | 1,528                       | 17.1                  | 7.6                       | 9.5  | 15.3   | 24.4            | 108.5                           | 1.21                      | .07               |

See footnotes at end of table.

**Table 3.48. Electricity Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 9, 1993 (Continued)**

| Building Characteristics   | Electricity Consumption |                             |                       |                           |  |        |                 | Electricity Expenditures        |                           |                   |
|--|-------------------------|-----------------------------|-----------------------|---------------------------|--|--------|-----------------|---------------------------------|---------------------------|-------------------|
|  | Total (million kWh)     | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | Distribution of Building-Level Intensities (kWh/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) |
|  |                         |                             |                       |                           | 25th Percentile  | Median | 75th Percentile |                                 |                           |                   |
| <b>Cooling Equipment (more than one may apply)</b>   |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Residential-Type Central A/C .....   | 34                      | 1,404                       | 17.7                  | 6.9                       | 9.1  | 14.3   | 20.6            | 104.4                           | 1.32                      | 0.07              |
| Heat Pumps .....   | 63                      | 1,958                       | 23.0                  | 11.1                      | 12.9   | 20.5   | 30.2            | 156.5                           | 1.84                      | .08               |
| Individual A/C .....   | 100                     | 1,932                       | 17.6                  | 8.4                       | 10.1   | 17.0   | 19.7            | 153.7                           | 1.40                      | .08               |
| District Chilled Water .....   | 170                     | 5,484                       | 22.2                  | 11.6                      | 15.3   | 19.5   | 22.5            | 332.5                           | 1.35                      | .06               |
| Central Chillers .....   | 499                     | 3,589                       | 18.0                  | 7.4                       | 11.5   | 17.8   | 24.4            | 278.4                           | 1.40                      | .08               |
| Packaged-A/C Units .....   | 416                     | 2,756                       | 17.3                  | 6.9                       | 11.4   | 17.0   | 24.4            | 214.3                           | 1.35                      | .08               |
| Swamp Coolers .....  | 43                      | 1,430                       | 13.6                  | 5.0                       | 6.6  | 11.4   | 18.7            | 111.0                           | 1.05                      | .08               |
| <b>Lighting Equipment (more than one may apply)</b>  |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Incandescent .....   | 354                     | 2,201                       | 17.3                  | 8.4                       | 9.0  | 16.9   | 24.4            | 170.1                           | 1.34                      | .08               |
| Standard Fluorescent .....   | 763                     | 2,478                       | 17.8                  | 8.0                       | 9.4  | 15.9   | 22.9            | 187.1                           | 1.35                      | .08               |
| Compact Fluorescent .....  | 296                     | 4,118                       | 17.1                  | 8.1                       | 9.4  | 17.5   | 23.9            | 344.1                           | 1.43                      | .08               |
| High-Intensity Discharge .....   | 329                     | 4,390                       | 17.6                  | 7.6                       | 8.5  | 14.4   | 21.5            | 312.0                           | 1.25                      | .07               |
| Electronic Ballast .....   | 392                     | 3,736                       | 16.8                  | 7.2                       | 10.6   | 16.2   | 23.4            | 291.0                           | 1.31                      | .08               |
| <b>Water-Heating Equipment (more than one may apply)</b>                                     |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Centralized System .....   | 507                     | 2,262                       | 16.3                  | 7.6                       | 9.1  | 15.9   | 22.8            | 178.1                           | 1.28                      | .08               |
| Distributed System .....   | 240                     | 2,994                       | 22.3                  | 9.7                       | 9.9  | 15.2   | 24.4            | 217.4                           | 1.62                      | .07               |
| Don't Know/<br>Not Ascertained .....   | 32                      | 3,182                       | 27.3                  | 11.2                      | 16.6   | 22.2   | 32.3            | 216.0                           | 1.85                      | .07               |
| <b>Commercial Refrigeration Equipment (more than one may apply)</b>                          |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Any Equipment .....  | 346                     | 5,494                       | 18.4                  | 7.9                       | 10.5   | 16.2   | 21.8            | 381.7                           | 1.28                      | .07               |
| Walk-in Units .....  | 233                     | 5,289                       | 18.6                  | 8.2                       | 12.4   | 17.2   | 24.2            | 367.5                           | 1.29                      | .07               |
| Cases and Cabinets .....   | 248                     | 4,967                       | 16.6                  | 7.1                       | 12.0   | 16.2   | 22.0            | 385.0                           | 1.29                      | .08               |
| None .....   | 458                     | 1,747                       | 17.9                  | 8.5                       | 9.2  | 15.9   | 23.4            | 145.0                           | 1.49                      | .08               |
| <b>Retrofit or Purchase of any Equipment Within Last Ten Years (more than one may apply)</b> |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Retrofit and/or Purchase .....   | 611                     | 2,881                       | 17.7                  | 7.6                       | 9.9  | 16.1   | 22.4            | 229.7                           | 1.41                      | .08               |
| Retrofit .....   | 346                     | 3,356                       | 15.3                  | 6.3                       | 9.7  | 14.4   | 20.9            | 267.9                           | 1.22                      | .08               |
| Purchase .....   | 415                     | 2,824                       | 21.2                  | 9.3                       | 11.4   | 16.5   | 23.4            | 224.1                           | 1.68                      | .08               |
| No Retrofit or Purchase .....  | 193                     | 1,710                       | 19.8                  | 11.1                      | 8.3  | 15.9   | 24.4            | 117.9                           | 1.36                      | .07               |
| <b>HVAC Conservation Features (more than one may apply)</b>                                  |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| VAV System .....   | 292                     | 3,900                       | 18.8                  | 8.6                       | 12.6   | 17.3   | 24.4            | 296.9                           | 1.43                      | .08               |
| Economizer Cycle .....   | 431                     | 3,078                       | 16.3                  | 7.2                       | 10.4   | 16.1   | 23.9            | 241.0                           | 1.28                      | .08               |
| HVAC Maintenance .....   | 787                     | 2,581                       | 18.3                  | 8.2                       | 9.7  | 16.3   | 23.4            | 198.9                           | 1.41                      | .08               |
| <b>Lighting Conservation Features (more than one may apply)</b>                              |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Specular Reflectors .....  | 332                     | 2,697                       | 15.2                  | 6.6                       | 10.6   | 16.2   | 23.0            | 210.3                           | 1.19                      | .08               |
| Natural Lighting Control<br>Sensors .....  | 186                     | 3,213                       | 13.5                  | 5.4                       | 9.8  | 15.6   | 19.8            | 268.1                           | 1.13                      | .08               |
| Occupancy Sensors .....  | 446                     | 4,092                       | 17.7                  | 7.6                       | 11.1   | 17.8   | 24.0            | 316.8                           | 1.37                      | .08               |
| Time Clock .....   | 141                     | 3,433                       | 13.4                  | 5.8                       | 8.6  | 14.4   | 17.8            | 261.0                           | 1.02                      | .08               |
| Manual Dimmer Switches .....   | 269                     | 3,443                       | 18.6                  | 8.7                       | 12.0   | 18.1   | 25.0            | 264.1                           | 1.43                      | .08               |

See footnotes at end of table.

**Table 3.48. Electricity Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 9, 1993 (Continued)**

| Building Characteristics  | Electricity Consumption |                             |                       |                           |  |        |                 | Electricity Expenditures        |                           |                   |
|---|-------------------------|-----------------------------|-----------------------|---------------------------|--|--------|-----------------|---------------------------------|---------------------------|-------------------|
|   | Total (million kWh)     | per Building (thousand kWh) | per Square Foot (kWh) | per Worker (thousand kWh) | Distribution of Building-Level Intensities (kWh/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per kWh (dollars) |
|   |                         |                             |                       |                           | 25th Percentile  | Median | 75th Percentile |                                 |                           |                   |
| <b>Energy Management Practices (more than one may apply)</b>      |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Energy Management and Control System .....                        | 372                     | 5,232                       | 20.4                  | 8.9                       | 12.6   | 19.6   | 29.9            | 359.1                           | 1.40                      | 0.07              |
| Energy Conservation Programs <sup>1</sup> .....                   | 448                     | 3,643                       | 18.2                  | 8.1                       | 10.4   | 16.2   | 23.9            | 272.1                           | 1.36                      | .07               |
| Energy Audit .....  | 328                     | 3,345                       | 18.8                  | 8.6                       | 9.8  | 15.6   | 25.0            | 249.0                           | 1.40                      | .07               |
| HVAC Maintenance Staff <sup>2</sup> .....                         | 244                     | 4,685                       | 16.7                  | 6.9                       | 9.8  | 17.7   | 23.3            | 348.6                           | 1.24                      | .07               |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b> |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Heating .....   | 270                     | 1,785                       | 13.7                  | 6.5                       | 8.2  | 13.8   | 20.9            | 148.3                           | 1.14                      | .08               |
| Cooling .....   | 262                     | 1,668                       | 13.6                  | 6.3                       | 8.3  | 14.4   | 20.8            | 137.6                           | 1.12                      | .08               |
| Hot Water .....   | 174                     | 2,564                       | 12.8                  | 5.6                       | 7.4  | 13.3   | 24.1            | 223.9                           | 1.12                      | .09               |
| Lighting .....  | 293                     | 1,706                       | 13.9                  | 6.5                       | 8.2  | 14.4   | 22.5            | 141.8                           | 1.15                      | .08               |
| <b>Building Generates Electricity</b>                             |                         |                             |                       |                           |  |        |                 |                                 |                           |                   |
| Yes .....   | 351                     | 6,745                       | 24.6                  | 12.7                      | 13.4   | 20.4   | 39.8            | 511.7                           | 1.86                      | .08               |
| No .....  | 453                     | 1,660                       | 15.1                  | 6.5                       | 9.0  | 15.3   | 22.1            | 129.7                           | 1.18                      | .08               |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

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

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • KWH = Kilowatthour. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.49. Natural Gas Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 3, 1993**

| Building Characteristics                         | Natural Gas Consumption    |                                    |                              |                                  |   |             |                 | Natural Gas Expenditures        |                           |                                   |
|--|----------------------------|------------------------------------|------------------------------|----------------------------------|---|-------------|-----------------|---------------------------------|---------------------------|-----------------------------------|
|  | Total (million cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | Distribution of Building-Level Intensities (cubic feet/square foot) |             |                 | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) |
|  |                            |                                    |                              |                                  | 25th Percentile   | Median      | 75th Percentile |                                 |                           |                                   |
| <b>All Buildings</b>                             | <b>1,906</b>               | <b>13,709</b>                      | <b>32.5</b>                  | <b>8.2</b>                       | <b>4.5</b>  | <b>23.0</b> | <b>65.5</b>     | <b>60.7</b>                     | <b>0.14</b>               | <b>4.43</b>                       |
| <b>Building Floorspace (square feet)</b>         |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| 10,000 to 50,000                                 | 61                         | 1,635                              | 59.1                         | 24.6                             | 25.3  | 54.7        | 100.6           | 8.9                             | .32                       | 5.45                              |
| 50,001 to 200,000                                | 295                        | 6,403                              | 54.7                         | 22.1                             | 13.3  | 31.7        | 88.0            | 28.2                            | .24                       | 4.40                              |
| Over 200,000                                     | 1,550                      | 27,687                             | 29.7                         | 7.2                              | .5  | 5.8         | 31.4            | 121.7                           | .13                       | 4.40                              |
| <b>Principal Building Activity</b>               |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Education  | 6                          | 1,894                              | 26.9                         | 10.1                             | 10.4  | 13.7        | 159.5           | 10.0                            | .14                       | 5.27                              |
| Health Care                                      | 580                        | 23,192                             | 49.6                         | 29.2                             | 7.0   | 103.8       | 134.9           | 91.6                            | .20                       | 3.95                              |
| Laboratory                                       | 56                         | 6,960                              | 24.2                         | 11.5                             | 3.1   | 27.4        | 87.3            | 39.4                            | .14                       | 5.66                              |
| Lodging  | 34                         | 3,730                              | 16.5                         | 34.7                             | 20.6  | 48.6        | 71.0            | 19.6                            | .09                       | 5.26                              |
| Mercantile and Service                           | 615                        | 22,767                             | 99.9                         | 12.6                             | 3.9   | 18.0        | 36.0            | 114.6                           | .50                       | 5.03                              |
| Office   | 579                        | 10,339                             | 18.0                         | 4.0                              | 1.1   | 16.0        | 41.3            | 41.9                            | .07                       | 4.06                              |
| All Others                                       | 37                         | 3,374                              | 9.2                          | 2.8                              | 6.3   | 41.4        | 100.6           | 17.3                            | .05                       | 5.14                              |
| <b>Year Constructed</b>                          |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| 1959 or Before                                   | 919                        | 14,580                             | 37.4                         | 6.2                              | 4.1   | 40.3        | 103.8           | 60.8                            | .16                       | 4.17                              |
| 1960 to 1969                                     | 157                        | 6,533                              | 12.1                         | 5.1                              | 2.3   | 14.2        | 38.4            | 27.3                            | .05                       | 4.17                              |
| 1970 to 1979                                     | 100                        | 3,865                              | 7.8                          | 3.0                              | 3.5   | 17.2        | 41.7            | 18.5                            | .04                       | 4.79                              |
| 1980 to 1989                                     | 694                        | 38,580                             | 126.0                        | 44.5                             | 4.8   | 24.1        | 53.4            | 183.0                           | .60                       | 4.74                              |
| 1990 to 1993                                     | 35                         | 4,411                              | 13.2                         | 9.1                              | 5.0   | 40.9        | 76.4            | 23.0                            | .07                       | 5.22                              |
| <b>Federal Agency</b>                            |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Department of Defense                            | 434                        | 48,224                             | 34.8                         | 10.6                             | 10.4  | 20.6        | 48.5            | 180.6                           | .13                       | 3.75                              |
| General Services Administration                  | 178                        | 4,458                              | 7.2                          | 1.6                              | .4  | 10.9        | 31.3            | 20.6                            | .03                       | 4.62                              |
| United States Postal Service                     | 629                        | 17,962                             | 87.4                         | 12.4                             | 4.5   | 19.9        | 36.0            | 90.7                            | .44                       | 5.05                              |
| Veterans Administration                          | 573                        | 18,497                             | 56.8                         | 34.6                             | 6.6   | 103.8       | 132.3           | 73.8                            | .23                       | 3.99                              |
| All Others                                       | 91                         | 3,797                              | 21.7                         | 7.7                              | 13.2  | 58.3        | 96.8            | 22.1                            | .13                       | 5.83                              |
| <b>Energy Sources (more than one may apply)</b>  |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Electricity                                      | 1,887                      | 13,671                             | 32.6                         | 8.2                              | 4.5   | 22.3        | 65.5            | 60.6                            | .14                       | 4.43                              |
| Natural Gas                                      | 1,906                      | 13,709                             | 32.5                         | 8.2                              | 4.5   | 23.0        | 65.5            | 60.7                            | .14                       | 4.43                              |
| Fuel Oil   | 955                        | 18,722                             | 27.6                         | 11.0                             | 3.9   | 20.1        | 103.8           | 73.4                            | .11                       | 3.92                              |
| District Heat                                    | 411                        | 10,548                             | 11.7                         | 2.3                              | .3  | 1.8         | 6.3             | 41.6                            | .05                       | 3.94                              |
| District Chilled Water                           | 372                        | 74,370                             | 30.0                         | 8.6                              | .3  | .5          | 53.5            | 275.1                           | .11                       | 3.70                              |
| Propane  | 3                          | 3,118                              | 6.0                          | 6.2                              | 6.0   | 6.0         | 6.0             | 3.2                             | .01                       | 1.03                              |
| Any Other  | 19                         | 4,837                              | 6.4                          | 2.5                              | 3.4   | 13.0        | 27.4            | 26.0                            | .03                       | 5.37                              |
| <b>Energy End Uses (more than one may apply)</b> |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Heating  | 1,906                      | 13,709                             | 32.5                         | 8.2                              | 4.5   | 23.0        | 65.5            | 60.7                            | .14                       | 4.43                              |
| Air Conditioning                                 | 1,884                      | 13,755                             | 32.5                         | 8.2                              | 4.5   | 21.6        | 61.9            | 60.9                            | .14                       | 4.43                              |
| Water Heating                                    | 1,901                      | 13,874                             | 32.5                         | 8.3                              | 4.5   | 21.6        | 65.5            | 61.5                            | .14                       | 4.43                              |
| Cooking  | 1,583                      | 25,531                             | 32.3                         | 7.7                              | .6  | 10.4        | 48.6            | 113.4                           | .14                       | 4.44                              |
| Manufacturing                                    | 564                        | 20,147                             | 26.6                         | 6.3                              | 3.8   | 11.5        | 26.3            | 84.9                            | .11                       | 4.21                              |
| <b>Workers (main shift)</b>                      |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Less than 50                                     | 59                         | 2,583                              | 68.1                         | 120.0                            | 20.6  | 61.9        | 103.8           | 12.5                            | .33                       | 4.85                              |
| 50 to 99   | 51                         | 3,634                              | 78.7                         | 55.8                             | 19.9  | 51.6        | 85.3            | 9.9                             | .21                       | 2.73                              |
| 100 to 499                                       | 347                        | 7,538                              | 61.1                         | 28.7                             | 9.1   | 29.5        | 99.1            | 35.5                            | .29                       | 4.71                              |
| 500 or More                                      | 1,449                      | 25,866                             | 28.1                         | 6.6                              | .5  | 5.9         | 32.8            | 114.0                           | .12                       | 4.41                              |
| <b>Weekly Operating Hours</b>                    |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| 48 or Fewer                                      | 39                         | 2,963                              | 12.9                         | 6.8                              | 6.3   | 21.6        | 99.1            | 15.8                            | .07                       | 5.33                              |
| 49 to 60   | 73                         | 2,616                              | 6.3                          | 2.1                              | 2.2   | 13.0        | 39.0            | 14.1                            | .03                       | 5.41                              |
| 61 to 167  | 127                        | 4,544                              | 17.7                         | 7.8                              | 2.3   | 20.0        | 40.1            | 14.8                            | .06                       | 3.25                              |
| Open Continuously                                | 1,667                      | 23,808                             | 45.2                         | 9.5                              | 6.3   | 38.4        | 103.8           | 106.1                           | .20                       | 4.46                              |

See footnotes at end of table.

**Table 3.49. Natural Gas Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 3, 1993 (Continued)**

| Building Characteristics   | Natural Gas Consumption             |  |  |  |   |        |                    | Natural Gas Expenditures                 |                                    |   |
|--|-------------------------------------|--|--|--|---|--------|--------------------|--|------------------------------------|---|
|  | Total<br>(million<br>cubic<br>feet) | per<br>Building<br>(thousand<br>cubic<br>feet) | per<br>Square<br>Foot<br>(cubic<br>feet) | per<br>Worker<br>(thousand<br>cubic<br>feet) | Distribution of<br>Building-Level Intensities<br>(cubic feet/square foot) |        |                    | per<br>Building<br>(thousand<br>dollars) | per<br>Square<br>Foot<br>(dollars) | per<br>Thousand<br>Cubic<br>Feet<br>(dollars) |
|  |                                     |  |  |  | 25th<br>Percentile  | Median | 75th<br>Percentile |  |                                    |   |
| <b>Multibuilding Facility</b>  |                                     |  |  |  |   |        |                    |  |                                    |   |
| Yes .....  | 761                                 | 10,431   | 31.5                                     | 9.0  | 10.4  | 41.7   | 103.8              | 46.4                                     | 0.14                               | 4.45  |
| No .....   | 1,144                               | 17,335   | 33.1                                     | 7.8  | .9  | 13.0   | 36.0               | 76.6                                     | .15                                | 4.42  |
| <b>Space-Heating Energy Source</b>   |                                     |  |  |  |   |        |                    |  |                                    |   |
| Natural Gas .....  | 1,480                               | 15,421   | 66.9                                     | 29.6   | 15.5  | 40.8   | 103.1              | 70.4                                     | .31                                | 4.57  |
| Natural Gas Main .....   | 1,456                               | 16,172   | 72.4                                     | 32.5   | 16.9  | 41.0   | 103.8              | 73.7                                     | .33                                | 4.56  |
| Natural Gas Secondary .....  | 25                                  | 4,154  | 12.3                                     | 4.7  | 6.3   | 23.8   | 41.7               | 21.0                                     | .06                                | 5.05  |
| Other Excluding Natural Gas .....  | 425                                 | 9,887  | 11.6                                     | 2.3  | .3  | 1.8    | 7.1                | 39.1                                     | .05                                | 3.96  |
| Building Not Heated .....  | NC                                  | NC   | NC                                       | NC   | NC  | NC     | NC                 | NC                                       | NC                                 | NC  |
| <b>Cooling Energy Source</b>   |                                     |  |  |  |   |        |                    |  |                                    |   |
| Natural Gas .....  | 1                                   | 563  | 25.3                                     | 6.3  | 25.3  | 25.3   | 25.3               | 4.4                                      | .20                                | 7.76  |
| Other Excluding Natural Gas .....  | 1,884                               | 13,852   | 32.5                                     | 8.2  | 4.2   | 21.3   | 64.6               | 61.3                                     | .14                                | 4.43  |
| A/C Not Performed .....  | 21                                  | 10,538   | 28.2                                     | 11.7   | 26.4  | 48.7   | 71.0               | 48.6                                     | .13                                | 4.61  |
| <b>Water-Heating Energy Source</b>   |                                     |  |  |  |   |        |                    |  |                                    |   |
| Natural Gas .....  | 1,428                               | 18,310   | 78.9                                     | 29.2   | 20.0  | 44.1   | 103.8              | 82.7                                     | .36                                | 4.51  |
| Other Excluding Natural Gas .....  | 472                                 | 8,008  | 11.7                                     | 2.6  | .5  | 5.3    | 19.2               | 33.4                                     | .05                                | 4.17  |
| Water Heating Not Performed .....  | 5                                   | 2,434  | 42.9                                     | 3.7  | 40.3  | 51.1   | 61.9               | 12.2                                     | .21                                | 5.01  |
| <b>Cooking Energy Source</b>   |                                     |  |  |  |   |        |                    |  |                                    |   |
| Natural Gas .....  | 1,393                               | 30,286   | 35.6                                     | 7.7  | .6  | 6.8    | 53.5               | 138.2                                    | .16                                | 4.56  |
| Other Excluding Natural Gas .....  | 190                                 | 11,860   | 19.0                                     | 7.4  | .5  | 22.3   | 46.4               | 42.0                                     | .07                                | 3.54  |
| Cooking Not Performed .....  | 323                                 | 4,190  | 33.6                                     | 12.7   | 10.4  | 35.1   | 81.2               | 18.4                                     | .15                                | 4.38  |
| <b>Manufacturing Energy Source</b>   |                                     |  |  |  |   |        |                    |  |                                    |   |
| Natural Gas .....  | 47                                  | 9,346  | 8.8                                      | 3.6  | 3.8   | 12.7   | 12.8               | 51.6                                     | .05                                | 5.52  |
| Other Excluding Natural Gas .....  | 517                                 | 22,495   | 32.5                                     | 6.8  | 3.9   | 10.3   | 26.4               | 92.1                                     | .13                                | 4.09  |
| Manufacturing Not Performed .....  | 1,341                               | 12,085   | 35.8                                     | 9.4  | 4.8   | 33.0   | 81.2               | 54.7                                     | .16                                | 4.52  |
| <b>Percent of Floorspace Heated</b>  |                                     |  |  |  |   |        |                    |  |                                    |   |
| Not Heated .....   | NC                                  | NC   | NC                                       | NC   | NC  | NC     | NC                 | NC                                       | NC                                 | NC  |
| 1 to 50 .....  | 16                                  | 3,292  | 3.7                                      | 2.5  | .5  | 31.4   | 41.4               | 16.4                                     | .02                                | 4.98  |
| 51 to 100 .....  | 1,889                               | 14,098   | 34.8                                     | 8.4  | 4.5   | 22.3   | 65.5               | 62.4                                     | .15                                | 4.43  |
| <b>Heating Equipment (more than one may apply)</b>   |                                     |  |  |  |   |        |                    |  |                                    |   |
| Heat Pumps .....   | 33                                  | 2,722  | 6.1                                      | 2.2  | 1.6   | 17.8   | 46.8               | 14.6                                     | .03                                | 5.36  |
| Furnaces .....   | 33                                  | 4,681  | 92.7                                     | 56.0   | 16.8  | 39.7   | 100.6              | 6.6                                      | .13                                | 1.41  |
| Individual Space Heaters .....   | 1,127                               | 32,207   | 54.0                                     | 18.1   | 3.9   | 26.4   | 88.0               | 145.2                                    | .24                                | 4.51  |
| District Heat .....  | 725                                 | 12,952   | 18.5                                     | 4.0  | .7  | 6.8    | 86.3               | 52.3                                     | .07                                | 4.04  |
| Boilers .....  | 1,076                               | 15,587   | 60.0                                     | 24.0   | 12.7  | 26.4   | 57.9               | 73.7                                     | .28                                | 4.73  |
| Packaged-Heating Units .....   | 638                                 | 39,857   | 158.8                                    | 50.0   | 2.5   | 19.9   | 78.1               | 205.3                                    | .82                                | 5.15  |
| <b>Retrofit or Purchase of any Equipment Within Last Ten Years (more than one may apply)</b> |                                     |  |  |  |   |        |                    |  |                                    |   |
| Retrofit and/or Purchase .....   | 1,784                               | 16,076   | 34.4                                     | 8.3  | 3.5   | 20.1   | 61.9               | 70.8                                     | .15                                | 4.40  |
| Retrofit .....   | 695                                 | 15,794   | 27.1                                     | 9.0  | 2.2   | 13.5   | 42.0               | 65.6                                     | .11                                | 4.15  |
| Purchase .....   | 1,667                               | 18,732   | 40.8                                     | 9.1  | 4.8   | 26.0   | 77.3               | 82.4                                     | .18                                | 4.40  |
| No Retrofit or Purchase .....  | 121                                 | 4,327  | 17.8                                     | 7.8  | 11.0  | 35.6   | 95.0               | 21.1                                     | .09                                | 4.87  |
| <b>HVAC Conservation Features (more than one may apply)</b>                                  |                                     |  |  |  |   |        |                    |  |                                    |   |
| VAV System .....   | 1,094                               | 22,331   | 48.0                                     | 10.7   | 3.2   | 12.7   | 42.0               | 105.8                                    | .23                                | 4.74  |
| Economizer Cycle .....   | 1,531                               | 19,634   | 38.3                                     | 8.2  | 3.4   | 14.2   | 47.0               | 88.1                                     | .17                                | 4.49  |
| HVAC Maintenance .....   | 1,888                               | 13,988   | 32.3                                     | 8.2  | 4.5   | 23.0   | 61.9               | 62.0                                     | .14                                | 4.43  |

