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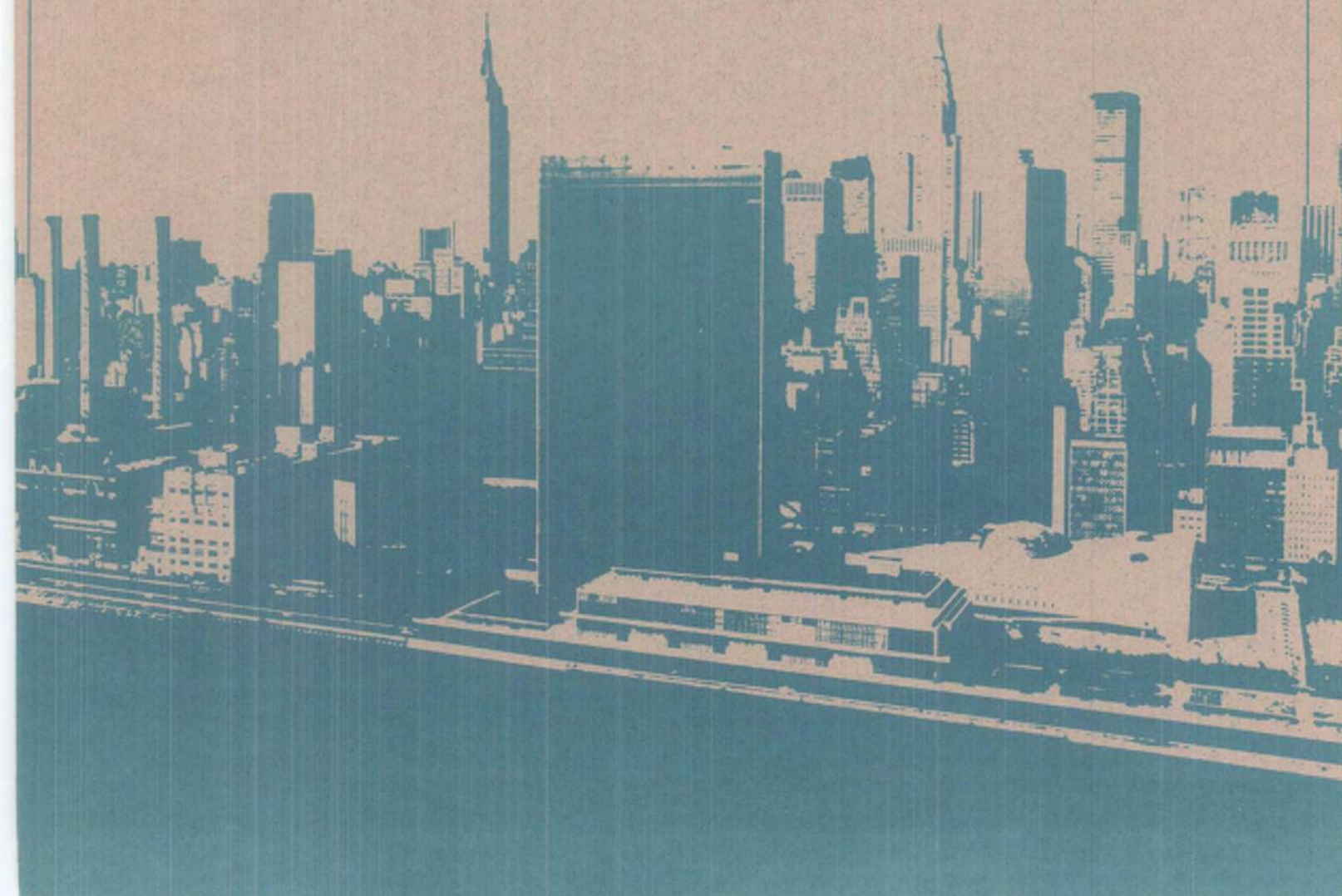
Nonresidential Buildings Energy
Consumption Survey:

Energy Information Administration
Washington, DC

Commercial Buildings Consumption and Expenditures 1983



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Statistics from the **Nonresidential Buildings Energy Consumption Survey (NBECS)** are reported in two series. One series features statistics on characteristics of commercial buildings. The second series features statistics on their consumption and expenditure patterns. The titles of both series have changed since their first reports, to clarify the types of buildings covered in the published statistics.