See footnotes at end of table.

**Table 3.49. Natural Gas Consumption and Expenditure Intensities in FBSS Buildings in Federal Region 3, 1993 (Continued)**

| Building Characteristics  | Natural Gas Consumption    |                                    |                              |                                  |   |        |                 | Natural Gas Expenditures        |                           |                                   |
|---|----------------------------|------------------------------------|------------------------------|----------------------------------|---|--------|-----------------|---------------------------------|---------------------------|-----------------------------------|
|   | Total (million cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | Distribution of Building-Level Intensities (cubic feet/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) |
|   |                            |                                    |                              |                                  | 25th Percentile   | Median | 75th Percentile |                                 |                           |                                   |
| <b>Energy Management Practices (more than one may apply)</b>      |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Energy Management and Control System .....                        | 1,638                      | 24,081                             | 36.5                         | 8.5                              | 3.2   | 18.6   | 89.6            | 107.6                           | 0.16                      | 4.47                              |
| Energy Conservation Programs <sup>1</sup> .....                   | 1,331                      | 27,171                             | 34.9                         | 8.4                              | 1.2   | 13.7   | 41.7            | 122.3                           | .16                       | 4.50                              |
| Energy Audit .....  | 566                        | 14,152                             | 27.5                         | 9.7                              | 5.8   | 34.0   | 66.9            | 58.4                            | .11                       | 4.13                              |
| HVAC Maintenance Staff <sup>2</sup> .....                         | 900                        | 17,312                             | 27.8                         | 5.5                              | 1.9   | 13.0   | 47.7            | 70.2                            | .11                       | 4.06                              |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b> |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Heating .....   | 192                        | 3,496                              | 9.2                          | 3.6                              | 1.8   | 13.3   | 41.7            | 16.3                            | .04                       | 4.66                              |
| Cooling .....   | 191                        | 3,480                              | 9.3                          | 3.6                              | 1.8   | 16.9   | 41.7            | 16.2                            | .04                       | 4.66                              |
| Hot Water .....   | 111                        | 3,181                              | 8.0                          | 3.0                              | 1.1   | 7.1    | 26.4            | 14.5                            | .04                       | 4.55                              |
| Lighting .....  | 223                        | 3,772                              | 10.6                         | 4.2                              | 1.7   | 18.0   | 40.2            | 15.6                            | .04                       | 4.13                              |
| <b>Natural Gas Transported for the Account of Others</b>          |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Used in Building .....  | 138                        | 12,502                             | 32.2                         | 20.9                             | 4.5   | 19.9   | 81.2            | 47.7                            | .12                       | 3.82                              |
| Not Used in Building .....  | 1,748                      | 14,095                             | 33.2                         | 8.0                              | 4.0   | 25.7   | 67.8            | 63.0                            | .15                       | 4.47                              |
| Don't Know/Not Ascertained .....                                  | 20                         | 5,066                              | 11.5                         | 3.2                              | 5.1   | 9.3    | 23.9            | 26.9                            | .06                       | 5.30                              |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.



**Table 3.50. Natural Gas Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 6, 1993**

| Building Characteristics                         | Natural Gas Consumption    |                                    |                              |                                  |   |             |                 | Natural Gas Expenditures        |                           |                                   |
|--|----------------------------|------------------------------------|------------------------------|----------------------------------|---|-------------|-----------------|---------------------------------|---------------------------|-----------------------------------|
|  | Total (million cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | Distribution of Building-Level Intensities (cubic feet/square foot) |             |                 | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) |
|  |                            |                                    |                              |                                  | 25th Percentile   | Median      | 75th Percentile |                                 |                           |                                   |
| <b>All Buildings</b> .....                       | <b>970</b>                 | <b>5,775</b>                       | <b>39.1</b>                  | <b>17.2</b>                      | <b>7.8</b>  | <b>28.1</b> | <b>67.9</b>     | <b>19.6</b>                     | <b>0.13</b>               | <b>3.39</b>                       |
| <b>Building Floorspace (square feet)</b>         |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| 10,000 to 50,000 .....                           | 145                        | 1,887                              | 78.6                         | 34.0                             | 16.2  | 38.4        | 80.4            | 6.3                             | .26                       | 3.33                              |
| 50,001 to 200,000 .....                          | 343                        | 6,017                              | 56.4                         | 30.2                             | 7.6   | 28.0        | 59.4            | 19.6                            | .18                       | 3.27                              |
| Over 200,000 .....                               | 482                        | 14,172                             | 28.5                         | 11.8                             | 2.9   | 9.9         | 23.7            | 49.6                            | .10                       | 3.50                              |
| <b>Principal Building Activity</b>               |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Education .....                                  | 7                          | 1,826                              | 55.1                         | 34.9                             | 38.1  | 74.3        | 76.6            | 7.9                             | .24                       | 4.35                              |
| Health Care .....                                | 615                        | 24,619                             | 64.4                         | 35.7                             | 47.7  | 68.0        | 111.1           | 79.0                            | .21                       | 3.21                              |
| Laboratory .....                                 | 56                         | 4,014                              | 38.3                         | 38.7                             | 5.8   | 53.6        | 101.7           | 13.8                            | .13                       | 3.44                              |
| Lodging .....                                    | 32                         | 2,928                              | 48.4                         | 86.8                             | 19.0  | 54.7        | 105.4           | 8.4                             | .14                       | 2.86                              |
| Mercantile and Service .....                     | 28                         | 727                                | 6.6                          | 2.2                              | 2.2   | 8.4         | 27.1            | 3.6                             | .03                       | 4.96                              |
| Office .....                                     | 154                        | 2,851                              | 20.3                         | 7.1                              | 7.6   | 20.8        | 39.8            | 10.9                            | .08                       | 3.81                              |
| All Others .....                                 | 77                         | 3,649                              | 67.4                         | 34.7                             | 14.2  | 42.9        | 96.4            | 12.8                            | .24                       | 3.50                              |
| <b>Year Constructed</b>                          |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| 1959 or Before .....                             | 437                        | 6,937                              | 51.9                         | 26.8                             | 11.8  | 37.2        | 74.5            | 21.6                            | .16                       | 3.11                              |
| 1960 to 1969 .....                               | 126                        | 4,184                              | 25.7                         | 6.7                              | 3.3   | 16.0        | 44.1            | 16.8                            | .10                       | 4.01                              |
| 1970 to 1979 .....                               | 174                        | 6,707                              | 36.0                         | 17.8                             | 8.5   | 24.1        | 65.9            | 23.9                            | .13                       | 3.56                              |
| 1980 to 1989 .....                               | 191                        | 4,670                              | 51.9                         | 23.4                             | 6.3   | 31.0        | 76.7            | 16.0                            | .18                       | 3.42                              |
| 1990 to 1993 .....                               | 42                         | 5,212                              | 14.0                         | 12.7                             | 2.8   | 15.2        | 61.0            | 18.4                            | .05                       | 3.54                              |
| <b>Federal Agency</b>                            |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Department of Defense .....                      | 143                        | 7,943                              | 100.9                        | 55.7                             | 26.0  | 68.1        | 117.8           | 26.1                            | .33                       | 3.29                              |
| General Services Administration ..               | 91                         | 3,131                              | 14.4                         | 4.8                              | 4.6   | 16.3        | 23.7            | 12.7                            | .06                       | 4.06                              |
| United States Postal Service .....               | 32                         | 660                                | 6.4                          | 2.3                              | 1.5   | 6.4         | 25.7            | 3.5                             | .03                       | 5.28                              |
| Veterans Administration .....                    | 485                        | 20,207                             | 55.6                         | 31.8                             | 38.7  | 67.3        | 101.6           | 62.7                            | .17                       | 3.10                              |
| All Others .....                                 | 219                        | 4,563                              | 64.9                         | 39.9                             | 28.5  | 60.2        | 102.2           | 16.2                            | .23                       | 3.54                              |
| <b>Energy Sources (more than one may apply)</b>  |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Electricity .....                                | 970                        | 5,775                              | 39.1                         | 17.2                             | 7.8   | 28.1        | 67.9            | 19.6                            | .13                       | 3.39                              |
| Natural Gas .....                                | 970                        | 5,775                              | 39.1                         | 17.2                             | 7.8   | 28.1        | 67.9            | 19.6                            | .13                       | 3.39                              |
| Fuel Oil .....                                   | 150                        | 12,474                             | 40.8                         | 13.0                             | 6.5   | 24.5        | 55.4            | 44.7                            | .15                       | 3.58                              |
| District Heat .....                              | 90                         | 6,020                              | 16.9                         | 9.9                              | 5.7   | 11.2        | 47.7            | 21.1                            | .06                       | 3.51                              |
| District Chilled Water .....                     | 92                         | 7,071                              | 17.7                         | 9.4                              | 5.8   | 16.3        | 44.1            | 24.5                            | .06                       | 3.46                              |
| Propane .....                                    | 28                         | 27,978                             | 207.2                        | 68.6                             | 207.2   | 207.2       | 207.2           | 96.5                            | .71                       | 3.45                              |
| Any Other .....                                  | 123                        | 30,715                             | 105.7                        | 42.7                             | 28.7  | 169.4       | 292.7           | 106.2                           | .37                       | 3.46                              |
| <b>Energy End Uses (more than one may apply)</b> |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Heating .....                                    | 970                        | 5,775                              | 39.1                         | 17.2                             | 7.8   | 28.1        | 67.9            | 19.6                            | .13                       | 3.39                              |
| Air Conditioning .....                           | 970                        | 5,775                              | 39.1                         | 17.2                             | 7.8   | 28.1        | 67.9            | 19.6                            | .13                       | 3.39                              |
| Water Heating .....                              | 969                        | 5,839                              | 39.1                         | 17.2                             | 7.6   | 28.4        | 68.0            | 19.8                            | .13                       | 3.39                              |
| Cooking .....                                    | 614                        | 12,793                             | 38.9                         | 16.2                             | 9.6   | 29.5        | 75.8            | 45.8                            | .14                       | 3.58                              |
| Manufacturing .....                              | 70                         | 3,198                              | 16.3                         | 5.2                              | 2.2   | 8.4         | 17.5            | 11.7                            | .06                       | 3.65                              |
| <b>Workers (main shift)</b>                      |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Less than 50 .....                               | 90                         | 1,962                              | 58.0                         | 94.6                             | 16.3  | 33.3        | 86.6            | 6.5                             | .19                       | 3.32                              |
| 50 to 99 .....                                   | 70                         | 2,012                              | 40.4                         | 27.4                             | 3.5   | 29.3        | 65.9            | 7.7                             | .15                       | 3.81                              |
| 100 to 499 .....                                 | 325                        | 5,799                              | 56.4                         | 29.4                             | 5.8   | 31.1        | 65.2            | 18.1                            | .18                       | 3.13                              |
| 500 or More .....                                | 485                        | 15,636                             | 30.7                         | 11.6                             | 5.4   | 12.3        | 44.1            | 55.0                            | .11                       | 3.52                              |
| <b>Weekly Operating Hours</b>                    |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| 48 or Fewer .....                                | 78                         | 2,615                              | 51.0                         | 28.7                             | 26.2  | 41.3        | 86.6            | 9.3                             | .18                       | 3.54                              |
| 49 to 60 .....                                   | 85                         | 3,259                              | 22.2                         | 9.3                              | 5.6   | 19.8        | 37.2            | 11.7                            | .08                       | 3.60                              |
| 61 to 167 .....                                  | 110                        | 2,030                              | 23.2                         | 10.0                             | 6.3   | 18.9        | 42.4            | 8.3                             | .10                       | 4.10                              |
| Open Continuously .....                          | 697                        | 12,022                             | 47.3                         | 20.8                             | 5.8   | 43.4        | 86.6            | 38.9                            | .15                       | 3.24                              |

See footnotes at end of table.

**Table 3.50. Natural Gas Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 6, 1993 (Continued)**

| Building Characteristics   | Natural Gas Consumption    |                                    |                              |                                  |   |        |                 | Natural Gas Expenditures        |                           |                                   |
|--|----------------------------|------------------------------------|------------------------------|----------------------------------|---|--------|-----------------|---------------------------------|---------------------------|-----------------------------------|
|  | Total (million cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | Distribution of Building-Level Intensities (cubic feet/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) |
|  |                            |                                    |                              |                                  | 25th Percentile   | Median | 75th Percentile |                                 |                           |                                   |
| <b>Multibuilding Facility</b>  |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Yes .....  | 655                        | 7,446                              | 42.0                         | 18.9                             | 11.4  | 51.2   | 94.0            | 23.9                            | 0.13                      | 3.21                              |
| No .....   | 315                        | 3,936                              | 34.2                         | 14.5                             | 5.4   | 18.9   | 37.0            | 14.9                            | .13                       | 3.77                              |
| <b>Space-Heating Energy Source</b>   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Natural Gas .....  | 891                        | 5,822                              | 45.0                         | 18.3                             | 8.5   | 30.1   | 72.2            | 19.7                            | .15                       | 3.38                              |
| Natural Gas Main .....   | 881                        | 6,116                              | 48.9                         | 20.0                             | 9.9   | 31.5   | 74.4            | 20.6                            | .16                       | 3.36                              |
| Natural Gas Secondary .....  | 10                         | 1,103                              | 5.6                          | 2.2                              | 1.5   | 8.6    | 10.4            | 5.2                             | .03                       | 4.71                              |
| Other Excluding Natural Gas .....  | 79                         | 5,295                              | 15.8                         | 10.1                             | 3.3   | 11.2   | 57.7            | 18.7                            | .06                       | 3.53                              |
| Building Not Heated .....  | NC                         | NC                                 | NC                           | NC                               | NC  | NC     | NC              | NC                              | NC                        | NC                                |
| <b>Cooling Energy Source</b>   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Natural Gas .....  | (*)                        | 147                                | 3.1                          | 2.0                              | 3.1   | 3.1    | 3.1             | .8                              | .02                       | 5.64                              |
| Other Excluding Natural Gas .....  | 970                        | 5,808                              | 39.1                         | 17.2                             | 8.4   | 28.2   | 68.0            | 19.7                            | .13                       | 3.39                              |
| A/C Not Performed .....  | NC                         | NC                                 | NC                           | NC                               | NC  | NC     | NC              | NC                              | NC                        | NC                                |
| <b>Water-Heating Energy Source</b>   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Natural Gas .....  | 817                        | 6,539                              | 52.2                         | 20.8                             | 12.3  | 38.4   | 76.4            | 22.0                            | .18                       | 3.37                              |
| Other Excluding Natural Gas .....  | 152                        | 3,706                              | 16.6                         | 8.9                              | 3.5   | 8.5    | 25.8            | 12.9                            | .06                       | 3.49                              |
| Water Heating Not Performed .....  | 1                          | 399                                | 20.2                         | 36.3                             | 14.2  | 20.1   | 26.0            | 3.7                             | .19                       | 9.29                              |
| <b>Cooking Energy Source</b>   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Natural Gas .....  | 538                        | 17,343                             | 48.9                         | 23.2                             | 11.2  | 47.7   | 101.4           | 60.6                            | .17                       | 3.50                              |
| Other Excluding Natural Gas .....  | 76                         | 4,496                              | 15.9                         | 5.2                              | 8.5   | 16.3   | 40.1            | 18.8                            | .07                       | 4.18                              |
| Cooking Not Performed .....  | 356                        | 2,967                              | 39.5                         | 19.2                             | 6.0   | 27.6   | 67.5            | 9.1                             | .12                       | 3.06                              |
| <b>Manufacturing Energy Source</b>   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Natural Gas .....  | 7                          | 6,927                              | 187.5                        | 164.9                            | 187.5   | 187.5  | 187.5           | 22.2                            | .60                       | 3.20                              |
| Other Excluding Natural Gas .....  | 63                         | 3,020                              | 14.8                         | 4.7                              | 2.2   | 7.5    | 16.3            | 11.2                            | .05                       | 3.70                              |
| Manufacturing Not Performed .....  | 900                        | 6,163                              | 43.9                         | 21.0                             | 9.4   | 31.2   | 71.0            | 20.8                            | .15                       | 3.37                              |
| <b>Percent of Floorspace Heated</b>  |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Not Heated .....   | NC                         | NC                                 | NC                           | NC                               | NC  | NC     | NC              | NC                              | NC                        | NC                                |
| 1 to 50 .....  | 23                         | 2,923                              | 26.0                         | 11.3                             | 4.7   | 19.8   | 84.1            | 11.8                            | .11                       | 4.04                              |
| 51 to 100 .....  | 947                        | 5,917                              | 39.6                         | 17.4                             | 8.4   | 28.4   | 67.9            | 20.0                            | .13                       | 3.37                              |
| <b>Heating Equipment (more than one may apply)</b>   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Heat Pumps .....   | 32                         | 5,290                              | 36.7                         | 10.3                             | 3.4   | 31.1   | 59.4            | 16.7                            | .12                       | 3.15                              |
| Furnaces .....   | 51                         | 3,402                              | 68.6                         | 39.3                             | 4.7   | 37.5   | 128.2           | 10.2                            | .21                       | 2.99                              |
| Individual Space Heaters .....   | 160                        | 6,650                              | 39.5                         | 11.4                             | 9.4   | 16.1   | 55.7            | 24.1                            | .14                       | 3.62                              |
| District Heat .....  | 283                        | 9,771                              | 39.9                         | 21.7                             | 15.1  | 54.7   | 74.3            | 27.2                            | .11                       | 2.79                              |
| Boilers .....  | 623                        | 6,424                              | 38.7                         | 15.8                             | 8.4   | 27.1   | 61.7            | 23.4                            | .14                       | 3.65                              |
| Packaged-Heating Units .....   | 327                        | 7,119                              | 58.1                         | 23.8                             | 6.3   | 16.8   | 71.0            | 25.4                            | .21                       | 3.57                              |
| <b>Retrofit or Purchase of any Equipment Within Last Ten Years (more than one may apply)</b> |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Retrofit and/or Purchase .....   | 805                        | 6,655                              | 37.8                         | 16.0                             | 7.5   | 25.7   | 65.8            | 22.5                            | .13                       | 3.38                              |
| Retrofit .....   | 297                        | 6,598                              | 25.9                         | 11.4                             | 12.4  | 26.0   | 72.2            | 25.1                            | .10                       | 3.81                              |
| Purchase .....   | 701                        | 6,944                              | 41.6                         | 16.0                             | 5.6   | 22.2   | 58.8            | 23.1                            | .14                       | 3.32                              |
| No Retrofit or Purchase .....  | 165                        | 3,508                              | 46.4                         | 27.0                             | 10.4  | 31.0   | 83.5            | 12.0                            | .16                       | 3.42                              |
| <b>HVAC Conservation Features (more than one may apply)</b>                                  |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| VAV System .....   | 484                        | 10,084                             | 34.5                         | 16.3                             | 5.6   | 19.6   | 69.7            | 35.4                            | .12                       | 3.52                              |
| Economizer Cycle .....   | 681                        | 7,828                              | 39.9                         | 17.1                             | 11.8  | 31.0   | 59.4            | 28.3                            | .14                       | 3.61                              |
| HVAC Maintenance .....   | 960                        | 5,963                              | 39.3                         | 17.3                             | 7.6   | 28.2   | 71.0            | 20.2                            | .13                       | 3.38                              |

See footnotes at end of table.

**Table 3.50. Natural Gas Consumption and Expenditure Intensities in FBSS Buildings in Federal Region 6, 1993 (Continued)**

| Building Characteristics  | Natural Gas Consumption    |                                    |                              |                                  |   |        |                 | Natural Gas Expenditures        |                           |                                   |
|---|----------------------------|------------------------------------|------------------------------|----------------------------------|---|--------|-----------------|---------------------------------|---------------------------|-----------------------------------|
|   | Total (million cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | Distribution of Building-Level Intensities (cubic feet/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) |
|   |                            |                                    |                              |                                  | 25th Percentile   | Median | 75th Percentile |                                 |                           |                                   |
| <b>Energy Management Practices (more than one may apply)</b>      |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Energy Management and Control System .....                        | 686                        | 10,549                             | 39.9                         | 18.8                             | 4.6   | 19.0   | 65.8            | 34.7                            | 0.13                      | 3.29                              |
| Energy Conservation Programs <sup>1</sup> .....                   | 388                        | 11,405                             | 34.4                         | 13.4                             | 8.4   | 22.5   | 57.7            | 37.4                            | .11                       | 3.28                              |
| Energy Audit .....  | 272                        | 4,945                              | 25.5                         | 8.9                              | 5.7   | 15.6   | 49.9            | 18.6                            | .10                       | 3.77                              |
| HVAC Maintenance Staff <sup>2</sup> .....                         | 340                        | 7,552                              | 28.5                         | 13.7                             | 3.5   | 11.8   | 31.8            | 27.2                            | .10                       | 3.60                              |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b> |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Heating .....   | 191                        | 2,171                              | 22.4                         | 9.1                              | 5.9   | 19.5   | 38.3            | 8.3                             | .09                       | 3.81                              |
| Cooling .....   | 191                        | 2,194                              | 22.4                         | 9.1                              | 5.7   | 19.8   | 38.4            | 8.4                             | .09                       | 3.81                              |
| Hot Water .....   | 39                         | 1,768                              | 13.4                         | 6.2                              | 8.4   | 18.2   | 31.0            | 7.9                             | .06                       | 4.45                              |
| Lighting .....  | 220                        | 2,591                              | 25.8                         | 10.4                             | 5.7   | 18.5   | 40.1            | 9.5                             | .09                       | 3.67                              |
| <b>Natural Gas Transported for the Account of Others</b>          |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Used in Building .....  | 66                         | 13,266                             | 105.1                        | 29.7                             | 57.7  | 157.4  | 187.5           | 40.2                            | .32                       | 3.03                              |
| Not Used in Building .....  | 826                        | 5,901                              | 37.2                         | 15.9                             | 5.9   | 25.8   | 59.3            | 20.1                            | .13                       | 3.41                              |
| Don't Know/Not Ascertained .....                                  | 78                         | 3,377                              | 38.9                         | 34.9                             | 10.8  | 52.6   | 101.7           | 11.9                            | .14                       | 3.52                              |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

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

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.51. Natural Gas Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 9, 1993**

| Building Characteristics                         | Natural Gas Consumption    |                                    |                              |                                  |   |             |                 | Natural Gas Expenditures        |                           |                                   |
|--|----------------------------|------------------------------------|------------------------------|----------------------------------|---|-------------|-----------------|---------------------------------|---------------------------|-----------------------------------|
|  | Total (million cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | Distribution of Building-Level Intensities (cubic feet/square foot) |             |                 | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) |
|  |                            |                                    |                              |                                  | 25th Percentile   | Median      | 75th Percentile |                                 |                           |                                   |
| <b>All Buildings</b> .....                       | <b>1,047</b>               | <b>4,655</b>                       | <b>30.2</b>                  | <b>14.0</b>                      | <b>11.4</b>   | <b>26.6</b> | <b>57.2</b>     | <b>20.6</b>                     | <b>0.13</b>               | <b>4.42</b>                       |
| <b>Building Floorspace (square feet)</b>         |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| 10,000 to 50,000 .....                           | 109                        | 1,177                              | 47.5                         | 18.4                             | 12.5  | 31.6        | 82.9            | 5.9                             | .24                       | 4.97                              |
| 50,001 to 200,000 .....                          | 409                        | 4,705                              | 44.4                         | 21.3                             | 16.7  | 30.4        | 51.8            | 21.8                            | .21                       | 4.64                              |
| Over 200,000 .....                               | 529                        | 11,747                             | 22.8                         | 10.6                             | 5.9   | 12.0        | 24.4            | 48.6                            | .09                       | 4.14                              |
| <b>Principal Building Activity</b>               |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Education .....                                  | 18                         | 2,573                              | 66.3                         | 67.0                             | 30.4  | 52.3        | 63.1            | 8.3                             | .21                       | 3.22                              |
| Health Care .....                                | 399                        | 15,353                             | 58.4                         | 26.9                             | 19.8  | 57.2        | 111.6           | 65.6                            | .25                       | 4.27                              |
| Laboratory .....                                 | 96                         | 3,306                              | 37.6                         | 25.3                             | 29.2  | 42.4        | 67.9            | 16.4                            | .19                       | 4.95                              |
| Lodging .....                                    | 23                         | 2,519                              | 43.6                         | 87.2                             | 24.4  | 54.5        | 69.6            | 12.0                            | .21                       | 4.77                              |
| Mercantile and Service .....                     | 54                         | 1,156                              | 8.2                          | 3.3                              | 6.0   | 11.2        | 18.0            | 6.9                             | .05                       | 5.94                              |
| Office .....                                     | 298                        | 4,197                              | 20.4                         | 8.8                              | 7.1   | 20.4        | 39.5            | 17.5                            | .09                       | 4.17                              |
| All Others .....                                 | 159                        | 4,425                              | 48.0                         | 29.3                             | 20.7  | 48.7        | 96.5            | 19.9                            | .22                       | 4.50                              |
| <b>Year Constructed</b>                          |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| 1959 or Before .....                             | 382                        | 4,897                              | 41.7                         | 24.0                             | 20.0  | 38.4        | 60.8            | 18.3                            | .16                       | 3.74                              |
| 1960 to 1969 .....                               | 272                        | 5,672                              | 33.2                         | 14.1                             | 13.0  | 28.9        | 53.9            | 25.3                            | .15                       | 4.46                              |
| 1970 to 1979 .....                               | 217                        | 4,812                              | 22.0                         | 9.9                              | 7.5   | 16.1        | 30.0            | 25.7                            | .12                       | 5.34                              |
| 1980 to 1989 .....                               | 155                        | 3,693                              | 26.0                         | 10.7                             | 8.6   | 21.4        | 69.9            | 16.0                            | .11                       | 4.34                              |
| 1990 to 1993 .....                               | 22                         | 1,796                              | 14.1                         | 6.9                              | 4.5   | 10.9        | 43.3            | 13.2                            | .10                       | 7.35                              |
| <b>Federal Agency</b>                            |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Department of Defense .....                      | 162                        | 4,371                              | 34.0                         | 20.4                             | 18.5  | 40.2        | 62.0            | 18.6                            | .14                       | 4.25                              |
| General Services Administration .....            | 224                        | 5,884                              | 18.3                         | 8.0                              | 6.6   | 16.6        | 26.5            | 23.1                            | .07                       | 3.93                              |
| United States Postal Service .....               | 58                         | 1,088                              | 8.2                          | 3.3                              | 5.2   | 9.2         | 16.1            | 6.5                             | .05                       | 5.98                              |
| Veterans Administration .....                    | 344                        | 11,861                             | 64.0                         | 28.8                             | 19.1  | 57.2        | 111.6           | 50.2                            | .27                       | 4.23                              |
| All Others .....                                 | 260                        | 3,830                              | 49.5                         | 26.9                             | 26.7  | 45.2        | 80.4            | 18.6                            | .24                       | 4.86                              |
| <b>Energy Sources (more than one may apply)</b>  |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Electricity .....                                | 1,047                      | 4,655                              | 30.2                         | 14.0                             | 11.4  | 26.6        | 57.2            | 20.6                            | .13                       | 4.42                              |
| Natural Gas .....                                | 1,047                      | 4,655                              | 30.2                         | 14.0                             | 11.4  | 26.6        | 57.2            | 20.6                            | .13                       | 4.42                              |
| Fuel Oil .....                                   | 496                        | 12,409                             | 47.1                         | 23.1                             | 24.0  | 43.8        | 98.3            | 54.3                            | .21                       | 4.37                              |
| District Heat .....                              | 238                        | 8,814                              | 35.7                         | 18.3                             | 9.7   | 22.8        | 83.2            | 37.8                            | .15                       | 4.29                              |
| District Chilled Water .....                     | 146                        | 18,262                             | 38.2                         | 20.3                             | 12.9  | 41.8        | 157.0           | 70.9                            | .15                       | 3.88                              |
| Propane .....                                    | 72                         | 71,563                             | 95.2                         | 47.7                             | 95.2  | 95.2        | 95.2            | 392.3                           | .52                       | 5.48                              |
| Any Other .....                                  | 72                         | 24,129                             | 42.7                         | 21.3                             | 11.4  | 121.6       | 161.0           | 83.8                            | .15                       | 3.47                              |
| <b>Energy End Uses (more than one may apply)</b> |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Heating .....                                    | 1,044                      | 4,683                              | 30.7                         | 14.4                             | 11.6  | 26.7        | 57.3            | 20.7                            | .14                       | 4.42                              |
| Air Conditioning .....                           | 1,012                      | 4,844                              | 30.2                         | 13.8                             | 11.2  | 26.3        | 54.2            | 21.1                            | .13                       | 4.36                              |
| Water Heating .....                              | 1,044                      | 4,683                              | 30.4                         | 14.0                             | 11.4  | 26.7        | 57.3            | 20.6                            | .13                       | 4.40                              |
| Cooking .....                                    | 465                        | 9,126                              | 29.4                         | 12.5                             | 11.4  | 29.6        | 83.2            | 42.5                            | .14                       | 4.66                              |
| Manufacturing .....                              | 95                         | 4,531                              | 17.5                         | 7.9                              | 7.6   | 9.7         | 22.6            | 18.5                            | .07                       | 4.08                              |
| <b>Workers (main shift)</b>                      |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| Less than 50 .....                               | 77                         | 1,408                              | 38.2                         | 69.8                             | 14.3  | 48.2        | 83.6            | 7.7                             | .21                       | 5.45                              |
| 50 to 99 .....                                   | 72                         | 1,997                              | 45.7                         | 26.4                             | 13.3  | 27.9        | 42.2            | 7.9                             | .18                       | 3.98                              |
| 100 to 499 .....                                 | 436                        | 4,637                              | 39.9                         | 23.0                             | 12.5  | 26.6        | 51.8            | 21.6                            | .19                       | 4.66                              |
| 500 or More .....                                | 462                        | 11,556                             | 22.9                         | 8.9                              | 4.8   | 14.1        | 31.0            | 47.3                            | .09                       | 4.09                              |
| <b>Weekly Operating Hours</b>                    |                            |                                    |                              |                                  |   |             |                 |                                 |                           |                                   |
| 48 or Fewer .....                                | 149                        | 3,465                              | 49.6                         | 34.9                             | 20.0  | 32.8        | 82.9            | 14.1                            | .20                       | 4.07                              |
| 49 to 60 .....                                   | 260                        | 4,640                              | 20.5                         | 8.6                              | 7.2   | 17.3        | 38.3            | 18.3                            | .08                       | 3.95                              |
| 61 to 167 .....                                  | 149                        | 2,608                              | 27.9                         | 15.3                             | 9.3   | 18.5        | 42.4            | 12.4                            | .13                       | 4.76                              |
| Open Continuously .....                          | 490                        | 7,100                              | 35.8                         | 16.0                             | 17.7  | 39.0        | 83.6            | 33.2                            | .17                       | 4.67                              |

See footnotes at end of table.

**Table 3.51. Natural Gas Consumption and Expenditure Intensities in  
FBSS Buildings in Federal Region 9, 1993 (Continued)**

| Building Characteristics   | Natural Gas Consumption    |                                    |                              |                                  |   |        |                 | Natural Gas Expenditures        |                           |                                   |
|--|----------------------------|------------------------------------|------------------------------|----------------------------------|---|--------|-----------------|---------------------------------|---------------------------|-----------------------------------|
|  | Total (million cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | Distribution of Building-Level Intensities (cubic feet/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) |
|  |                            |                                    |                              |                                  | 25th Percentile   | Median | 75th Percentile |                                 |                           |                                   |
| <b>Multibuilding Facility</b>  |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Yes .....  | 720                        | 6,053                              | 38.1                         | 17.6                             | 19.8  | 40.9   | 69.6            | 27.4                            | 0.17                      | 4.52                              |
| No .....   | 327                        | 3,086                              | 20.7                         | 9.7                              | 7.1   | 16.8   | 30.0            | 13.0                            | .09                       | 4.20                              |
| <b>Space-Heating Energy Source</b>   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Natural Gas .....  | 904                        | 4,611                              | 31.3                         | 14.4                             | 13.2  | 28.9   | 60.4            | 20.4                            | .14                       | 4.43                              |
| Natural Gas Main .....   | 836                        | 4,521                              | 30.8                         | 14.5                             | 14.3  | 28.6   | 59.3            | 20.1                            | .14                       | 4.45                              |
| Natural Gas Secondary .....  | 67                         | 6,131                              | 40.6                         | 14.0                             | 5.2   | 31.0   | 60.8            | 25.3                            | .17                       | 4.13                              |
| Other Excluding Natural Gas .....  | 141                        | 5,205                              | 26.9                         | 14.0                             | 7.2   | 12.4   | 32.8            | 22.6                            | .12                       | 4.34                              |
| Building Not Heated .....  | 3                          | 1,558                              | 4.7                          | 1.5                              | 2.0   | 4.6    | 7.1             | 9.1                             | .03                       | 5.87                              |
| <b>Cooling Energy Source</b>   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Natural Gas .....  | 2                          | 309                                | 9.6                          | 3.2                              | 5.2   | 11.2   | 15.7            | 2.3                             | .07                       | 7.51                              |
| Other Excluding Natural Gas .....  | 1,011                      | 4,978                              | 30.3                         | 13.9                             | 11.4  | 26.6   | 57.2            | 21.7                            | .13                       | 4.36                              |
| A/C Not Performed .....  | 35                         | 2,189                              | 30.7                         | 20.4                             | 21.4  | 53.4   | 61.8            | 13.3                            | .19                       | 6.07                              |
| <b>Water-Heating Energy Source</b>   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Natural Gas .....  | 813                        | 4,566                              | 30.0                         | 13.9                             | 15.7  | 30.0   | 60.8            | 20.5                            | .13                       | 4.48                              |
| Other Excluding Natural Gas .....  | 231                        | 5,144                              | 31.7                         | 14.5                             | 6.9   | 12.9   | 39.5            | 21.2                            | .13                       | 4.13                              |
| Water Heating Not Performed .....  | 3                          | 1,572                              | 9.7                          | 9.1                              | 9.0   | 14.6   | 20.2            | 15.6                            | .10                       | 9.94                              |
| <b>Cooking Energy Source</b>   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Natural Gas .....  | 329                        | 9,690                              | 33.4                         | 13.0                             | 7.1   | 26.3   | 67.8            | 45.8                            | .16                       | 4.73                              |
| Other Excluding Natural Gas .....  | 136                        | 7,997                              | 22.8                         | 11.4                             | 12.2  | 30.8   | 83.2            | 35.8                            | .10                       | 4.48                              |
| Cooking Not Performed .....  | 582                        | 3,345                              | 30.8                         | 15.5                             | 11.4  | 26.5   | 52.3            | 14.1                            | .13                       | 4.23                              |
| <b>Manufacturing Energy Source</b>   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Natural Gas .....  | 27                         | 3,355                              | 14.6                         | 7.0                              | 8.0   | 10.8   | 20.4            | 16.1                            | .07                       | 4.81                              |
| Other Excluding Natural Gas .....  | 68                         | 5,256                              | 19.0                         | 8.4                              | 7.1   | 9.3    | 46.7            | 20.0                            | .07                       | 3.80                              |
| Manufacturing Not Performed .....  | 952                        | 4,668                              | 32.5                         | 15.2                             | 12.5  | 28.4   | 57.6            | 20.8                            | .14                       | 4.45                              |
| <b>Percent of Floorspace Heated</b>  |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Not Heated .....   | 3                          | 1,558                              | 4.7                          | 1.5                              | 2.0   | 4.6    | 7.1             | 9.1                             | .03                       | 5.87                              |
| 1 to 50 .....  | 76                         | 6,321                              | 46.1                         | 73.9                             | 5.7   | 35.3   | 57.9            | 25.3                            | .18                       | 4.00                              |
| 51 to 100 .....  | 968                        | 4,590                              | 29.9                         | 13.5                             | 11.6  | 26.6   | 57.3            | 20.4                            | .13                       | 4.45                              |
| <b>Heating Equipment (more than one may apply)</b>   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Heat Pumps .....   | 76                         | 2,613                              | 29.6                         | 12.4                             | 7.2   | 36.2   | 49.1            | 10.8                            | .12                       | 4.12                              |
| Furnaces .....   | 22                         | 1,018                              | 19.3                         | 8.4                              | 8.6   | 18.2   | 49.1            | 6.0                             | .11                       | 5.94                              |
| Individual Space Heaters .....   | 132                        | 5,753                              | 28.9                         | 12.7                             | 9.2   | 30.4   | 67.8            | 24.7                            | .12                       | 4.30                              |
| District Heat .....  | 257                        | 7,550                              | 34.7                         | 18.5                             | 12.0  | 31.2   | 101.3           | 32.4                            | .15                       | 4.29                              |
| Boilers .....  | 617                        | 4,639                              | 26.5                         | 11.6                             | 14.1  | 27.0   | 51.8            | 22.6                            | .13                       | 4.87                              |
| Packaged-Heating Units .....   | 264                        | 4,549                              | 47.6                         | 22.5                             | 12.9  | 26.6   | 63.1            | 16.3                            | .17                       | 3.58                              |
| <b>Retrofit or Purchase of any Equipment Within Last Ten Years (more than one may apply)</b> |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Retrofit and/or Purchase .....   | 876                        | 5,409                              | 29.4                         | 13.4                             | 11.2  | 27.6   | 57.2            | 24.2                            | .13                       | 4.47                              |
| Retrofit .....   | 643                        | 8,464                              | 33.2                         | 14.5                             | 15.9  | 31.5   | 70.0            | 35.5                            | .14                       | 4.19                              |
| Purchase .....   | 495                        | 4,340                              | 29.9                         | 13.6                             | 9.6   | 26.4   | 54.2            | 21.4                            | .15                       | 4.94                              |
| No Retrofit or Purchase .....  | 171                        | 2,717                              | 34.8                         | 18.4                             | 12.0  | 26.5   | 60.8            | 11.3                            | .14                       | 4.16                              |
| <b>HVAC Conservation Features (more than one may apply)</b>                                  |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| VAV System .....   | 390                        | 6,614                              | 29.8                         | 13.9                             | 11.2  | 22.5   | 50.9            | 29.8                            | .13                       | 4.51                              |
| Economizer Cycle .....   | 674                        | 5,911                              | 29.6                         | 13.5                             | 9.7   | 22.0   | 51.8            | 24.9                            | .12                       | 4.21                              |
| HVAC Maintenance .....   | 1,028                      | 4,780                              | 30.1                         | 13.9                             | 11.2  | 26.5   | 57.1            | 21.1                            | .13                       | 4.40                              |

See footnotes at end of table.