This publication is the second report published in the consumption and expenditure series. The first report published in this series appeared in two volumes, **Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures, Parts 1 and 2**. This report on 1983 data consolidates those two parts into one volume.

The first report published in the building characteristics series was **Nonresidential Buildings Energy Consumption Survey: Building Characteristics**, which contained 1979 data. The second report published in this series, with the new title **Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings 1983**, was released July 1985. A third series, **Nonresidential Buildings Energy Consumption Survey (NBECS): Fuel Characteristics and Conservation Practices**, which contained 1979 data, has been discontinued as a separate series. The types of statistics offered in that report are now included in the building characteristics series.

Nonresidential Buildings Energy Consumption Survey: Commercial Buildings Consumption and Expenditures 1983

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

This report was prepared by the Energy Information Administration, the independent statistical and 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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Preface

This report is the second publication that contains data collected in the 1983 Nonresidential Buildings Energy Consumption Survey (NBECS), conducted by the Energy Information Administration (EIA). The first report, *Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings 1983*, was published in July 1985. It covered commercial buildings and their characteristics, sources of energy, and conservation practices. This second report concerns consumption of and expenditures for energy in commercial buildings.

The 1983 NBECS was the second EIA survey to be based on a national sample of nonresidential buildings and their fuel suppliers. The first NBECS was conducted for 1979. The NBECS is the only source of national-level data on consumption and expenditures for energy in commercial buildings. These data are used for analyses by the policymakers in Congress and in Federal, State, and local governments, utility companies, architectural firms, and building-equipment companies. EIA also conducts energy consumption surveys in the residential, residential transportation, and industrial sectors.

A glossary of terms used in this report and in the survey forms (Form EIA-788 A through C) is provided at the end of this publication. A list of related energy-consumption publications is included for readers who seek earlier NBECS publications or consumption reports for the other sectors.



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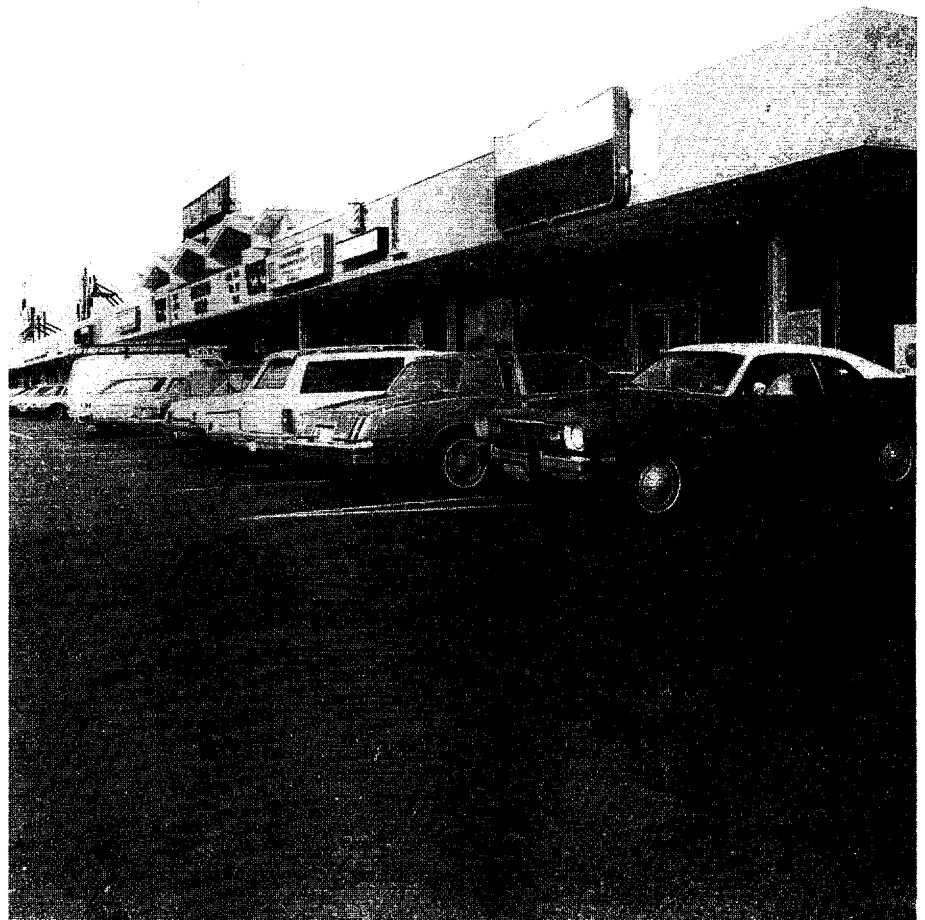
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Major Findings