**Table 3.51. Natural Gas Consumption and Expenditure Intensities in FBSS Buildings in Federal Region 9, 1993 (Continued)**

| Building Characteristics  | Natural Gas Consumption    |                                    |                              |                                  |   |        |                 | Natural Gas Expenditures        |                           |                                   |
|---|----------------------------|------------------------------------|------------------------------|----------------------------------|---|--------|-----------------|---------------------------------|---------------------------|-----------------------------------|
|   | Total (million cubic feet) | per Building (thousand cubic feet) | per Square Foot (cubic feet) | per Worker (thousand cubic feet) | Distribution of Building-Level Intensities (cubic feet/square foot) |        |                 | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Cubic Feet (dollars) |
|   |                            |                                    |                              |                                  | 25th Percentile   | Median | 75th Percentile |                                 |                           |                                   |
| <b>Energy Management Practices (more than one may apply)</b>      |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Energy Management and Control System .....                        | 360                        | 6,319                              | 24.9                         | 10.9                             | 8.2   | 24.4   | 59.3            | 29.1                            | 0.11                      | 4.61                              |
| Energy Conservation Programs <sup>1</sup> .....                   | 655                        | 6,684                              | 29.9                         | 13.3                             | 11.6  | 26.6   | 57.3            | 28.2                            | .13                       | 4.22                              |
| Energy Audit .....  | 344                        | 5,139                              | 25.8                         | 11.0                             | 9.7   | 22.6   | 58.2            | 23.9                            | .12                       | 4.65                              |
| HVAC Maintenance Staff <sup>2</sup> .....                         | 371                        | 9,509                              | 29.5                         | 12.3                             | 6.5   | 21.5   | 57.3            | 41.1                            | .13                       | 4.33                              |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b> |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Heating .....   | 453                        | 3,571                              | 24.6                         | 11.5                             | 9.6   | 20.9   | 39.7            | 15.0                            | .10                       | 4.19                              |
| Cooling .....   | 432                        | 3,515                              | 24.6                         | 11.5                             | 9.2   | 20.0   | 39.3            | 14.5                            | .10                       | 4.11                              |
| Hot Water .....   | 270                        | 4,580                              | 20.7                         | 9.2                              | 9.6   | 20.9   | 30.8            | 17.9                            | .08                       | 3.91                              |
| Lighting .....  | 511                        | 3,902                              | 26.8                         | 12.5                             | 10.5  | 22.5   | 47.6            | 16.1                            | .11                       | 4.14                              |
| <b>Natural Gas Transported for the Account of Others</b>          |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Used in Building .....  | 223                        | 9,286                              | 42.8                         | 17.4                             | 12.9  | 42.8   | 57.3            | 39.1                            | .18                       | 4.21                              |
| Not Used in Building .....  | 736                        | 4,231                              | 27.5                         | 13.2                             | 10.6  | 22.9   | 51.8            | 18.7                            | .12                       | 4.43                              |
| Don't Know/   |                            |                                    |                              |                                  |   |        |                 |                                 |                           |                                   |
| Not Ascertained .....   | 85                         | 3,397                              | 32.3                         | 13.7                             | 20.2  | 37.6   | 69.9            | 16.4                            | .16                       | 4.82                              |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • A/C = Air Conditioning. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.52. District Heat Consumption and Expenditure Intensities  
in FBSS Buildings in Federal Region 3, 1993**

| Building Characteristics                         | District Heat Consumption |                                |                          |                              | District Heat Expenditures      |                           |                              |
|--|---------------------------|--------------------------------|--------------------------|------------------------------|---------------------------------|---------------------------|------------------------------|
|  | Total (million pounds)    | per Building (thousand pounds) | per Square foot (pounds) | per Worker (thousand pounds) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) |
| <b>All Buildings</b> .....                       | <b>3,015</b>              | <b>19,577</b>                  | <b>47.11</b>             | <b>12.5</b>                  | <b>241.6</b>                    | <b>0.58</b>               | <b>12.34</b>                 |
| <b>Building Floorspace (square feet)</b>         |                           |                                |                          |                              |                                 |                           |                              |
| 10,000 to 50,000 .....                           | 187                       | 6,034                          | 195.10                   | 119.6                        | 56.2                            | 1.82                      | 9.32                         |
| 50,001 to 200,000 .....                          | 805                       | 12,786                         | 115.92                   | 60.9                         | 138.1                           | 1.25                      | 10.80                        |
| Over 200,000 .....                               | 2,022                     | 33,707                         | 36.06                    | 8.9                          | 446.2                           | .48                       | 13.24                        |
| <b>Principal Building Activity</b>               |                           |                                |                          |                              |                                 |                           |                              |
| Education .....                                  | 19                        | 4,754                          | 72.05                    | 48.5                         | 55.7                            | .84                       | 11.72                        |
| Health Care .....                                | 422                       | 20,091                         | 50.04                    | 31.7                         | 208.0                           | .52                       | 10.35                        |
| Laboratory .....                                 | 765                       | 26,372                         | 217.10                   | 130.6                        | 292.3                           | 2.41                      | 11.08                        |
| Lodging .....                                    | 37                        | 5,326                          | 76.24                    | 83.8                         | 64.3                            | .92                       | 12.07                        |
| Mercantile and Service .....                     | 69                        | 23,105                         | 33.16                    | 2.1                          | 283.6                           | .41                       | 12.27                        |
| Office .....                                     | 1,372                     | 19,883                         | 31.08                    | 7.9                          | 275.0                           | .43                       | 13.83                        |
| All Others .....                                 | 331                       | 15,747                         | 65.43                    | 23.4                         | 184.2                           | .77                       | 11.70                        |
| <b>Year Constructed</b>                          |                           |                                |                          |                              |                                 |                           |                              |
| 1959 or Before .....                             | 1,500                     | 18,992                         | 43.45                    | 8.6                          | 228.9                           | .52                       | 12.05                        |
| 1960 to 1969 .....                               | 954                       | 19,865                         | 63.78                    | 26.5                         | 250.6                           | .80                       | 12.62                        |
| 1970 to 1979 .....                               | 244                       | 22,214                         | 27.09                    | 10.2                         | 355.4                           | .43                       | 16.00                        |
| 1980 to 1989 .....                               | 197                       | 19,678                         | 78.56                    | 44.4                         | 170.4                           | .68                       | 8.66                         |
| 1990 to 1993 .....                               | 120                       | 19,987                         | 40.21                    | 32.3                         | 247.6                           | .50                       | 12.39                        |
| <b>Federal Agency</b>                            |                           |                                |                          |                              |                                 |                           |                              |
| Department of Defense .....                      | 462                       | 35,532                         | 39.22                    | 11.3                         | 558.3                           | .62                       | 15.71                        |
| General Services Administration .....            | 1,009                     | 21,476                         | 29.05                    | 7.1                          | 294.9                           | .40                       | 13.73                        |
| United States Postal Service .....               | 42                        | 20,837                         | 32.06                    | 1.4                          | 261.9                           | .40                       | 12.57                        |
| Veterans Administration .....                    | 407                       | 14,520                         | 68.33                    | 49.6                         | 146.5                           | .69                       | 10.09                        |
| All Others .....                                 | 1,095                     | 17,115                         | 107.26                   | 53.3                         | 179.2                           | 1.12                      | 10.47                        |
| <b>Energy Sources (more than one may apply)</b>  |                           |                                |                          |                              |                                 |                           |                              |
| Electricity .....                                | 3,015                     | 19,577                         | 47.11                    | 12.5                         | 241.6                           | .58                       | 12.34                        |
| Natural Gas .....                                | 1,337                     | 34,290                         | 37.97                    | 7.6                          | 476.7                           | .53                       | 13.90                        |
| Fuel Oil .....                                   | 749                       | 39,431                         | 32.81                    | 11.7                         | 599.0                           | .50                       | 15.19                        |
| District Heat .....                              | 3,015                     | 19,577                         | 47.11                    | 12.5                         | 241.6                           | .58                       | 12.34                        |
| District Chilled Water .....                     | 1,273                     | 22,731                         | 55.62                    | 19.8                         | 289.3                           | .71                       | 12.73                        |
| Propane .....                                    | 40                        | 19,769                         | 59.28                    | 52.7                         | 173.6                           | .52                       | 8.78                         |
| Any Other .....                                  | 70                        | 23,281                         | 22.00                    | 8.1                          | 174.9                           | .17                       | 7.51                         |
| <b>Energy End Uses (more than one may apply)</b> |                           |                                |                          |                              |                                 |                           |                              |
| Heating .....                                    | 3,015                     | 19,577                         | 47.11                    | 12.5                         | 241.6                           | .58                       | 12.34                        |
| Air Conditioning .....                           | 3,011                     | 19,683                         | 47.08                    | 12.5                         | 242.9                           | .58                       | 12.34                        |
| Water Heating .....                              | 3,001                     | 19,742                         | 47.33                    | 12.5                         | 243.5                           | .58                       | 12.33                        |
| Cooking .....                                    | 1,834                     | 32,757                         | 36.26                    | 8.7                          | 431.1                           | .48                       | 13.16                        |
| Manufacturing .....                              | 845                       | 42,260                         | 43.59                    | 10.5                         | 536.9                           | .55                       | 12.70                        |
| <b>Workers (main shift)</b>                      |                           |                                |                          |                              |                                 |                           |                              |
| Less than 50 .....                               | 190                       | 6,118                          | 97.49                    | 242.8                        | 58.6                            | .93                       | 9.57                         |
| 50 to 99 .....                                   | 130                       | 7,240                          | 138.75                   | 106.3                        | 70.1                            | 1.34                      | 9.68                         |
| 100 to 499 .....                                 | 791                       | 15,818                         | 118.23                   | 66.5                         | 176.2                           | 1.32                      | 11.14                        |
| 500 or More .....                                | 1,904                     | 34,620                         | 34.99                    | 8.4                          | 460.4                           | .47                       | 13.30                        |
| <b>Weekly Operating Hours</b>                    |                           |                                |                          |                              |                                 |                           |                              |
| 48 or Fewer .....                                | 354                       | 11,798                         | 51.57                    | 22.1                         | 123.3                           | .54                       | 10.45                        |
| 49 to 60 .....                                   | 754                       | 15,718                         | 35.71                    | 13.5                         | 224.1                           | .51                       | 14.26                        |
| 61 to 167 .....                                  | 249                       | 13,816                         | 38.52                    | 16.6                         | 146.3                           | .41                       | 10.59                        |
| Open Continuously .....                          | 1,658                     | 28,583                         | 56.12                    | 10.7                         | 347.0                           | .68                       | 12.14                        |

See footnotes at end of table.

**Table 3.52. District Heat Consumption and Expenditure Intensities  
in FBSS Buildings in Federal Region 3, 1993 (Continued)**

| Building Characteristics  | District Heat Consumption |                                |                          |                              | District Heat Expenditures      |                           |                              |
|---|---------------------------|--------------------------------|--------------------------|------------------------------|---------------------------------|---------------------------|------------------------------|
|   | Total (million pounds)    | per Building (thousand pounds) | per Square foot (pounds) | per Worker (thousand pounds) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) |
| <b>HVAC Conservation Features (more than one may apply)</b>       |                           |                                |                          |                              |                                 |                           |                              |
| VAV System .....  | 814                       | 21,434                         | 38.85                    | 8.8                          | 277.7                           | 0.50                      | 12.96                        |
| Economizer Cycle .....  | 1,819                     | 23,326                         | 43.17                    | 9.5                          | 300.8                           | .56                       | 12.89                        |
| HVAC Maintenance .....  | 2,983                     | 19,755                         | 47.09                    | 12.4                         | 244.1                           | .58                       | 12.35                        |
| <b>Energy Management Practices (more than one may apply)</b>      |                           |                                |                          |                              |                                 |                           |                              |
| Energy Management and Control System .....                        | 1,583                     | 22,609                         | 38.59                    | 8.5                          | 284.6                           | .49                       | 12.59                        |
| Energy Conservation Programs <sup>1</sup> .....                   | 1,533                     | 26,898                         | 32.90                    | 8.5                          | 366.2                           | .45                       | 13.62                        |
| Energy Audit .....  | 1,071                     | 19,836                         | 41.50                    | 15.3                         | 257.4                           | .54                       | 12.98                        |
| HVAC Maintenance Staff <sup>2</sup> .....                         | 1,491                     | 27,101                         | 40.07                    | 8.0                          | 383.7                           | .57                       | 14.16                        |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b> |                           |                                |                          |                              |                                 |                           |                              |
| Heating .....   | 1,160                     | 15,468                         | 35.82                    | 13.8                         | 198.6                           | .46                       | 12.84                        |
| Cooling .....   | 1,162                     | 15,284                         | 35.84                    | 13.8                         | 196.1                           | .46                       | 12.83                        |
| Hot Water .....   | 718                       | 17,090                         | 39.04                    | 15.6                         | 215.0                           | .49                       | 12.58                        |
| Lighting .....  | 1,235                     | 15,063                         | 37.98                    | 15.6                         | 191.6                           | .48                       | 12.72                        |
| <b>Building Generates Electricity</b>                             |                           |                                |                          |                              |                                 |                           |                              |
| Yes .....   | 1,017                     | 29,044                         | 41.37                    | 9.1                          | 364.2                           | .52                       | 12.54                        |
| No .....  | 1,998                     | 16,793                         | 50.70                    | 15.4                         | 205.6                           | .62                       | 12.24                        |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.



**Table 3.53. District Heat Consumption and Expenditure Intensities  
in FBSS Buildings in Federal Region 6, 1993**

| Building Characteristics                         | District Heat Consumption |                                |                          |                              | District Heat Expenditures      |                           |                              |
|--|---------------------------|--------------------------------|--------------------------|------------------------------|---------------------------------|---------------------------|------------------------------|
|  | Total (million pounds)    | per Building (thousand pounds) | per Square foot (pounds) | per Worker (thousand pounds) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) |
| <b>All Buildings</b> .....                       | <b>982</b>                | <b>14,439</b>                  | <b>73.07</b>             | <b>40.0</b>                  | <b>156.2</b>                    | <b>0.79</b>               | <b>10.82</b>                 |
| <b>Building Floorspace (square feet)</b>         |                           |                                |                          |                              |                                 |                           |                              |
| 10,000 to 50,000 .....                           | 95                        | 4,525                          | 164.13                   | 117.6                        | 46.9                            | 1.70                      | 10.36                        |
| 50,001 to 200,000 .....                          | 392                       | 12,639                         | 105.24                   | 50.4                         | 138.9                           | 1.16                      | 10.99                        |
| Over 200,000 .....                               | 495                       | 30,938                         | 54.19                    | 31.0                         | 333.4                           | .58                       | 10.78                        |
| <b>Principal Building Activity</b>               |                           |                                |                          |                              |                                 |                           |                              |
| Education .....                                  | 5                         | 2,676                          | 152.90                   | 118.9                        | 18.8                            | 1.08                      | 7.04                         |
| Health Care .....                                | 271                       | 18,077                         | 40.07                    | 24.9                         | 175.7                           | .39                       | 9.72                         |
| Laboratory .....                                 | 463                       | 27,242                         | 194.80                   | 140.6                        | 318.7                           | 2.28                      | 11.70                        |
| Lodging .....                                    | 24                        | 4,892                          | 85.13                    | 95.9                         | 58.4                            | 1.02                      | 11.94                        |
| Mercantile and Service .....                     | (*)                       | 2                              | .01                      | (*)                          | (*)                             | (*)                       | 12.50                        |
| Office .....                                     | 151                       | 8,362                          | 55.54                    | 17.5                         | 92.3                            | .61                       | 11.04                        |
| All Others .....                                 | 67                        | 6,723                          | 62.15                    | 70.5                         | 57.9                            | .54                       | 8.61                         |
| <b>Year Constructed</b>                          |                           |                                |                          |                              |                                 |                           |                              |
| 1959 or Before .....                             | 570                       | 12,950                         | 98.54                    | 50.2                         | 140.9                           | 1.07                      | 10.88                        |
| 1960 to 1969 .....                               | 105                       | 15,026                         | 102.66                   | 36.4                         | 169.0                           | 1.15                      | 11.25                        |
| 1970 to 1979 .....                               | 56                        | 14,012                         | 57.43                    | 15.8                         | 116.6                           | .48                       | 8.32                         |
| 1980 to 1989 .....                               | 191                       | 17,362                         | 65.95                    | 45.9                         | 188.1                           | .71                       | 10.83                        |
| 1990 to 1993 .....                               | 60                        | 29,909                         | 21.69                    | 23.1                         | 352.5                           | .26                       | 11.78                        |
| <b>Federal Agency</b>                            |                           |                                |                          |                              |                                 |                           |                              |
| Department of Defense .....                      | 14                        | 4,687                          | 57.04                    | 27.6                         | 28.4                            | .35                       | 6.05                         |
| General Services Administration ..               | 44                        | 8,724                          | 38.67                    | 14.3                         | 103.6                           | .46                       | 11.87                        |
| United States Postal Service .....               | (*)                       | 2                              | .01                      | (*)                          | (*)                             | (*)                       | 12.50                        |
| Veterans Administration .....                    | 286                       | 15,053                         | 41.14                    | 25.9                         | 146.1                           | .40                       | 9.71                         |
| All Others .....                                 | 638                       | 15,953                         | 129.38                   | 67.6                         | 181.1                           | 1.47                      | 11.35                        |
| <b>Energy Sources (more than one may apply)</b>  |                           |                                |                          |                              |                                 |                           |                              |
| Electricity .....                                | 982                       | 14,439                         | 73.07                    | 40.0                         | 156.2                           | .79                       | 10.82                        |
| Natural Gas .....                                | 222                       | 14,786                         | 41.55                    | 24.4                         | 142.6                           | .40                       | 9.64                         |
| Fuel Oil .....                                   | 63                        | 8,971                          | 59.38                    | 24.8                         | 88.7                            | .59                       | 9.89                         |
| District Heat .....                              | 982                       | 14,439                         | 73.07                    | 40.0                         | 156.2                           | .79                       | 10.82                        |
| District Chilled Water .....                     | 343                       | 12,688                         | 46.70                    | 21.9                         | 133.2                           | .49                       | 10.50                        |
| Propane .....                                    | 7                         | 3,659                          | 308.31                   | 122.0                        | 13.9                            | 1.17                      | 3.81                         |
| Any Other .....                                  | 58                        | 19,307                         | 47.21                    | 31.3                         | 181.1                           | .44                       | 9.38                         |
| <b>Energy End Uses (more than one may apply)</b> |                           |                                |                          |                              |                                 |                           |                              |
| Heating .....                                    | 982                       | 14,439                         | 73.07                    | 40.0                         | 156.2                           | .79                       | 10.82                        |
| Air Conditioning .....                           | 982                       | 14,439                         | 73.07                    | 40.0                         | 156.2                           | .79                       | 10.82                        |
| Water Heating .....                              | 982                       | 14,439                         | 73.07                    | 40.0                         | 156.2                           | .79                       | 10.82                        |
| Cooking .....                                    | 264                       | 15,551                         | 39.46                    | 23.2                         | 145.9                           | .37                       | 9.38                         |
| Manufacturing .....                              | 13                        | 3,210                          | 53.79                    | 40.8                         | 21.5                            | .36                       | 6.71                         |
| <b>Workers (main shift)</b>                      |                           |                                |                          |                              |                                 |                           |                              |
| Less than 50 .....                               | 97                        | 4,633                          | 91.20                    | 204.8                        | 50.3                            | .99                       | 10.86                        |
| 50 to 99 .....                                   | 27                        | 5,471                          | 146.86                   | 70.0                         | 65.3                            | 1.75                      | 11.93                        |
| 100 to 499 .....                                 | 494                       | 18,310                         | 121.45                   | 75.8                         | 202.2                           | 1.34                      | 11.04                        |
| 500 or More .....                                | 363                       | 24,188                         | 44.72                    | 21.2                         | 252.1                           | .47                       | 10.42                        |
| <b>Weekly Operating Hours</b>                    |                           |                                |                          |                              |                                 |                           |                              |
| 48 or Fewer .....                                | 106                       | 10,583                         | 103.08                   | 132.1                        | 117.2                           | 1.14                      | 11.08                        |
| 49 to 60 .....                                   | 232                       | 11,579                         | 82.25                    | 41.6                         | 113.1                           | .80                       | 9.77                         |
| 61 to 167 .....                                  | 325                       | 17,103                         | 104.44                   | 47.6                         | 202.2                           | 1.23                      | 11.82                        |
| Open Continuously .....                          | 319                       | 16,815                         | 49.28                    | 28.2                         | 176.2                           | .52                       | 10.48                        |

See footnotes at end of table.

**Table 3.53. District Heat Consumption and Expenditure Intensities  
in FBSS Buildings in Federal Region 6, 1993 (Continued)**

| Building Characteristics  | District Heat Consumption |                                |                          |                              | District Heat Expenditures      |                           |                              |
|---|---------------------------|--------------------------------|--------------------------|------------------------------|---------------------------------|---------------------------|------------------------------|
|   | Total (million pounds)    | per Building (thousand pounds) | per Square foot (pounds) | per Worker (thousand pounds) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) |
| <b>HVAC Conservation Features<br/>(more than one may apply)</b>   |                           |                                |                          |                              |                                 |                           |                              |
| VAV System .....  | 393                       | 16,388                         | 47.64                    | 28.4                         | 167.9                           | 0.49                      | 10.24                        |
| Economizer Cycle .....  | 555                       | 15,409                         | 58.61                    | 34.1                         | 157.7                           | .60                       | 10.23                        |
| HVAC Maintenance .....  | 979                       | 14,612                         | 72.98                    | 39.9                         | 158.0                           | .79                       | 10.82                        |
| <b>Energy Management Practices<br/>(more than one may apply)</b>  |                           |                                |                          |                              |                                 |                           |                              |
| Energy Management and Control System .....                        | 610                       | 16,955                         | 64.26                    | 35.6                         | 176.4                           | .67                       | 10.40                        |
| Energy Conservation Programs <sup>1</sup> .....                   | 194                       | 17,672                         | 38.63                    | 18.9                         | 168.7                           | .37                       | 9.55                         |
| Energy Audit .....  | 69                        | 13,806                         | 50.17                    | 16.7                         | 125.7                           | .46                       | 9.10                         |
| HVAC Maintenance Staff <sup>2</sup> .....                         | 195                       | 16,235                         | 33.38                    | 19.8                         | 171.2                           | .35                       | 10.54                        |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b> |                           |                                |                          |                              |                                 |                           |                              |
| Heating .....   | 387                       | 13,361                         | 88.47                    | 46.6                         | 140.6                           | .93                       | 10.52                        |
| Cooling .....   | 408                       | 13,613                         | 85.40                    | 43.1                         | 144.2                           | .90                       | 10.59                        |
| Hot Water .....   | 77                        | 8,526                          | 52.16                    | 17.6                         | 84.5                            | .52                       | 9.91                         |
| Lighting .....  | 363                       | 11,706                         | 93.25                    | 42.4                         | 134.0                           | 1.07                      | 11.45                        |
| <b>Building Generates Electricity</b>                             |                           |                                |                          |                              |                                 |                           |                              |
| Yes .....   | 154                       | 19,291                         | 32.86                    | 25.4                         | 199.8                           | .34                       | 10.36                        |
| No .....  | 828                       | 13,792                         | 94.68                    | 44.8                         | 150.4                           | 1.03                      | 10.91                        |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

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

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey. • HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

**Table 3.54. District Heat Consumption and Expenditure Intensities  
in FBSS Buildings in Federal Region 9, 1993**

| Building Characteristics                         | District Heat Consumption |                                |                          |                              | District Heat Expenditures      |                           |                              |
|--|---------------------------|--------------------------------|--------------------------|------------------------------|---------------------------------|---------------------------|------------------------------|
|  | Total (million pounds)    | per Building (thousand pounds) | per Square foot (pounds) | per Worker (thousand pounds) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) |
| <b>All Buildings</b> .....                       | <b>834</b>                | <b>11,269</b>                  | <b>70.93</b>             | <b>36.0</b>                  | <b>122.5</b>                    | <b>0.77</b>               | <b>10.87</b>                 |
| <b>Building Floorspace (square feet)</b>         |                           |                                |                          |                              |                                 |                           |                              |
| 10,000 to 50,000 .....                           | 88                        | 3,376                          | 109.56                   | 49.5                         | 38.6                            | 1.25                      | 11.43                        |
| 50,001 to 200,000 .....                          | 353                       | 10,092                         | 96.22                    | 49.2                         | 113.6                           | 1.08                      | 11.25                        |
| Over 200,000 .....                               | 393                       | 30,226                         | 53.94                    | 27.6                         | 314.2                           | .56                       | 10.40                        |
| <b>Principal Building Activity</b>               |                           |                                |                          |                              |                                 |                           |                              |
| Education .....                                  | 14                        | 7,224                          | 85.32                    | 85.0                         | 70.3                            | .83                       | 9.73                         |
| Health Care .....                                | 503                       | 13,963                         | 64.92                    | 30.7                         | 138.9                           | .65                       | 9.95                         |
| Laboratory .....                                 | 97                        | 24,275                         | 253.76                   | 178.2                        | 286.9                           | 3.00                      | 11.82                        |
| Lodging .....                                    | 43                        | 3,587                          | 63.25                    | 120.6                        | 46.9                            | .83                       | 13.07                        |
| Mercantile and Service .....                     | 5                         | 2,455                          | 84.17                    | 25.8                         | 29.5                            | 1.01                      | 12.01                        |
| Office .....                                     | 52                        | 6,499                          | 26.83                    | 11.6                         | 80.6                            | .33                       | 12.40                        |
| All Others .....                                 | 120                       | 11,979                         | 152.30                   | 109.7                        | 151.0                           | 1.92                      | 12.61                        |
| <b>Year Constructed</b>                          |                           |                                |                          |                              |                                 |                           |                              |
| 1959 or Before .....                             | 230                       | 6,377                          | 76.08                    | 38.7                         | 76.9                            | .92                       | 12.05                        |
| 1960 to 1969 .....                               | 138                       | 12,511                         | 85.08                    | 48.5                         | 127.1                           | .86                       | 10.16                        |
| 1970 to 1979 .....                               | 323                       | 17,955                         | 66.77                    | 28.5                         | 200.2                           | .74                       | 11.15                        |
| 1980 to 1989 .....                               | 144                       | 15,950                         | 62.91                    | 46.9                         | 143.8                           | .57                       | 9.02                         |
| 1990 to 1993 .....                               | NC                        | NC                             | NC                       | NC                           | NC                              | NC                        | NC                           |
| <b>Federal Agency</b>                            |                           |                                |                          |                              |                                 |                           |                              |
| Department of Defense .....                      | 169                       | 7,327                          | 51.06                    | 40.4                         | 93.6                            | .65                       | 12.78                        |
| General Services Administration ..               | 34                        | 17,050                         | 29.46                    | 11.7                         | 201.4                           | .35                       | 11.81                        |
| United States Postal Service .....               | NC                        | NC                             | NC                       | NC                           | NC                              | NC                        | NC                           |
| Veterans Administration .....                    | 526                       | 11,692                         | 76.78                    | 34.0                         | 117.0                           | .77                       | 10.01                        |
| All Others .....                                 | 105                       | 26,299                         | 235.43                   | 171.1                        | 310.3                           | 2.78                      | 11.80                        |
| <b>Energy Sources (more than one may apply)</b>  |                           |                                |                          |                              |                                 |                           |                              |
| Electricity .....                                | 828                       | 11,346                         | 70.57                    | 35.8                         | 123.0                           | .77                       | 10.84                        |
| Natural Gas .....                                | 509                       | 18,859                         | 76.28                    | 39.1                         | 204.6                           | .83                       | 10.85                        |
| Fuel Oil .....                                   | 163                       | 18,081                         | 54.54                    | 27.4                         | 188.3                           | .57                       | 10.41                        |
| District Heat .....                              | 834                       | 11,269                         | 70.93                    | 36.0                         | 122.5                           | .77                       | 10.87                        |
| District Chilled Water .....                     | 349                       | 13,941                         | 61.01                    | 35.5                         | 137.2                           | .60                       | 9.84                         |
| Propane .....                                    | NC                        | NC                             | NC                       | NC                           | NC                              | NC                        | NC                           |
| Any Other .....                                  | 78                        | 39,199                         | 60.17                    | 33.5                         | 461.9                           | .71                       | 11.78                        |
| <b>Energy End Uses (more than one may apply)</b> |                           |                                |                          |                              |                                 |                           |                              |
| Heating .....                                    | 834                       | 11,582                         | 71.26                    | 36.0                         | 125.9                           | .77                       | 10.87                        |
| Air Conditioning .....                           | 751                       | 11,919                         | 70.01                    | 35.7                         | 125.8                           | .74                       | 10.55                        |
| Water Heating .....                              | 786                       | 10,919                         | 68.76                    | 34.4                         | 116.3                           | .73                       | 10.65                        |
| Cooking .....                                    | 462                       | 23,080                         | 64.64                    | 32.5                         | 238.7                           | .67                       | 10.34                        |
| Manufacturing .....                              | 161                       | 20,132                         | 105.63                   | 52.0                         | 203.9                           | 1.07                      | 10.13                        |
| <b>Workers (main shift)</b>                      |                           |                                |                          |                              |                                 |                           |                              |
| Less than 50 .....                               | 61                        | 3,412                          | 70.49                    | 404.0                        | 41.9                            | .87                       | 12.28                        |
| 50 to 99 .....                                   | 22                        | 3,583                          | 57.02                    | 46.0                         | 42.9                            | .68                       | 11.98                        |
| 100 to 499 .....                                 | 445                       | 11,416                         | 104.29                   | 52.6                         | 127.7                           | 1.17                      | 11.18                        |
| 500 or More .....                                | 306                       | 27,799                         | 49.01                    | 21.7                         | 279.3                           | .49                       | 10.05                        |
| <b>Weekly Operating Hours</b>                    |                           |                                |                          |                              |                                 |                           |                              |
| 48 or Fewer .....                                | 75                        | 3,566                          | 60.41                    | 33.8                         | 38.4                            | .65                       | 10.77                        |
| 49 to 60 .....                                   | 177                       | 13,594                         | 80.07                    | 36.4                         | 161.0                           | .95                       | 11.84                        |
| 61 to 167 .....                                  | 39                        | 39,376                         | 129.21                   | 116.5                        | 590.6                           | 1.94                      | 15.00                        |
| Open Continuously .....                          | 543                       | 13,922                         | 67.82                    | 34.4                         | 142.9                           | .70                       | 10.27                        |

See footnotes at end of table.

**Table 3.54. District Heat Consumption and Expenditure Intensities  
in FBSS Buildings in Federal Region 9, 1993 (Continued)**

| Building Characteristics  | District Heat Consumption |                                |                          |                              | District Heat Expenditures      |                           |                              |
|---|---------------------------|--------------------------------|--------------------------|------------------------------|---------------------------------|---------------------------|------------------------------|
|   | Total (million pounds)    | per Building (thousand pounds) | per Square foot (pounds) | per Worker (thousand pounds) | per Building (thousand dollars) | per Square Foot (dollars) | per Thousand Pound (dollars) |
| <b>HVAC Conservation Features (more than one may apply)</b>       |                           |                                |                          |                              |                                 |                           |                              |
| VAV System .....  | 274                       | 21,070                         | 56.85                    | 30.5                         | 196.6                           | 0.53                      | 9.33                         |
| Economizer Cycle .....  | 472                       | 16,281                         | 82.92                    | 42.0                         | 172.5                           | .88                       | 10.59                        |
| HVAC Maintenance .....  | 832                       | 11,721                         | 71.28                    | 36.0                         | 127.4                           | .77                       | 10.87                        |
| <b>Energy Management Practices (more than one may apply)</b>      |                           |                                |                          |                              |                                 |                           |                              |
| Energy Management and Control System .....                        | 298                       | 22,919                         | 54.91                    | 30.0                         | 245.9                           | .59                       | 10.73                        |
| Energy Conservation Programs <sup>1</sup> .....                   | 402                       | 19,142                         | 69.66                    | 31.9                         | 209.1                           | .76                       | 10.92                        |
| Energy Audit .....  | 248                       | 10,343                         | 61.46                    | 31.5                         | 110.1                           | .65                       | 10.64                        |
| HVAC Maintenance Staff <sup>2</sup> .....                         | 255                       | 17,031                         | 60.77                    | 33.6                         | 180.0                           | .64                       | 10.57                        |
| <b>Off-Hours Reduction in Equipment (more than one may apply)</b> |                           |                                |                          |                              |                                 |                           |                              |
| Heating .....   | 153                       | 10,204                         | 70.48                    | 35.2                         | 117.7                           | .81                       | 11.53                        |
| Cooling .....   | 139                       | 7,709                          | 60.63                    | 27.6                         | 86.6                            | .68                       | 11.24                        |
| Hot Water .....   | 48                        | 7,956                          | 34.19                    | 14.5                         | 94.3                            | .41                       | 11.85                        |
| Lighting .....  | 160                       | 6,953                          | 57.61                    | 27.8                         | 81.4                            | .67                       | 11.71                        |
| <b>Building Generates Electricity</b>                             |                           |                                |                          |                              |                                 |                           |                              |
| Yes .....   | 242                       | 24,229                         | 65.80                    | 35.6                         | 285.6                           | .78                       | 11.79                        |
| No .....  | 592                       | 9,244                          | 73.27                    | 36.1                         | 97.0                            | .77                       | 10.49                        |

<sup>1</sup> Building participates in any programs sponsored by the Federal Energy Management Program, in-house, utility, or third party.

<sup>2</sup> HVAC maintenance staff means at least one person spends at least half their working hours maintaining the heating/cooling equipment.

NC = No cases in responding sample.

Notes: • Total workers are the number of workers during the main shift. • See Glossary for explanation of abbreviations and definitions of terms used in this report. • These data are from 881 federally owned buildings having the following criteria: (1) located in Federal Regions 3, 6, or 9; (2) larger than 10,000 square feet; and (3) used for a commercial purpose, other than warehouse and storage. In addition, 9 out of 10 selected buildings were from agencies other than the Department of Defense. • Statistics for the "energy end uses" represent consumption in buildings that have end use, not consumption for a particular fuel for a particular end use. • FBSS = Federal Buildings Supplemental Survey.

• HVAC = Heating, Ventilation, and Air Conditioning. • VAV = Variable-Air Volume. • Data are for Fiscal Year 1993 (October 1, 1992 through September 30, 1993). • Because of rounding, data may not sum to totals.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

# **Appendix A**

## **How the Survey Was Conducted**

# Appendix A

## How the Survey Was Conducted

### Introduction

The Federal Buildings Supplemental Survey (FBSS) conducted by the Energy Information Administration (EIA) of the U.S. Department of Energy (DOE), in conjunction with the Office of Federal Energy Management Programs (OFEMP) of DOE was a supplement to the Commercial Buildings Energy Consumption Survey (CBECS). The FBSS was conducted to assist in the implementation of the Energy Policy Act of 1992 (EPACT) by focusing a modified version of the CBECS exclusively on Federally owned and operated buildings. The CBECS, a triennial commercial buildings survey conducted by EIA, is the only source of national-level data on both commercial buildings' characteristics and related energy consumption and expenditures. Federally owned commercial buildings are one of three types of government-owned commercial buildings that are included in the CBECS sample. However, because the CBECS sample size is relatively small (6,500 sample commercial buildings of an estimated 4.8 million commercial buildings) and yields an even smaller number of federally owned government buildings, in-depth examination of energy use and characteristics of these buildings was not possible using the CBECS data. To obtain energy-related building characteristics and consumption and expenditures data for Federal commercial buildings, a sample survey of approximately 900 Federally owned and operated buildings was conducted in Federal Regions 3, 6, and 9 (See Appendix C for the Federal regions map). The FBSS sample selection procedures are described in the "Sample Design" section of this appendix. As with the CBECS, the "building" was the basic unit for the FBSS since the building is the energy-consuming unit. FBSS data are at the building level and data presented in this report represent the 881 responding buildings and cannot be used to generalize about Federal buildings in each region.

EIA used a computer-assisted telephone interview (CATI) to conduct voluntary interviews with the Federal building energy manager or designated person. CATI was used as a test as opposed to the usual in-person data collection method to see if building owners/managers could provide the technical information over the telephone. Under EIA's direction, a survey research firm conducted the FBSS CATI at their telephone center.

### At a Glance - Differences Between 1992 CBECS and 1993 FBSS

The CBECS consists of two major data collection stages--a building characteristics survey, which is an in-person interview with the building respondent, and an energy suppliers survey which is mailed to the energy suppliers. The FBSS survey design included only one major data collection stage -- collecting both building characteristics and consumption data from the building respondent, because the Federal building respondent was thought to have consumption data available to them. Respondents were asked to provide consumption and expenditures data for electricity, natural gas, fuel oil, and district sources (steam, hot water, and chilled water). For these major fuels, the following data were requested: (1) quantity consumed or delivered; (2) cost; and (3) unit of measure. The units of measure were as follows: electricity--kilowatt (kW) demand; natural gas including transportation gas--therms, cubic feet or 1,000 cubic feet; fuel oil--fuel-tank data; and district heating and cooling--the entire district or system. Respondents could Fax completed worksheets that were mailed to them in advance. If building respondents could not obtain these data, they were asked to provide the name, address, telephone and Fax number of the person who would most likely be able to provide the data. The data were requested for the Federal Fiscal Year 1993; that is, from October 1992 to September 1993.

These data were collected on the Building Questionnaire, a modified version of the CBECS form tailored to include specific questions relating to the Federal Energy Management Program (FEMP); such as, questions on motors, retrofitting equipment, energy conservation program sponsorship, and availability of energy audits. Additionally, wording and structural changes to the 1992 CBECS questionnaire were incorporated into the 1993 FBSS questionnaire to facilitate the CATI mode of data collection.

### **Questions Asked in 1993 FBSS and Not 1992 CBECS**

- Equipment Age for: heating (each type present), central chillers, refrigeration, water heating, motors 10 or more horsepower (each type present)
- Sponsorship of Retrofit/Purchase and Type of Assistance (included FEMP and Federal Energy Efficiency Fund (FEEF)) for: special energy technologies, heating equipment (each type present), central chillers, refrigeration, water-heating equipment, lighting
- FBSS asked if Electronic Ballasts were present in the building
- Motors - 10 or more horsepower: number, age, approximate number of energy-efficient motors, approximate number of motors rewind, age when rewind, general behavior when motor fails -- rewind or replace. Specifically asked for the following equipment:

|             |                 |
|-------------|-----------------|
| Chillers    | Heat Pumps      |
| Fans        | Air Compressors |
| Water Pumps | Elevators       |
| Escalators  | Refrigeration   |

- Questions asked of the interviewer to assess the respondents ability to answer the motor questions and the questionnaire in general

### **1992 CBECS Questions Not Asked in 1993 FBSS**

- Physical Characteristics: Number of below-ground-level floors, building shape, ground-level length/width of square and rectangular buildings, attachment to other structures, renovations and demolitions
- Ownership and Occupancy Characteristics: Building owner and occupant of building, number businesses and organizations that occupy buildings, percent vacant three consecutive months, additional operating hours when equipment in use
- Conservation and Energy Management: Special space functions, opening and closing windows

This appendix has three sections: "Sample Design," "Survey of Building Characteristics and Consumption Data," and "Public-Use Data Preparation." These sections focus on components of the sample, the procedures for data collection and processing, data difficulties encountered, and procedures for handling unit and item nonresponse.

## **Target Population**

The OFEMP requested that the FBSS provide building-level energy-related characteristics for a special sample of commercial buildings owned by the Federal Government. To meet OFEMP's requests, the FBSS target population consisted of federally owned commercial buildings: (1) operated by either GSA, some agency other than GSA, or a contract facility; and (2) in Federal Regions 3, 6, or 9 that:

- Met the CBECS definition of a building--a structure intended for human access and totally enclosed by walls extending from the foundation to the roof
- Were primarily used for some commercial purpose--more than 50 percent of the floorspace devoted to activities that are neither residential, industrial, agricultural nor warehouse/storage
- Measured 10,000 square feet or larger -- this was increased from the CBECS 1,001 square feet size criterion because smaller buildings form a large, inherently ill-defined, group of marginal structures.

All agencies in Federal Regions 3, 6, and 9 were in the FBSS target population.<sup>3</sup>

## Determining Building Eligibility

During the development of the facility and building sample lists for the FBSS frame, somewhat looser criteria were applied to prevent inaccurate exclusion of eligible buildings based on inaccurate list information. During the interview with the building owner or manager, building eligibility was determined according to the criteria listed above to allow a knowledgeable respondent to ultimately screen eligible buildings. Once the interview began, initial screening questions instructed the interviewer to terminate the interview if the respondent indicated that the building size was less than 10,000 square feet or if 50 percent or more of the square footage was used for residential, industrial, agricultural, or warehouse/storage purposes.

## Sample Design

Although a comprehensive list of all Federal buildings in the target population (3 Federal regions) does not exist, there is a list of most Federal facilities. Under the direction of the OFEMP, a data base was developed, which contained energy management information on all Federally owned facilities in the United States. As of June 1994, 19,237 Federal facilities were represented in the data base. Therefore, the FBSS sample design was based upon sampling from a national list of Federal facilities created from the data base.

## Two-Stage Systematic Probability-Proportional-to-Size (PPS) Sample

The sample design of the FBSS was a two-stage systematic probability-proportional-to-size (PPS) design and the two-stages of the design were: (1) Selecting Facilities and (2) Selecting Buildings. Facility selection was conducted using the FEMP data base. For each facility selected in stage one, a list of buildings on the selected facility was obtained from the facility energy manager. For stage two, buildings were selected. PPS sampling is commonly used to take advantage of existing knowledge about the sample units to improve the reliability of survey estimates. For quantities roughly proportional to certain measures of size (MOS's), estimates based on PPS sampling have lower variances than estimates based on equal-probability sampling. The total square footage of a facility or building was used as a MOS since building size is well correlated with commercial activity and energy consumption, which indicates size is a good choice not only for PPS sampling, but also for ordering in the systematic selection.

<sup>3</sup>For a detailed discussion of CBECS criteria, see Appendix A, "How the Survey was Conducted" in the *Commercial Buildings Energy Consumption and Expenditures 1992*, DOE/EIA-0318(92), Energy Information Administration (Washington, D.C., Government Printing Office, April 1995).



## First Stage -- Selecting Facilities

To prepare for the first-stage of the PPS sample, all Federal facilities listed in Regions 3, 6, and 9 were divided into Department of Defense (DOD) and non-DOD facilities based on agency designation, to ensure appropriate selection of DOD facilities. Next, within the DOD facilities, eight strata were formed by grouping adjacent States. Adjacent States were assumed to be similar in average temperatures and main fuel used; and, therefore, similar in energy-related characteristics. Similarly, the non-DOD facilities were grouped into eight strata by the same grouping of adjacent States. From the 15 States in Regions 3, 6, and 9 the States were grouped as follows: (1) West Virginia and Virginia, (2) Delaware and Pennsylvania, (3) Maryland and District of Columbia, (4) Oklahoma and Texas, (5) New Mexico, (6) Louisiana and Arkansas, (7) Hawaii and California, and (8) Arizona and Nevada. These groupings resulted in the listed Federal facilities being divided in a total of 16 strata--8 DOD strata and 8 non-DOD strata. From each of the 16 strata an independent systematic PPS sample of facilities was conducted; such that  $N_i$  buildings were selected (with replacement).  $N_i$  represents the number of buildings assigned to stratum I based on the ratio of the square feet of stratum I to the square feet of all facilities. A modified proportional allocation of the sample to stratum was used; 10 percent from the 8 DOD strata, 90 percent from the 8 non-DOD strata, resulting in separate proportional allocation within each of these two sets of strata. Table A1 below lists the adjacent States contained in each stratum along with square footage and sample sizes for each stratum.

**Table A1. Stratum Sample Size**

| Strata # | Strata Type | Federal Region | States | Square Feet | Number of Facilities | Number of Buildings | $N_i$ | $R_i$     |
|----------|-------------|----------------|--------|-------------|----------------------|---------------------|-------|-----------|
| 1        | DOD         | 3              | WV, VA | 62,361,720  | 85                   | 7,070               | 28    | 2,227,204 |
| 2        | DOD         | 3              | DE, PA | 29,160,956  | 109                  | 2,702               | 13    | 2,243,150 |
| 3        | DOD         | 3              | MD, DC | 53,219,624  | 53                   | 5,164               | 24    | 2,217,484 |
| 7        | DOD         | 6              | OK, TX | 85,299,041  | 138                  | 10,876              | 38    | 2,244,712 |
| 8        | DOD         | 6              | NM     | 12,952,851  | 12                   | 2,165               | 6     | 2,158,809 |
| 9        | DOD         | 6              | LA, AR | 18,895,368  | 49                   | 3,408               | 9     | 2,099,485 |
| 13       | DOD         | 9              | HI, CA | 164,757,998 | 186                  | 19,659              | 74    | 2,226,459 |
| 14       | DOD         | 9              | AZ, NV | 18,348,119  | 29                   | 3,230               | 8     | 2,293,515 |
| 4        | Non-DOD     | 3              | WV, VA | 31,238,568  | 172                  | 1,681               | 218   | 143,296   |
| 5        | Non-DOD     | 3              | DE, PA | 23,271,681  | 199                  | 1,099               | 162   | 143,653   |
| 6        | Non-DOD     | 3              | MD, DC | 74,381,176  | 167                  | 1,759               | 518   | 143,593   |
| 10       | Non-DOD     | 6              | OK, TX | 35,509,436  | 460                  | 1,815               | 247   | 143,763   |
| 11       | Non-DOD     | 6              | NM     | 14,218,734  | 64                   | 1,646               | 99    | 143,624   |
| 12       | Non-DOD     | 6              | LA, AR | 13,621,885  | 134                  | 463                 | 95    | 143,388   |
| 15       | non-DOD     | 9              | HI, CA | 56,847,625  | 429                  | 4,368               | 396   | 143,555   |
| 16       | non-DOD     | 9              | AZ, NV | 9,348,882   | 134                  | 959                 | 65    | 143,829   |

$N_i$  = Stratum sample size or the number of buildings assigned to stratum I.

$R_i$  = Ratio of stratum square feet to stratum sample size.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

## Second Stage -- Selecting Buildings

In the second stage, the selected multibuilding facilities were screened for eligible buildings. Each facility was sampled independently. Once the frame of buildings for each facility was verified for accuracy, it provided the correct MOS for each eligible building and, consequently, an update for the facility MOS. The frame of buildings for each facility was then ordered by building square footage and sampled systematically with PPS.

## Projected Sampling Results

The core sample size was 1,000 buildings, since 90 percent of 1,000 would provide the targeted sample size of 900 buildings. An additional sample of 1,000 buildings was selected for reserve use for ineligible buildings, nonresponse, and any replication that may have been needed. The 2,000 buildings were randomly divided into the core and reserve samples, Panel I and Panel II, respectively.

## Actual Sample Selected

To achieve the FBSS sampling goal, the actual sample selected included the core (Panel I) and reserve (Panel II) buildings of which 963 buildings were from Region 3, 494 buildings were from Region 6, and 543 were from Region 9.

## Actual Sampling Results

These procedures resulted in 881 completed interviews, only 19 short of the targeted goal of 900. Of the 881 completed interviews; 310 (35.2 percent) were from Region 3; 245 (27.8 percent) were from Region 6; and 326 (37.0 percent) were from Region 9 (See Table A2). The overall response rate for this survey was 75 percent. The regional response rates are provided below.

**Table A2. Regional Response Rates in Panel I and Panel II**

|                        | Panel I Selection |                      |         | Panel II Selection |                      |         | Total    |                      |         |
|------------------------|-------------------|----------------------|---------|--------------------|----------------------|---------|----------|----------------------|---------|
|                        | Eligible          | Completed Interviews | Percent | Eligible           | Completed Interviews | Percent | Eligible | Completed Interviews | Percent |
| <b>Region 3</b> . . .  | 383               | 283                  | 73.89   | 40                 | 27                   | 67.50   | 423      | 310                  | 73.29   |
| <b>Region 6</b> . . .  | 228               | 207                  | 90.79   | 43                 | 38                   | 88.37   | 271      | 245                  | 90.41   |
| <b>Region 9</b> . . .  | 288               | 210                  | 72.92   | 195                | 116                  | 59.49   | 483      | 326                  | 67.49   |
| <b>Total</b> . . . . . | 899               | 700                  | 77.86   | 278                | 181                  | 65.11   | 1,177    | 881                  | 74.85   |

Source: Energy Information Administration, Office of Energy Markets and End Use, 1993 Federal Buildings Supplemental Survey.

# Survey of Building Characteristics and Consumption Data

## Data Collection

FBSS data collection involved many phases and began with the redesign of the 1992 CBECS Building Questionnaire to not only assist in the implementation of the 1992 EPACT but also to accommodate the CATI system. After the questionnaire redesign, the data collection phases continued with minimizing nonresponse to ensure quality data, training supervisors and interviewers, interviewing building respondents, and concluded with processing the FBSS data. Survey interviewing began July 1994 (pretests were conducted) and ended December 31, 1994. A survey contractor performed the data collection under the direction of EIA. The data were collected by the survey contractor's telephone center staff.

### *Minimizing Nonresponse*

Prior to and throughout data collection, EIA worked closely with the three Federal regions employing several approaches to increase cooperation and participation and to ensure that respondent burden and nonresponse was minimized. There were telephone callbacks; establishment of an 800 number to address respondents' concerns or questions; and direct EIA response to customer concerns. Respondents were encouraged to call either EIA or the 800 number if they had any questions. Additionally, letters of notification and/or FBSS materials were sent to the following:

- Federal Interagency Management Task Force
- General Services Administration (GSA) and Department of Energy (DOE) regional offices
- Facility managers of facilities selected to participate in FBSS
- Building managers of the buildings selected to participate in the FBSS.

For more discussion on the efforts taken to minimize nonresponse and respondent burden as well as examples of letters sent and addressees receiving those respective letters, see Appendix E, "Outreach Efforts."

### *Training Supervisors and Interviewers*

Because the 1993 FBSS was a CATI-administered, shortened version of the 1992 CBECS Building Questionnaire, only a shortened version of training was needed. The survey contractor conducted both the half-day supervisor training session and the one-day interviewer training session at the survey contractor's telephone center. The supervisor training session covered the in-depth FBSS subject-matter information, which included a component on monitoring the interview and providing feedback. The interviewer training session conducted on August 11, 1994, included FBSS background, key concepts related to energy use, several hours of interviewer self-study, several hours of practice interview, and administrative information. EIA personnel observed the interviewer training session and were available for assistance. From August 12 through August 15, 1994, interviewers received intense monitoring. On August 16, an interviewer debriefing was held. Monitoring also continued throughout the data collection process.

### *Interviewing the Building Respondent*

Each interview began with a series of screening questions designed to verify the building's address and eligibility for the survey. The completed building interview lasted an average of 39 minutes. This included the time for the interviewer to ask all questions on energy-related building characteristics as well as the consumption and expenditure data.

## Data Preparation for Report

EIA data analysts reviewed and processed the data for the final data tape. Crosstabulations were run to check for internal

consistency of the data. Because commercial building consumption and expenditure data are complex and interrelated, the EIA review was extensive. EIA performed data imputations and in July 1995, prepared a final data tape. Statistical tables of aggregated data were then produced and analyzed. The report text was based on these tables, which are presented both in the text and in Chapter 3, of this report.

### ***Processing the FBSS Data***

Because FBSS used CATI as the mode of data collection, most data editing occurred during the interview. The CATI system checked for completeness, inconsistencies or ambiguities in the data, accuracy of questionnaire skip patterns, and checked that only allowable values or codes were entered. After the interviews, data editing occurred during review of data frequencies and crosstabulations. These were reviewed to search for outlying values and inconsistencies that the CATI edits may not have identified. When CATI edits failed to resolve data problems, especially when the energy sources or heating and cooling equipment were involved, EIA personnel provided technical guidance, and when necessary, the survey contractor contacted the respondent by telephone for clarification. Telephone data retrieval was conducted for edit failures involving nonprogrammed-CATI edits. After having inconsistencies corrected by the contractor, EIA began the data preparation for the report. Any changes made to any questionnaire response as a result of data editing were documented.

### ***Data Editing/Data Adjustments***

Adjustments for unit nonresponse were performed. Cases missing all or part of calendar year 1993 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 the "Nonsampling and Sampling Errors" section. For cases where the consumption data covered more than the one sampled building, the EIA implemented a special adjustment procedure--disaggregation to compute building-specific annualized consumption and expenditures.

**Disaggregation.** Disaggregation was generally necessary when either 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 building respondent had not. A disaggregation "factor" was calculated based on the square footage of the buildings involved.

### ***Imputations***

Nonresponse to several items in otherwise completed questionnaires was 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. The characteristics 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 Federal region. 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. For the FBSS, only data items considered critical for predicting energy consumption were imputed. These data items were: square footage, year constructed, principal building activity, energy sources used, end uses performed, major and minor fuel end uses, percent of floorspace heated and cooled, presence of refrigeration equipment, months the building was in use, operating hours, and number of workers.

The general approach taken for imputing annual consumption or expenditures for a particular fuel was to use respondent cases to develop multiple linear regression equations, and then use these equations to provide imputed values for cases in which the data were missing.

## Public-Use Data Preparation

In addition to the publication of this 1993 FBSS service report, the basic survey data at the microlevel were provided to the public on public-use data diskettes. These public-use diskettes are available to the public through the National Technical Information Service (NTIS) and the Office of Scientific and Technical Information (OSTI). (See Appendix F for ordering information.)

# **Appendix B**

## **Types of Buildings**

# **Appendix C**

## **Federal Regions Map**

# **Appendix D**

## **Metric Conversion Factors**



# Appendix D

## Metric Conversion Factors

Data in the Energy Information Administration publications are expressed in units, such as British thermal units, barrels, cubic feet, and short tons, that historically have been used in the United States. However, because U.S. activities involve foreign nations, most of which use metric units of measure, the United States is committed to making the transition to the metric system. The metric conversion factors presented in Table D1 can be used to calculate the metric-unit equivalents of values expressed in U.S. units. For example, 500 short tons are the equivalent of 453.6 metric tons (500 short tons x 0.9071847 metric tons/short tons=453.6 metric tons).

**Table D1. Metric Conversion Factors**

| Type of Unit | U.S. Unit   | Conversion Factor                         | Metric Unit                             |
|--------------|---|---|---|
| Mass         | Short Tons  | X 0.907 1847                              | = Metric Tons (t)                       |
|              | Short Tons Uranium Oxide (U <sub>3</sub> O <sub>8</sub> ) | X 0.769                                   | = Metric Tons Uranium (U)               |
|              | Short Tons Uranium Fluoride (UF <sub>6</sub> )            | X 0.613                                   | = Metric Tons Uranium (U)               |
|              | Long Tons   | X 1.016                                   | = Metric Tons(t)                        |
|              | Pounds(lb)  | X 0.453 592 37 <sup>a</sup>               | = Kilograms(kg)                         |
|              | Pounds Uranium Oxide(lb U <sub>3</sub> O <sub>8</sub> )   | X 0.384 645 <sup>b</sup>                  | = Kilograms (Kg)                        |
| Volume       | Ounces, Avoirdupois(oz)                                   | X 28. 349 52                              | = Grams(g)                              |
|              | Barrels of Oil(bbl)                                       | X 0.158 987 3                             | = Cubic Meters (m <sup>3</sup> )        |
|              | Cubic Yards(yd <sup>3</sup> )                             | X 0.765 555                               | = Cubic Meters (m <sup>3</sup> )        |
|              | Cubic Feet(ft <sup>3</sup> )                              | X 0.028 316 85                            | = Cubic Meters (m <sup>3</sup> )        |
|              | U.S. Gallons(gal)   | X 3.785 412                               | = Liter (L)                             |
|              | Ounces, Fluid(fl oz)                                      | X 29.573 53                               | = Milliliters (ml)                      |
| Length       | Cubic Inches(in <sup>3</sup> )                            | X 16.387 06                               | = Milliliters (ml)                      |
|              | Miles (mi)  | X 1,609 344 <sup>a</sup>                  | = Kilometers (km)                       |
|              | Yards (yd)  | X 0.914 4 <sup>a</sup>                    | = Meters (m)                            |
|              | Feet (ft)   | X 0.304 8 <sup>a</sup>                    | = Meters (m)                            |
| Area         | Inches (in)   | X 2.54 <sup>a</sup>                       | = Centimeters (cm)                      |
|              | Acres   | X 0.404 69                                | = Hectares (ha)                         |
|              | Square Miles (mi <sup>2</sup> )                           | X 2,589 988                               | = Square Kilometers (km <sup>2</sup> )  |
|              | Square Yards (yd <sup>2</sup> )                           | X 0.836 127 4                             | = Square Meters (m <sup>2</sup> )       |
|              | Square Feet (ft <sup>2</sup> )                            | X 0.092 903 04 <sup>a</sup>               | = Square Meters (m <sup>2</sup> )       |
| Temperature  | Square Inches (in <sup>2</sup> )                          | X 6.4561 6 <sup>a</sup>                   | = Square Centimeters (cm <sup>2</sup> ) |
|              | Degrees Fahrenheit (°F)                                   | X 5/9 (after subtracting 32) <sup>a</sup> | = Degrees Celsius (°C)                  |
| Energy       | British thermal units (Btu)                               | X 1,055.056                               | = Joules (J)                            |
|              | Calories (cal)  | X 4.186 8                                 | = Joules (J)                            |
|              | Kilowatthours (kWh)                                       | X 3.6                                     | = Megajoules (MJ)                       |

<sup>a</sup>Exact Conversion.

<sup>b</sup>Calculated by the Energy Information Administration.

<sup>c</sup>To convert degrees Celsius (°C) to degrees Fahrenheit (°F) multiply by 9/5, then add 32.

Sources: ●General Services Administration, Federal Standard 376B, *Preferred Metric Units for General Use by the Federal Government* (Washington, DC, January 27, 1993), pp. 9-11, 13, and 16. ●National Institute of Standards and Technology, *Special Publications* 330, 811, and 814. ●American National Standards Institute/Institute of Electrical and Electronic Engineers, ANS/EEE Std.268-1982, pp 28 and 29. ●Energy Information Administration, *Monthly Energy Review August 1993*, Appendix B, p 161.

# **Appendix E**

## **Outreach Efforts**

# Appendix E

## Outreach Efforts

This appendix contains examples of the letters of notification and FBSS materials that were sent prior to and throughout the FBSS data collection process to minimize nonresponse and respondent burden. This appendix also contains the names and addresses of the Federal Interagency Management Task Force and GSA and DOE regional offices contacts to whom their respective letters were sent. Also included is the thank you letter sent to FBSS respondents (Letter 5). The FBSS letters of notification and other FBSS materials were sent to the following:

### Letter 1. Federal Interagency Management Task Force:

Some agencies (those without Cabinet appointees) are not represented in the Federal Interagency Management Task Force. The following nonmember agencies did not receive an advance FBSS notification letter:

- Federal Energy Management Agency
- Government Printing Office
- Interstate Commerce Commission
- National Science Foundation

Although members of the Federal Interagency Management Task Force, some agencies did not have facilities chosen to participate in the FBSS. The following member agencies did not receive an advance FBSS notification letter:

- Department of Housing and Urban Development
- General Accounting Office
- Office of Management and Budget
- Department of State

Letter 2. General Services Administration and DOE regional offices and enclosures

Letter 3. Facility Managers of facilities selected to participate in FBSS and enclosures

Letter 4. Building Managers of the buildings selected to participate in the FBSS and enclosures.

# Appendix F

## Related EIA Energy Consumption Publications

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 the Office of Scientific and Technical Information (OSTI). For OSTI ordering information, call 615-576-8401.

### 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 at that time and subsequently.

#### Characteristics of Buildings

*Commercial Buildings Characteristics 1992*; April 1994, DOE/EIA-0246(92), GPO Stock No. 061-003-00850-0, \$28.00.

"Commercial Buildings Characteristics 1992," *Monthly Energy Review*, January 1994, DOE/EIA-0035(94/01).

*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*; A Supplemental Reference, DOE/EIA-M008, \$22.95. Available from the NTIS, Order No. DE-85015581.

*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: Fuel Characteristics and Conservation Practices*; June 1981, DOE/EIA-0278, GPO Stock No. 061-00300200-5, \$9.00.

*Nonresidential Buildings Energy Consumption Survey: Building Characteristics*; March 1981, DOE/EIA-0246, GPO Stock No. 061-003-00171-8, \$6.50.

#### Consumption and Expenditures

*Commercial Buildings Consumption and Expenditures 1992*; April 1995, DOE/EIA-0318(92), GPO Stock No. 061-003-00904-2, \$31.00.

*Commercial Buildings Consumption and Expenditures 1989*; April 1992, DOE/EIA-0318(89), GPO Stock No. 061-003-00753-8, \$25.00.

*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. 061-003-00366-4, \$6.00.

### **Other Publications on the Commercial Sector**

Energy Consumption Series-- *Energy End-Use Intensities in Commercial Buildings*, September 1994, DOE/EIA-0555(94)/2, GPO Stock No. 061-003-0087-9, 9.00.

"Assessment of Energy Use in Multibuilding Facilities," *Monthly Energy Review*, December 1993, DOE/EIA-0035(93/12).

Energy Consumption Series--*Assessment of Energy Use in Multibuilding Facilities*, August 1993, DOE/EIA-0555(93)/1, GPO Stock No. 061-003-00817-8, \$7.50.

Energy Consumption Series--*User-Needs Study for the 1992 Commercial Buildings Energy Consumption Survey*, September 1992, DOE/EIA-0555(92)/4, GPO Stock No. 061-003-00770-8, \$8.50.

Energy Consumption Series--*Lighting in Commercial Buildings*; March 1992, DOE/EIA-0555(92)/1, GPO Stock No. 061-003-00749-0, \$6.50.

### **Industrial Sector**

*Changes in Energy Intensity in the Manufacturing Sector 1985-1991*, October 1995, DOE/EIA-0552(85-91), GPO Stock No, 061-003-00925-5, \$9.00

*Manufacturing Consumption of Energy 1991*, December 1994, DOE/EIA-0512(91), GPO Stock No. 061-003-008709, \$34.00.

"Energy Preview: Manufacturing Energy Consumption Survey Preliminary Estimates, 1991," *Monthly Energy Review*, September 1993, DOE/EIA-0035(93/01).

"Energy Efficiency in the Manufacturing Sector," *Monthly Energy Review* (Article), p.1, December 1992.

*Manufacturing Energy Consumption Survey: Changes in Energy Intensity in the Manufacturing Sector 1980-1988*, December 1991, DOE/EIA-0552(80-88), 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. 061-003-00650-7, \$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/EIA0514(85), GPO Stock No. 061-003-00595-1, \$6.00.

*Manufacturing Energy Consumption Survey: Consumption of Energy, 1985*; November 1988, DOE/EIA-0512(85), GPO Stock No. 061-003-00594-2, \$6.00.

"Manufacturing Sector Energy Consumption 1985 Provisional Estimates," *Monthly Energy Review* (Article), pp. vii-x, January 1987, DOE/EIA-0035(87/01).

*Report on the 1980 Manufacturing Industries' Energy Consumption Study and Survey of Large Combustors*; February 1983, DOE/EIA-0358, GPO Stock No. 061-003-00293-5, \$5.00.

*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.).

#### **Other Publications on the Industrial Sector**

Energy Consumption Series--*Derived Annual Estimates of Manufacturing Energy Consumption 1974-1988*, August 1992, DOE/EIA-0555(92)/3, GPO Stock No. 061-003-00766-0, \$7.00.

Energy Consumption Series--*Development of the 1991 Manufacturing Energy Consumption Survey*, May 1992, DOE/EIA-0555(92)/2, GPO Stock No. 061-003-00757-1, \$5.50.

## **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 1993*; June 1995, DOE/EIA-0314(93), GPO Stock No. 061-003-00912-3, \$23.00.

*Housing Characteristics 1990*; May 1992, DOE/EIA-0314(90), GPO Stock No. 061-003-00754-6, \$23.00.

*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. 061--003-00087-8, \$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 1993*, October 1995, DOE/EIA-0321(93), GPO Stock No. 061-003-00932-8, \$21.00.

"Household Energy Consumption and Expenditures 1990," *Monthly Energy Review*, August 1993, DOE/EIA-0035(93/08).

*Household Energy Consumption and Expenditures 1990*; February 1993, DOE/EIA-0321/1(90), GPO Stock No. 061-003-00795-3, \$22.00.

*Household Energy Consumption and Expenditures 1990*; February 1993, DOE/EIA-0321/2(90), GPO Stock No. 061-003-00796-1, \$21.00.

*Household Energy Consumption and Expenditures 1987, Part 1: National Data*; October 1989, DOE/EIA-0321/1(87), GPO Stock No. 061-003-00635-3, \$15.00. Note: Energy end-use data are included in this report.

*Household Energy Consumption and Expenditures 1987, Part 2: Regional Data*; DOE/EIA-0321/2(87) (no GPO Stock No. available), \$16.00.

*Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 Through March 1985, Part 1: National Data*; March 1987, DOE/EIA-0321/1(84), GPO Stock No. 061-003-00519-5, \$9.50.

*Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 Through March 1985, Part 2: Regional Data*; May 1987, DOE/EIA-0321/2(84), GPO Stock No. 061-003-00528-4, \$17.00. Note: Energy end-use data are included in this report.

*Residential Energy Consumption Survey: Consumption and Expenditures, April 1982 Through March 1983, Part 1: National Data*; November 1984, DOE/EIA-0321/1(82), GPO Stock No. 061-003-00411-3, \$7.00.

*Residential Energy Consumption Survey: Consumption and Expenditures, April 1982 Through March 1983, Part 2: Regional Data*; December 1984, DOE/EIA-0321/2(82), GPO Stock No. 061-003-00414-8, \$9.50.

*Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, Part 1: National Data*; September 1983, DOE/EIA-0321/1(81), GPO Stock No. 061-003-00340-1, \$6.00.

*Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, Part 2: Regional Data*; October 1983, DOE/EIA-0321/2(81), GPO Stock No. 061-003-00357-5, \$8.00.

*Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 1: National Data*; September 1982, DOE/EIA-0321/1(80), GPO Stock No. 061-003-00278-1, \$7.50.

*Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 2: Regional Data*; June 1983, DOE/EIA-0321/2(80), GPO Stock No. 061-003-00319-2, \$7.00.

*Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures, Part I: National Data (Including Conservation)*; April 1981, DOE/EIA-0262/1, GPO Stock No. 061-003-00191-2, \$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**

Energy Consumption Series--*Sample Design for the Residential Energy Consumption Survey*, August 1994, DOE/EIA-0555(94)/1, GPO Stock No. 061-003-00865-8, \$6.50.

Energy Consumption Series--*User-Needs Study of the 1993 Residential Energy Consumption Survey*, September 1993, DOE/EIA-0555(93)/2, GPO Stock No. 061-003-00819-4, \$13.00.

"End-Use Consumption of Residential Energy," *Monthly Energy Review* (Article), pp. vii-xiv, July 1987, DOE/EIA-0035(87/07).

*Residential Energy Consumption Survey: Trends in Consumption and Expenditures 1978-1984* June 1987, DOE/EIA-0482, 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. 061-00300-347-8, \$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.).

## **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 was changed to *Household Vehicles Energy Consumption 1988*.

*Household Vehicles Energy Consumption 1991*; December 1993, DOE/EIA-0464(91), GPO Stock No. 061-003-00652-3, \$14.00.

"Energy Preview: Residential Transportation Energy Consumption Survey Preliminary Estimates, 1991," *Monthly Energy Review*, January 1993, DOE/EIA-0035(93/01).

*Household Vehicles Energy Consumption 1988*; February 1990, DOE/EIA-0464(88), 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.).

## **Cross-Sector**

*Energy Consumption Series--Measuring Energy Efficiency in the United States' Economy: A Beginning*; October 1995, DOE/EIA-0555(95)/2, GPO Stock No. 061-003-00935-2, \$6.50.

*Energy Consumption Series--Buildings and Energy In the 1980's*; June 1995, DOE/EIA-0555(95)/1, GPO Stock No. 061-003-00914-0, \$6.50.

*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 Office of Scientific and Technical Information (OSTI) and NTIS.

*Commercial Buildings Energy Consumption and Expenditures 1992, OSTI - ASCII or dBase format, order by title, \$10 per diskette, \$40/set of four. NTIS - ASCII or dBase format, order by title, call for prices.*

*Commercial Buildings Characteristics 1992*, **OSTI** - ASCII or dBase format, order by title, \$10 per diskette, \$40/set of four. **NTIS** - ASCII or dBase format: order No. PB-94-504305, call for prices.

*Residential Energy Consumption Survey 1993 Data*, **OSTI** - ASCII or dBase format, Order by title; \$10 per diskette. **NTIS** - ASCII format: No. Stock No. Assigned yet, Order by title.

*Residential Energy Consumption Survey 1990 Data*, **OSTI** - ASCII (3 diskettes) or dBASE (2 diskettes) format, order by title, \$10 per diskette. **NTIS** - ASCII format: Order No. PB-93-506103 and dBASE format: Order No. PB-93-506095.

*Residential Energy Consumption Survey 1987 Data*, **OSTI** - ASCII or dBASE format, order by title, \$45 for each set. **NTIS** - ASCII format: Order No. PB-91-505115, \$130, and DBASE format: Order No. PB-91-505107, \$130.

*Commercial Buildings Energy Consumption Survey 1992 Data*, **OSTI** - ASCII or dBASE format, order by title, \$10 per diskette, \$40 set of four. **NTIS** - ASCII or dBASE format, order by title, call for prices.

*Commercial Buildings Energy Consumption Survey 1989 Data*, **OSTI** - ASCII format, order by title, \$10 per diskette, \$40 set of four. **NTIS** - ASCII or dBASE format: Order No. PB92-504232, \$140.

*Nonresidential Buildings Energy Consumption Survey 1986 Data*, **NTIS** - ASCII format: Order No. PB91-506808, \$130.

*Residential Transportation Energy Consumption Survey 1991 Data*, **OSTI** - ASCII or dBASE format, order by title, call for prices. **NTIS** - ASCII format: Order No. PB94-500824. dBASE format: Order No. PB94-500816, call for prices.

*Residential Transportation Energy Consumption Survey 1988 Data*, **GPO** - ASCII or dBASE format, order by title, \$15 for each set. **NTIS** - ASCII format: Order No. PB91-507269, dBASE format: Order No. PB91-507277, \$50 each.

## Planned Publications

*EPACT Section 407 Data System: Results from Atlanta Clean City Fleet Vehicle Survey*, planned for November 1995.

*EPACT Section 407 Data Program: The Vehicle Stock and New Survey Findings*, planned for December 1995.

**Note:** The Energy Information Administration also publishes annually the *State Energy Data Report, Consumption Estimates*, DOE/EIA-0214, the *State Energy Price and Expenditures Report*, DOE/EIA-0376; and the *Monthly Energy Review*, DOE/EIA-0035. These reports contain annual and monthly consumption information derived from EIA supply surveys.

# Glossary

**Air-Conditioning:** See **Cooling**.

**Air-Handling Units:** A method for channeling warm or cool air to different parts of a building. The process of moving the conditioned air often involves drawing 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 or chilled water to cool the air inside the duct work. In the "Detailed Tables," air-handling units are included in "Ducts for Heating" in the "Heating Distribution Equipment" stub and in "Ducts for Cooling" in the "Cooling Distribution Equipment" stub. (See **Cooling, Duct, and Space Heating**.)

**Alternative Rate Program Assistance:** A type of assistance that offers special rate structures or discounts on the consumer's monthly electric bill in exchange for participation in programs aimed at cutting peak demands or changing load shape. These rates are intended to reduce consumer bills and shift hours of operation of equipment from on-peak to off-peak periods through the application of time-differentiated rates. For example, utilities often pay consumers several dollars a month (refund on their monthly electric bill) for participation in a load control program. Large commercial and industrial consumers sometimes obtain interruptible rates, which provide a discount in return for the consumer's agreement to cut electrical loads upon request from the utility (usually during critical periods, such as summer afternoons when the system demand approaches the utility's generating capability). (See **Energy Conservation Program Assistance, Energy Conservation Programs, and Retrofit or Purchase of Any Equipment**.)

**Asphalt or Fiberglass Shingles:** See **Shingles**.

**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 distribution 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 **Electric Baseboard and 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, Heating, Ventilation, and Air-Conditioning (HVAC), and District Heat**.)

**Bottled Gas:** See **Liquefied Petroleum Gas (LPG)** and **Propane**.

**British Thermal Unit:** See **Btu (British Thermal Unit)**.

**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 **Btu Conversion Factors** and **Metric Conversion Factors**.)

**Btu Conversion Factors:** The Btu conversion factors used for this survey are as follows:

|  | <b>Btu Equivalent</b> | <b>Unit</b>  |
|--|-----------------------|--------------|
| Electricity                            | 3,412                 | Kilowatthour |
| Natural Gas                            | 1,028                 | cubic foot   |
| Distillate Fuel Oils (Nos. 1,2, and 4) | 5.825 million         | per Barrel   |
| Residual Fuel Oils (Nos. 5 and 6)      | 6.287 million         | per Barrel   |
| Kerosene                               | 5.670 million         | per Barrel   |
| 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 = 1 pound steam.

Sources: Energy Information Administration, *Monthly Energy Review* (August 1995), pp. 145, 147, 149 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:** In this survey, a structure totally enclosed by walls extending from the foundation to the roof, containing over 10,000 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 Envelope or Shell Energy Conservation Program:** An energy conservation program that promotes reduction of energy consumption through improvements to the building envelope. Includes installation of insulation, weatherstripping, caulking, window film, and window replacement. (See **Building Shell (Envelope)**.)

**Building Floorspace:** See **Floorspace**.

**Building Shell Conservation Features:** Building features designed to reduce the energy loss or gain through the shell or envelope of the building. In the "Detailed Tables," this category includes roof, ceiling or wall insulation; storm windows or double- or triple-paned glass (multiple glazing); tinted or reflective glass or shading films; and exterior or interior shadings or awnings. This category does not include participation in a building envelope or shell energy conservation program. (See **Roof or Ceiling Insulation, Wall Insulation, Storm Windows, Storm Doors, Storm or Multiple Glazing, Tinted or Reflective Glass or Shading Film, and Exterior or Interior Shadings or Awnings**.)

**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.

**Built-Up Roof:** A roof covering consisting of several successive layers (each of which is called a ply), usually of roofing felt, with mopping 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**.

**Cases or Cabinets:** Refrigeration in cabinets (units) without covers or with flexible covers made of plastic or some other material, hung in strips or curtains (fringed material, usually plastic, that push aside like a bead curtain). Flexible covers stop the flow of warm air into the refrigerated space. (See **Commercial Refrigeration/Freezer Equipment**.)

**CATI:** See Computer-Assisted Telephone Interviewing (CATI).

**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. Chillers located at central plants are included under district chilled water. (See **Cooling, District Chilled Water, Central Physical Plant,** and **Heating, Ventilation, and Air-Conditioning (HVAC).**)

**Central Cooling:** Cooling of an entire building with a refrigeration unit to condition the air. Typically, central chillers and ductwork are present in a centrally cooled building. (See **Cooling.**)

**Central Physical Plant:** A plant that is owned by, and on the grounds of, a multibuilding facility that provides district heating, district cooling, or electricity to one or more buildings on the same facility. 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,** or **District Chilled Water.**)

**Centralized Water-Heating System:** Equipment to heat and store water for purposes other than space heating, which provides hot water from a single location for distribution throughout a building. A residential-type tank water heater is a good example of a centralized water heater. (See **Water-Heating Equipment** and **Distributed/Point-of-Use Water-Heating System.**)

**Chiller:** See **Central Chiller.**

**Coal:** A black or brownish-black solid, combustible substance formed by the partial decomposition of vegetable matter without access to air. In this report, the term includes anthracite, bituminous and subbituminous coal, as well as the derivative of coal (formed by destructive distillation or imperfect combustion) known as coke. This survey 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. In this report, coal is included in the "Any Other" category for the energy sources, main space-heating energy sources, and space-heating energy sources categories. (See **Energy Source.**)

**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. Agricultural buildings, residences, and manufacturing buildings were excluded from the survey. For a more complete list of buildings in the survey, see Appendix B, "Types of Buildings."

**Commercial Refrigeration/Freezer Equipment:** These include: commercial refrigeration/freezer units for the sale or storage of perishable materials; residential-type refrigerators/freezers; 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 this report, data are collected on refrigeration/freezer equipment inside and/or adjacent to the building. (See **Cases and Cabinets** and **Walk-in Refrigeration Units.**)

**Compact Fluorescent Light Bulbs:** Designed to replace screw-in incandescent light bulbs, they are often found in table lamps, wall sconces and hall and ceiling fixtures of commercial buildings with residential type lights. They combine the efficiency of fluorescent lighting with the convenience of standard incandescent bulbs. Light is produced the same way as other fluorescent lamps. Compact fluorescent bulbs have either electronic or magnetic ballasts. (See **Light Bulbs** and **Fluorescent Light Bulbs.**)

**Computer-Assisted Telephone Interviewing (CATI):** A computer-assisted survey process that uses the telephone for voice communications between the interviewer and the respondent. This mode of data collection was used for the 1993 Federal Buildings Supplemental Survey (FBSS).

**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. (See **Precast Concrete Panel.**)

**Concrete Roof:** 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. This measure is used in the fuel-specific tables in the "Detailed Tables." (See **Energy Source-Specific Floorspace**.)

**Confidence Interval:** A range that is estimated to include the population value at a given confidence level, usually 95 percent. The range is calculated from the sample data. The confidence level is the expected fraction of such confidence intervals that actually do include the corresponding, unknown population value.

**Conservation Features:** A feature in the building designed to reduce the usage of energy. (See **Building Shell Conservation Features, HVAC Conservation Features, and Lighting Conservation Features**.)

**Consumption:** The amount of energy used in, or delivered to, a building during a given period of time. For this report, unless otherwise noted, all consumption statistics are site energy consumption, which includes electric utility sales to commercial buildings but excludes electrical system and district heat energy losses. Statistics for this report are presented on an annual basis for the 365-day period of fiscal year 1993 (October 1, 1992 through September 30, 1993). Site consumption is the amount of energy delivered to the site (building); no adjustment is made for the fuels consumed to produce electricity or district sources. Site consumption is also referred to as net energy. However, primary consumption is the amount of site consumption plus losses that occur in the electricity generation process.

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, Conversion Losses, and Expenditures**.)

**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 Workers**.)

**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, Btu Conversion Factors, and Metric Conversion Factors**.

**Conversion Losses:** The amount of energy lost during generation, transmission, and distribution of energy sources particularly electricity, including plant and unaccounted-for uses. (See **Consumption, Site Electricity, and Primary Electricity**.)

**Cooking:** In this report, the use of energy for commercial or institutional food preparation. This survey 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 a central cooling or district cooling system that circulates chilled water. 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, Central Chiller, Heat Pump, Heating, Ventilation, and Air-Conditioning (HVAC), and Residential-Type Central Air Conditioner**.)

**Cooling Distribution Equipment:** The part of a cooling system that distributes conditioned water and/or air by means of pipes, ducts, or fans. Often the distribution serves both heating and cooling. (See **Duct, Individual Room Air-Conditioners in Wall or Windows,** and **Fan-Coil Unit.**)

**Cooling Equipment:** The equipment used for cooling room air in the building for human comfort. (See **Cooling Distribution Equipment** and also descriptions of specific response categories collected in the FBSS: **Residential-Type Central Air-Conditioner, Heat Pump, Individual Room Air-Conditioners in Walls or Windows, Central Chillers,** and **Packaged Units.**)

**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 Conversion Factors.**)

**Daylighting Controls:** See **Natural Lighting Control Sensors.**

**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. In the "Detailed Tables," decorative or construction glass is included in "Other" in the "Predominant Wall Materials" stub. (See **Window or Vision Glass.**)

**Direct Electricity Load Control Program:** A conservation program in which the utility system operator has direct control of the power supply to individual equipment on consumer premises and is able to interrupt consumer load at the time of peak load.

**Discrete-Delivery Energy Sources:** Energy sources that arrive at a building (site) in units or containers of a fixed size, rather than being available on a continuous basis. In this report, fuel oil is the only discrete delivery energy source. (See **Energy Source** and **Continuous-Delivery Energy Sources.**)

**Distributed/Point-of-Use Water-Heating System:** A system for heating hot water, for other than space-heating purposes, which is located at more than one place within a building. A point-of-use water heater is located at the faucet and heats water only as required for immediate use. Because water is not heated until it is required, this equipment is more energy efficient. (See **Water-Heating Equipment** and **Centralized Water Heating System.**)

**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 district system 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 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 reported together as district heat in most places. (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.**)

**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. (See **Air-Handling Units.**)



**Economizer Cycle:** An HVAC conservation feature, a method of operating a ventilation system to reduce the air-conditioning load. Wherever the temperature and humidity of the outdoor air are more favorable (lower heat content) than the temperature and humidity of the return air, more outdoor air is brought into the building. An economizer consists of indoor and outdoor temperature and humidity sensors, dampers, motors, and motor controls. (See **HVAC Conservation Features**.)

**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**.)

**Electric Utility Energy Conservation Program Sponsor:** An energy conservation program sponsored by an electric utility that suggests ways to increase the energy efficiency of buildings, to reduce energy costs, to change usage patterns, or to promote the use of a different energy source. (See **Energy Conservation Program Sponsor, Utility-Sponsored Energy Conservation Program, and Retrofit or Purchase of Any Equipment**.)

**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, Multibuilding Facility, Primary Electricity, and Site Electricity**.)

**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 that produce electric power for sale to other buildings but are not part of the same multibuilding facility. (See **Energy End Use, Electricity, and Multibuilding Facility**.)

**EMCS:** See **Energy Management and Control System (EMCS)**.

**Energy Audit:** In this report, an evaluation to provide information on the physical and operating characteristics of a building and its energy uses and processes that is collected at the premise or facility by trained auditors. Audit services vary from simple walk-throughs to building management training programs and site-specific process and efficiency evaluations. Audits can be initiated or sponsored and performed by a local utility, a Federal, State or local government, a building owner, or an energy service contractor. (See **Energy Management Practices**.)

**Energy Conservation Features:** In the "Detailed Tables," this includes building shell conservation features, HVAC conservation features, lighting conservation features, and other conservation features incorporated by the building. However, this category does not include participation in energy conservation programs. (See **Building Shell Conservation Features, HVAC Conservation Features, and Lighting Conservation Features**.)

**Energy Conservation Programs:** In this report, this is the planning and implementation of strategies designed to encourage consumers to improve energy efficiency, reduce energy costs, change the time of usage, or promote the use of a different energy source. This covers the complete range of load-shape objectives, including strategic conservation and load management, as well as strategic load growth.

The FBSS collected information on a variety of conservation strategies. This information included whether the building's electric or natural gas utility had sponsored any programs; whether the building had participated in, or planned to participate in, any programs sponsored by FEMP, in-house, by a utility, or by a third-party; which specific program areas the building had participated in, such as: the building envelope or direct electricity load control; identification of specific program sponsors; and what type of assistance was received through the program, such as: the Federal Energy Efficiency Fund (FEEF), general information, incentives, or alternative rates. (See **Energy Management Practices**.)

**Energy Conservation Program Assistance:** In this report, energy conservation program assistance consists of: the Federal Energy Efficiency Fund (FEEF), general information, site-specific information, incentives, alternative-rate programs, fuel-switching programs, and other programs. This assistance can be provided by FEMP, utilities, an in-house group, or third parties, such as an energy service company or contractor. Assistance for energy conservation programs may be monetary or nonmonetary awards to encourage consumers to buy energy-efficient equipment and to participate in programs designed to reduce energy usage. Examples of incentives are zero or low-interest loans, rebates, and direct installation of low-cost measures, such as water-heater wraps or compact fluorescent bulbs.

**Energy Conservation Program Sponsor:** An energy conservation program can be sponsored by FEMP, an electric or natural gas utility, in-house, or a third party, such as an energy service company or contractor. A sponsor suggests ways to increase the energy efficiency of buildings, to reduce energy costs, to change the usage patterns, or to promote the use of a different energy source through energy conservation programs.

**Energy-Efficient Motors:** These are also known as "high-efficiency motors" and "premium motors." They are virtually interchangeable with standard motors, but differences in construction make them more energy efficient.

**Energy End Use:** A use for which energy is consumed in a building. Information on six specific end uses was collected in this survey. (See **Cooking, Cooling, Space Heating, Electricity Generation, Manufacturing, and Water Heating.**)

**Energy Intensity:** The ratio of consumption to unit of measurement (floorspace, number of workers, etc.) 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. The energy intensity can also be computed for individual buildings. (See **Consumption, Conditional 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 **Energy Management Practices.**)

**Energy Management Practices:** In this report, involvement, as a part of the building's normal operations, in energy efficiency programs that are designed to reduce the energy used by specific end-use systems. In the "Detailed Tables," this includes the following: Energy Management and Control System, Energy Conservation Programs, Energy Audit, and HVAC Maintenance Staff. (See **Energy Management and Control System (EMCS), Energy Conservation Program, Energy Audit, and HVAC Maintenance Staff.**)

**Energy Source:** A type of energy or fuel consumed in the building. For this report, the major energy sources identified are electricity, natural gas, fuel oil, district heat, and district chilled water. In this survey, information about the use of propane, wood, coal, photovoltaic cells and solar thermal panels in commercial buildings was obtained from the building respondent. (See **Electricity, Natural Gas, Fuel Oil, District Heat, District Chilled Water, Liquefied Petroleum Gas (LPG), Propane, Wood, Coal, Photovoltaic Cells (PVC's) and Solar Thermal Panels.**)

**Energy Source-Specific Floorspace:** Total floorspace of those buildings that use a particular fuel. (See **Conditional Energy Intensity.**)

**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."

**Evaporative Cooler (Swamp Cooler):** An air-cooling unit that turns air into moist, cool air by saturating the air with water vapor. It does not cool air by use of a refrigeration unit. This type of equipment is commonly found in warm, dry climates. (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 fiscal year 1993. 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**.)

**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**, **Floorspace**, and **Square Footage**.)

**Exterior or Interior Shadings or Awnings:** A building shell conservation feature 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, horizontal or vertical shades, mini blinds, or any other means of covering a window from the inside to limit the amount of solar or thermal penetration. (See **Building Shell Conservation Features**.)

**Facility:** At the sampling stage, an establishment that encompasses 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. For all sample buildings, a survey question determined whether the building was part of a multibuilding facility. In many cases, a building was reported during the 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 during the interview. (See **Building** and **Multibuilding Facility**.)

**Fan-Coil Unit:** A type of heating or cooling distribution equipment that circulates hot or chilled water with fans but without ducts. 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**.)

**Federal Energy Efficiency Fund (FEEF):** A fund established by the Energy Policy Act of 1992 to improve energy efficiency in Federal facilities by providing grants to Federal agencies to implement energy efficiency and water conservation projects. (See **Energy Conservation Program Assistance** and **Retrofit or Purchase of Any Equipment**.)

**Federal Energy Management Program (FEMP):** A Department of Energy program aiming to reduce the cost of government and make it work better through energy efficiency, use of renewable energy, and water conservation. (See **Energy Conservation Program Assistance** and **Retrofit or Purchase of Any Equipment**.)

**Floors:** The number of levels in the tallest section of a building that are actually considered a part of the 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 Federal Region 3). (See **Square Footage**.)

**Fluorescent Light Bulbs:** These are usually long, narrow, white tubes made of glass coated on the inside with fluorescent material that are connected to a fixture at both ends of the light bulb; the tubes may also be circular or U-shaped. The light bulb produces light by passing electricity through mercury vapor, causing the fluorescent coating to glow or fluoresce. Excluded are compact fluorescent light bulbs, which are a separate category. In the "Detailed Tables," these bulbs are included in the "Standard Fluorescent" category in the "Lighting Equipment" stub. (See **Light Bulbs**, and **Compact Fluorescent Light Bulbs**.)

**Forced Air Through Vents or Air-Handling Units:** See **Air-Handling Units**.

**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, 2, and 4), residual fuel oil (No. 5 and 6), and kerosene. Number 1 distillate fuel oil is used mostly as a blending stock to assure that heavier grades of fuel flow under severe cold weather conditions. Number 2 fuel oil is the most common form of heating oil. Number 2 distillate collectively refers to Number 2 heating oil and Number 2 diesel fuel. Although these products are not precisely identical, they are essentially interchangeable in most applications. Number 4 distillate is a blend of Numbers 2, 5 or Number 6 residual fuel oil, used in large stationary diesel engines and boilers equipped with fuel preheating equipment. (See **Energy Source**.)

**Fuel-Switching:** See **Replacement Energy Source for Main Heating**.

**Fuel-Switching Program Assistance:** A type of assistance where the sponsor encourages consumers to change from one fuel to another for a particular end-use service. For example, utilities might encourage consumers to replace electric water heaters with gas units or encourage industrial consumers to use electric microwave heaters instead of natural gas heaters. (See **Energy Conservation Program Assistance**, **Energy Conservation Program**, and **Retrofit or Purchase of Any Equipment**.)

**Furnace:** 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 for heating is distributed throughout the building, typically by air ducts. (See **Boiler**; **Duct**; **Space Heating**; and **Heating, Ventilation, Air Conditioning, and Heating (HVAC)**.)

**Gallon:** A volumetric measure equal to 4 quarts (231 cubic inches) used to measure fuel oil. One barrel equals 42 gallons. (See **Barrel**.)

**General Information Energy Conservation Program Assistance:** This type of program assistance refers to efforts of an energy conservation sponsor to inform consumers about program options through such mechanisms as brochures, bill stuffers, and workshops. (See **Energy Conservation Program Assistance** and **Energy Conservation Programs**.)

**Heating:** See **Space Heating** or **Water Heating**.

**Heating Distribution Equipment:** The part of a heating system that distributes conditioned water and/or air throughout a building by means of pipes, ducts, or fans. Often the distribution equipment serves both heating and cooling. (See **Radiators**, **Baseboard**, **Duct**, **Individual Space Heater**, and **Fan-Coil Unit**.)

**Heating Equipment:** The equipment used for heating ambient air in the building such as a heat pump, furnace, individual space heater, district steam or hot water piped in from outside the building, boiler and packaged-heating units. (See **Heating Distribution Equipment**, **Boiler**, **Furnace**, **Heat Pump**, **Individual Space Heater**, and **Packaged Units**.)

**Heating, Ventilation, and Air-Conditioning (HVAC):** The system or systems that condition air in a building.

**Heat Pump:** Heating and/or cooling equipment that 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 **Heating, Ventilation, and Air-Conditioning (HVAC)**.)

**HID:** See **High-Intensity Discharge (HID) Light Bulbs**.

**High-Intensity Discharge (HID) Light Bulbs:** 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- and low-pressure sodium lamps. HID lamps have an extremely long life and emit far more lumens per fixture than do fluorescent lights. (See **Light Bulbs**.)

**Hot-Deck Imputation:** An imputation procedure for deriving a probable response to a questionnaire item concerning the commercial building using random resampling from nonmissing cases to fill in values for missing cases. (See **Imputation**.)

**HVAC:** See **Heating, Ventilation, and Air-Conditioning (HVAC)**.

**HVAC Conservation Features:** A building feature designed to reduce the amount of energy consumed by the heating, cooling, and ventilating equipment. In the "Detailed Tables," this category includes the presence of variable air-volume (VAV) systems, an economizer cycle, and preventive maintenance programs for the heating and cooling equipment. (See **Variable Air-Volume (VAV) System, Economizer Cycle, and Preventive Maintenance Program for the Heating and/or Cooling Equipment**.)

**HVAC Maintenance:** See **Preventive Maintenance Program for Heating and/or Cooling Equipment**.

**HVAC Maintenance Staff:** The building employs at least one person who spends at least half of their working hours maintaining the heating and/or cooling equipment. (See **Energy Management Practices**.)

**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, Regression**)

**Incandescent Light Bulbs:** A light bulb that produces a soft warm light by electrically heating a tungsten filament so that it glows. Because so much of the energy is lost as heat, these are highly inefficient sources of light. The halogen light bulb is a type of incandescent light bulb, made more efficient by the addition of a halogen gas. Included in this category are the familiar type of 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 **Light Bulbs**.)

**Incentives:** A type of program assistance that provides cash or non-cash awards to customers to encourage the purchase or sales of conservation programs. Appliance rebate programs are the most common example on incentive programs. Incentives can also include zero or low-interest loans. (See **Energy Conservation Program Assistance, Energy Conservation Programs, and Retrofit or Purchase of Any Equipment**.)

**Individual A/C:** See **Individual Room Air-Conditioners in Walls or Windows**.

**Individual Room 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. In the "Detailed Tables," these are labeled as "Individual A/C." (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 **Baseboard** and **Electric Baseboard**.)

**Industrial:** See **Manufacturing/Industrial**.

**In Scope:** Meeting the requirements for eligibility in the FBSS, and, therefore, included in the population covered by the survey. These eligibility requirements were (a) that the structure be a Federal building in Region 3, 6, or 9; (b) that the building be larger than 10,000 square feet; and (c) that more than 50 percent of the floorspace be used for commercial activities excluding buildings used for warehouse and storage. (See **Building, Commercial, and Floorspace.**)

**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 Features.**)

**Intensity:** The amount of a quantity per unit of measurement (floorspace, number of workers, etc.) 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, and Expenditures per Square Foot.**)

**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 and Electricity.**)

**Lamp:** See **Light Bulbs.**

**Light Bulbs:** A term generally used to describe a manmade source of light. The term is often used when referring to a "bulb" or "tube." The FBSS collected data only about light bulbs using electricity. (See **Incandescent Light Bulbs, Fluorescent Light Bulbs, Compact Fluorescent Light Bulbs and High-Intensity Discharge (HID) Light Bulbs.**)

**Lighting Conservation Features:** A building feature or practice designed to reduce the amount of energy consumed by the lighting system. In the "Detailed Tables," Lighting Conservation Features include natural lighting control sensors, manual dimmer switches, occupancy sensors, specular reflectors, and time clocks or timed switches. (See **Natural Lighting Control Sensors, Manual Dimmer Switches, Occupancy Sensors, Specular Reflectors, and Time Clocks or Timed Switches.**)

**Lighting Equipment:** These are light bulbs used to light the building's interior, such as incandescent light bulbs, fluorescent light bulbs, compact fluorescent light bulbs, and high-intensity discharge (HID) lights. (See **Incandescent Light Bulbs, Fluorescent Light Bulbs, Compact Fluorescent Light Bulbs, High-Intensity Discharge (HID) Light Bulbs, and Electronic Ballasts.**)

**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. (See **Energy Source, Propane, and Natural Gas.**)

**LPG:** See **Liquefied Petroleum Gas (LPG).**

**Main Space-Heating Energy Source:** The energy source used to heat most of the square footage in the building most of the time.

**Major Energy Sources:** The energy sources or fuels for which consumption and expenditures data were collected in the FBSS. 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. (See **Energy Sources.**)

**Major Fuels:** See **Major Energy Sources.**

**Manual Dimmer Switches:** A lighting conservation feature that changes the level of light in the building. These are like residential-style dimmer switches, which are not commonly used with fluorescent or HID lamps. (See **Lighting Conservation Features**.)

**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, metalwork, glasswork, 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.

Commercial buildings (such as offices) that were associated with a manufacturing establishment were included, but the manufacturing and 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** and Appendix B, "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 is stucco. This category does not include concrete panels since concrete panels represent a different method of constructing buildings. Concrete panels are included in the "Other" category. (See **Precast Concrete Panel**.)

**Mean:** The simple arithmetic average for a population 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**.)

**Mean Operating Hours:** The arithmetic average number of operating hours per building is the weighted sum of the number of operating hours divided by the weighted sum of the number of buildings.

**Mean Square Feet per Building:** The arithmetic average square feet per building is the weighted sum of the total square feet divided by the weighted sum of the number of buildings.

**Mean Square Feet per Worker:** The arithmetic average square feet per worker is the weighted sum of the total square feet divided by the weighted sum of the total number of main shift workers.

**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. For example, 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 Panels:** 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. These are included in the "Other" category in the "Predominant Exterior Wall Material" stub.

**Metal Surfacing:** Light-gauge metal sheets used for roofing. These are included in the "Other" category in the "Predominant Roof Material" stub.

**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 equal to 3,600,000 joules. One gigajoule (10<sup>9</sup> joules) is approximately 278 kilowatthours (kWh.) (For additional metric conversions, see Appendix D, "Metric Conversion Factors.")

**More than One May Apply:** In the "Detailed Tables," a row stub accompanied by this phrase indicates overlapping categories, so that a particular building may be represented 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.

**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 and Facility**.)

**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 (LPG) or to privately owned gas wells operated by a building owner. (See **Energy Source, Liquefied Petroleum Gas (LPG), and Propane**.)

**Natural Gas Transported for the Account of Others:** Natural gas physically delivered to a building by a local utility, but not bought from that utility. A separate transaction is made to purchase the volume of gas and the utility is paid for the use of its pipeline to deliver the gas. Included are quantities covered by long-term contracts and quantities involved in short-term or spot-market sales. Also called "Direct-Purchase Gas," "Spot-Market Gas," "Spot Gas," "Transported Gas," and "Self-Help Gas."

**Natural Gas Utility Energy Conservation Program Sponsor:** An energy conservation program sponsored by a natural gas utility that suggests ways to increase the energy efficiency of buildings, to reduce energy costs, to change the usage patterns, or to promote the use of a different energy source. (See **Energy Conservation Program Sponsor and Utility-Sponsored Energy Conservation Program**).

**Natural Lighting Control Sensors:** A lighting conservation feature that takes advantage of sunlight to cut the amount of electric lighting used in a building; a control system that varies the light output of an electric lighting system in response to variations in available daylight. It is sometimes referred to as "daylighting controls" or "photocells." (See **Lighting Conservation Features**.)

**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. Additionally, the FBSS excluded buildings that were used for warehouse and storage. (See **Commercial Building, Manufacturing/Industrial, Building, Residential, Principal Building Activity, Out of Scope**, and Appendix B, "Types of Buildings.")

**Occupancy Sensors:** A lighting conservation feature that uses motion or sound to switch lights on or off; also known as "ultrasonic switching." When movement is detected, the lights turn on and remain on as long as there is movement in the room. Occupancy sensors that detect sound work like ultrasonic switching; when sound is detected, the lights turn on. In this report, occupancy sensors refer to detecting movement, not sound. (See **Lighting Conservation Features**.)

**Off-Hour Equipment Reduction:** A method of conserving energy by changing the temperature setting or reducing the use of heating, cooling, domestic hot water heating, lighting or any other equipment either manually or automatically when the building is closed. (See **Conservation Features**.)

**Operating Hours:** See **Weekly Operating Hours**.

**Out of Scope:** Violating one or more of the requirements for eligibility in the survey, therefore not included in the population covered by the FBSS. (See **In Scope**.)

**Packaged A/C 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; Heating, Ventilation, and Air-Conditioning (HVAC)**; and **Space Heating**.)

**Percent Lit When Closed:** The percentage of the building's square footage that is lit electrically during all hours other than the usual operating hours. (See **Percent Lit When Open, Square Footage**, and **Weekly Operating Hours**.)

**Percent Lit When Open:** The percentage of the building's square footage that is lit electrically during usual operating hours. (See **Percent Lit When Closed, Square Footage** and **Weekly Operating Hours**.)

**Percent of Floorspace Cooled:** The percentage of the building's square footage that is cooled to meet the comfort requirements of the occupants. (See **Square Footage** and **Cooling**.)

**Percent of Floorspace Heated:** The percentage of the building's square footage designed to be heated to at least 50 degrees Fahrenheit. (See **Square Footage** and **Space Heating**.)

**Percent Window Glass:** The percentage of the building's exterior wall construction material made of glass that can be seen through from the inside of the building. This percentage excludes glass covered or constructed of glass material that cannot be seen through. (See **Decorative or Construction Glass** and **Window or Vision Glass**.)

**Photovoltaic Cells (PVC's):** A device that produces electrical current by converting light or similar radiation. In the "Detailed Tables," PVC's are included in the "Any Other" category in the "Energy Sources," "Space-Heating Energy Sources," and "Main Space-Heating Energy Sources" stubs.

**Plastic, Rubber, or Synthetic Roofing:** A layer of heavy gauge plastic or rubber used for roofing. In the "Detailed Tables," plastic, rubber or synthetic roofing are included in the "Synthetic or Rubber" category in the "Predominant Roof Material" stub.

**Point-of-Use Water-Heating System:** See **Distributed/Point-of-Use Water-Heating System**.

**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. 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**.)

**Precast Concrete Panel:** Refers to concrete panels usually made in factories and delivered to the construction site where they are hoisted onto the structure. Sometimes concrete panels are poured at the site and then hoisted on the structure. The panels are either solid or insulated. They can have plain, colored or textured finishing. In the "Detailed Tables," pre-cast concrete panels are included in the "Other" category in the "Predominant Wall Material" stub. (See **Concrete Panel**.)

**Preventive Maintenance Program for Heating and/or Cooling Equipment:** As used in this report, an 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 Features**.)

**Primary Electricity:** The amount of electricity delivered to commercial buildings adjusted to account for the fuels used to produce the electricity. That is, site electricity plus the conversion losses in the generation process at the utility plant. (See **Consumption, Conversion Losses, Electricity** and **Site Electricity**.)

**Primary Energy Consumption:** See **Consumption**.

**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 B, "Types of

Buildings.")

**Principal Facility Activity:** The main purpose for the activities across all buildings in a facility; for example, the principal building activity for a library on a school campus is "public assembly;" however, the principal facility activity is "school."

**Process Heating or Cooling Energy Conservation Program:** An energy conservation program designed to promote increased electric energy efficiency applications in industrial process heating or cooling. (See **Energy Conservation Programs and Waste-Heat Recovery.**)

**Propane:** A gaseous petroleum product that liquefies under pressure; propane is a major component in liquefied petroleum gas, or LPG. Any LPG reported in the CBECS was assumed to be propane. (See **Liquefied Petroleum Gas (LPG).**)

**Quad:** Quadrillion ( $10^{15}$ ) Btu. (See **Btu.**)

**Radiator:** A heating unit usually visibly exposed within the room or space to be heated; it transfers heat from steam or hot water by radiation to objects within visible range and by conduction to the surrounding air, which in turn is circulated by natural convection. Typically, a radiator is a freestanding, cast-iron fixture. (See **Space Heating.**)

**Reflectors:** See **Specular Reflectors.**

**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.**)

**Regular HVAC Maintenance:** See **Preventive Maintenance Program for Heating and/or Cooling Equipment.**

**Reheating Coils:** A part of some air-conditioning systems, these are 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 **Air-Handling Units, Cooling, and Space Heating.**)

**Relative Standard Error:** See **RSE or Relative Standard Error.**

**Replacement Energy Source for Main Heating:** In this report, the heating energy source to which the building could switch within one week without major modifications to the main heating equipment, without substantially reducing the area heated, and without substantially reducing the temperature maintained in the heated area.

**Residential:** As a building activity in this survey, activities related to use as a dwelling for one or more households. 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 dropped from the sample during the interview stage. (See **Principal Building Activity, In Scope, and Commercial Building.**)

**Residential-Type Central Air-Conditioner:** There are four basic parts to a residential central air-conditioning system: (1) a condensing unit, (2) a cooling coil, (3) ductwork, and (4) a control mechanism such as a thermostat. There are two basic configurations of residential central systems: (1) a "split system" where the condensing unit is located outside and the other components are inside, and (2) a packaged-terminal air-conditioning (PTAC) unit that both heats and cools or cools only. This system contains all four components encased in one unit and is usually found in a "utility closet." If the residential type is a "PTAC," it is considered a "Packaged air-conditioning unit."

**Retrofit or Purchase of Any Equipment:** The FBSS determined whether the building had retrofitted or purchased any of the heating equipment, central chillers, water heating equipment, lighting equipment, or refrigeration equipment in the past ten years. The survey also collected the sponsor and type of assistance received for these retrofits or purchases. The sponsors included an electric utility, in-house, a third party, and FEMP. The type of assistance included the Federal Energy Efficiency Fund, incentives, alternative rates, and fuel switching.

**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 Features**.)

**RSE or Relative Standard Error:** A measure of the reliability or precision of a survey statistic. Variability occurs in survey statistics because the different samples that could be drawn would each produce different values for the survey statistics. The RSE is defined as the standard error (the square root of the variance,) of a survey estimate, divided by the survey estimate and multiplied by 100. For example, an RSE of 10 percent means that the standard error is one-tenth as large as the survey estimate.

**Sampling:** The procedure used to select cases (in this survey, buildings) for interview from the population (Federal buildings in Regions 3, 6, or 9). (See Appendix A, "How the Survey Was Conducted.")

**Secondary Heating Fuel:** Fuels used in secondary space-heating equipment. When no secondary space-heating equipment is used, a secondary space-heating fuel that is used in the main space-heating equipment is not included in the tabulations. This occurs when, for example, wood and coal are both used in a furnace but wood is named the main space-heating fuel. Coal, in this case, is not tabulated.

**Shadings or Awnings:** See **Exterior or Interior Shadings or Awnings**.

**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. These are included in the "Other" category in the "Predominant Wall Material" and "Predominant Roof Material" stubs (See **Shingles**, **Siding**, and **Wooden Materials**.)

**Sheet Metal Panels:** Includes metal panels made in factories and shipped to the building site where they are fastened to the building frame. They are usually aluminum or galvanized steel. These are included in the "Other" category in the "Predominant Wall Material" stub. (See **Metal Panels**.)

**Shingles:** Flat pieces of weatherproof material laid with others in a series of overlapping rows as covering for roofs and sometimes the walls of buildings. Shingles are manufactured in a variety of materials including fiberglass, wood, plastic, baked clay, tile, asbestos, asphalt, and aluminum. All types of shingles are included in the "Other" category in the "Predominant Roof Material" and "Predominant Wall Material" stubs. (See **Siding**, **Shakes**, **Slate or Tile Shingles**, and **Wooden Materials**.)

**Siding:** An exterior wall covering material made of wood, plastic (including vinyl), or metal. The structural walls may be masonry or wood. Siding is generally produced in the shape of boards applied to the outside of a building in overlapping rows. This is included in the "Other" category in the "Predominant Wall Material" stub. (See **Wooden Materials**.)

**Site Electricity:** The amount of electricity delivered to commercial buildings. (See **Consumption**, **Conversion Losses**, **Electricity** and **Primary Electricity**.)

**Site-Specific Energy Conservation Program Assistance:** A type of assistance that provides guidance on energy efficiency and load-management options tailored to a particular customer's facility; it often involves an on-site inspection of the customer facility to identify cost-effective energy conservation actions that could be taken. They include audits, engineering design calculations on information provided about the building, and technical assistance to architects and engineers who design new facilities. (See **Energy Conservation Program Assistance** and **Energy Conservation Programs**.)

**Slate or Tile Shingles:** 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. These are included in the "Other" category in the "Predominant Roof Material" stub. (See **Shingles**.)

**Solar Thermal Panels:** These are thermal panels that use sunlight to heat fluids, a system that actively concentrates thermal energy from the sun by means of solar collector panels. The panels typically consist of flat, sun-oriented boxes

with transparent covers, containing water tubes or air baffles under a blackened heat-absorbent panel. The energy is usually used for space heating, for water heating and/or for heating swimming pools. This is included in "Any Other" in the "Energy Sources" stub. (See **Energy Sources**.)

**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**.)

**Specular Reflectors:** A lighting conservation feature, this is the mirror-like backing of a florescent lighting fixture specifically designed to reflect light into the room. The materials and shape of the reflector are designed to reduce absorption of light within the fixture, while delivering light in the desired angular pattern. The most common materials used are silver (highest reflectivity) and aluminum (lowest cost). (See **Lighting Conservation Features**.)

**Square Feet per Worker:** The ratio of the total square footage in each 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 Factors**.)

**Standard Error:** A measure of the precision of an estimate, equal to the square root of the variance. (See **Variance** and **RSE or Relative Standard Error**.)

**Standard Fluorescent:** See **Fluorescent Light Bulbs**.

**Standby Electricity Generation:** Involves use of generators during times of high demand on utilities to avoid extra "peak-demand" charges.

**Standby Electricity Generation Energy Conservation Program:** An energy conservation program that encourages consumers to use generators during times of high electricity demand to avoid "peak-demand" charges. In the "Detailed Tables," this is included in "Energy Conservation Program" category in the "Energy Management Practices" stub. (See **Energy Conservation Programs**.)

**Steam:** See **District Steam**.

**Steam or Hot Water Radiators or Baseboards:** See **Baseboard** and **Radiator**.

**Storm Doors:** A building shell conservation feature consisting of a second door installed outside or inside a prime door creating an insulating air space. Included are sliding glass doors made of double glass or of insulating glass such as thermopane, double- or triple-pane glass as well as sliding glass doors with glass or plexiglass installed outside or inside of the door. Plastic materials covering doors or doors with storm window covering on just the glass portion of the door are counted only if they can be used year after year. (See **Storm or Multiple Glazing**.)

**Storm or Multiple Glazing:** A building shell conservation feature consisting of storm windows, storm doors, or double- or triple-pane glass that are placed on the exterior of the building to reduce the rate of heat loss. (See **Building Shell Conservation Features**.)

**Storm Windows:** A building shell conservation feature consisting of a window or glazing material placed outside or inside a window creating an insulating air space. Windows with double glass or thermopanes are considered storm windows as well as windows with glass or plexiglass placed on the outside or inside of the window. Plastic material over windows is counted as a storm window if the same plastic material can be used year after year. (See **Storm or Multiple Glazing**.)

**Swamp Coolers:** See **Evaporative Cooler (Swamp Cooler)** and **Cooling**.

**Synthetic or Rubber Roofing:** See **Plastic, Rubber or Synthetic Roofing**.

**Thermal Energy Storage (TES) or Pump Storage:** The temporary storage of energy for later use. Examples of thermal storage are the storage of solar energy for night heating, the storage of summer heat for winter use, the storage of winter ice for space cooling in the summer, and the storage of heat or coolness generated electrically during time when electricity is cheaper (off-peak hours) for later use when electricity rates are higher. There are four basic types TES systems: ice storage, water storage, storage in a thermal mass such as soil, rock or other solids, and storage in other material such as glycol. The most commonly installed types of thermal energy storage systems in commercial buildings are those using ice or chilled water for cooling the building.

**Thermostat:** A device that adjusts the amount of heating and cooling produced and/or distributed by automatically responding to the temperature in the environment.

**Third-Party Energy Conservation Program Sponsor:** An energy service company (ESCO), which promotes a program sponsored by a manufacturer or distributor of energy products such as lighting or refrigeration whose goal is to encourage consumers to improve energy efficiency, reduce energy costs, change the time of usage, or promote the use of a different energy source. (See **Energy Conservation Programs** and **Energy Conservation Program Sponsor and Retrofit or Purchase of Any Equipment**.)

**Time Clocks or Timed Switches:** Time clocks are automatic controls that turn lights off and on at predetermined times. (See **Lighting Conservation Features**.)

**Tinted or Reflective Glass or Shading 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 Features**.)

**Transported Gas:** See **Natural Gas Transported for the Account of Others**.

**Trillion Btu:** Equivalent to 1,000,000,000,000 (10<sup>12</sup>) Btu. (See **Btu**.)

**Utility-Sponsored Energy Conservation Program:** In this report, this is any energy conservation program sponsored by an electric and/or natural gas utility to review equipment and construction features in buildings and advise on ways, among other things, to increase the energy efficiency of buildings; such as, programs to encourage the use of more energy-efficient equipment. Also, 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 **Energy Conservation Program Sponsor**.)

**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 FBSS 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 for three or more consecutive months, and/or the number of months the building was in use. (See **Principal Building Activity**, and Appendix B, "Types of Buildings.")

**Variable Air-Volume (VAV) System:** An HVAC system that supplies varying quantities of conditioned (heated or cooled) air to different parts of the building according to the heating and cooling needs of those specific areas. This is an HVAC conservation feature and is usually referred to as "VAV." (See **HVAC Conservation Features**.)

**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 FBSS 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**.)

**VAV:** See **Variable Air-Volume (VAV) System**.

**Walk-In Refrigeration Units:** Refrigeration/freezer units within a building that are large enough to walk into. They may be portable or permanent, such as a meat storage locker in a butcher store. Walk-in units may or may not have a door, plastic strips, or other flexible covers. (See **Commercial Refrigeration/Freezer Equipment**.)

**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 Features**.)

**Warm-Air Furnace:** See **Furnace**.

**Waste-Heat Recovery:** Any conservation system whereby some space heating or water heating is done by actively capturing byproduct heat that would otherwise be ejected into the environment. In commercial buildings, sources of waste-heat recovery include refrigeration/air-conditioner compressors, manufacturing or other processes, data processing centers, lighting fixtures, ventilation exhaust air, and the occupants themselves. Not to be considered is the passive use of radiant heat from lighting, workers, motors, ovens, etc., when there are no special systems for collecting and redistributing heat. (See **Process Heating or Cooling Energy Conservation Program**.)

**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**.)

**Water-Heating Equipment:** Automatically controlled, thermal insulated equipment designed for heating water at temperatures less than 180 degrees Fahrenheit for other than space heating purposes. This survey collected data to distinguish between two types of water heating equipment: centralized and distributed/point-of-use. (See **Centralized Water-Heating System** and **Distributed/Point-of-Use Water-Heating System**.)

**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 a certain Federal region that a particular sample building represents. To estimate the total value of an attribute (such as square footage) in the entire Federal region, each sample building's value is multiplied by the building's weight. Summing (aggregating) the weighted sample values provides an estimate of the Federal region total.

**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. In the "Detailed Tables," window or vision glass is included in "Other" in the "Predominant Wall Materials" stub. (See **Decorative or Construction Glass**.)

**Wood:** As an energy source, wood logs, chips, or wood products that are used as fuel. In this survey, information about the use of wood as fuel in commercial buildings was obtained from the building respondent. Wood is included in the "Any Other" category in the "Energy Sources" stub. (See **Energy Source**.)

**Wooden Materials:** Wood shingles, wood shakes, or other wooden materials used as roofing materials. (The questionnaire also includes wood siding and shingles under exterior wall construction.) (See **Shingles** and **Shakes**.)

**Workers:** The number of people working in a building across all shifts on a typical workday during the year. The main

shift is the time when most people are in the building. 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.

**Year Constructed:** The year in which the major part or the largest portion of a building was constructed.