Strip shopping malls, such as this one, are included in the mercantile sales and personal services building type.





Major Findings

Introduction

This is the second report of findings from the 1983 Nonresidential Buildings Energy Consumption Survey (NBECS). The first report, *Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings 1983* (DOE/EIA-246(83)), dealt with the structural characteristics of commercial buildings; this report presents estimates of energy consumption and expenditures for commercial buildings during 1983.

The 1983 NBECS was the second national sample survey of nonresidential buildings¹ and their energy suppliers conducted by the Energy Information Administration. In the 1983 NBECS, the buildings surveyed in the 1979 NBECS were recontacted. In addition, a sample of buildings constructed between 1979 and mid-1983 was also surveyed. Geographically, the two NBECS surveys covered the 48 contiguous States and the District of Columbia. (For details on the survey methodology, see Appendix A, "How the Survey was Conducted," and Appendix B, "Sample Design.")

This report presents data on consumption and expenditures for five major fuels used in commercial buildings.² These five fuels are: electricity, natural gas, fuel oil, purchased steam, and propane.³ Table 1 shows the number of commercial buildings in which each of these fuels was consumed in 1983, with breakdowns by various characteristics of buildings. Table 2 shows the same breakdowns according to the total square footage of the buildings. Major fuel use in commercial buildings in 1983 totaled 5.15 (± 0.63) quadrillion Btu, at a total cost of \$59.2 (± 7.8) billion.⁴

This report provides a cross-sectional analysis depicting patterns of energy consumption in commercial buildings at a particular time (1983). Understanding changes that may have occurred within commercial buildings requires more than a simple comparison of the findings presented here with those of the 1979 NBECS. Also, comparing buildings with and without various features does not by itself indicate the effects of those features on energy consumption and expenditures. For example, the effects of conservation features cannot be determined by comparing the 1983 results for buildings with and without those features (such as insulation) but only by comparing consumption patterns in the same buildings before and after the installation of the conservation features. Such a longitudinal analysis of conservation and other effects is planned for a future report.

¹For the NBECS, a nonresidential building is defined as a roofed and walled structure that is used for some purpose other than residential. Nonresidential buildings include industrial plants, offices, health-care facilities, and retail sales/service buildings. The definition includes some buildings that are primarily residential (as well as commercial and industrial buildings). For example, a residential building such as an apartment building that also contained some obvious nonresidential activity (such as a store or an office) was considered a nonresidential building for the purposes of the 1983 survey.

²Commercial buildings were defined as buildings whose principal activity is nonresidential, nonindustrial, and nonagricultural. Commercial buildings include, but are not limited to, stores, offices, schools, churches, gymnasiums, libraries, museums, hospitals, clinics, warehouses, and jails. Government buildings are included except buildings on military bases or reservations. Industrial buildings and farm buildings have been excluded from this report. Of the 7,140 buildings in the NBECS sample, 6,345 were classified as commercial buildings.

³The data on consumption and expenditures reported as "propane" in the 1983 NBECS publications were reported as "liquefied petroleum gas" (LPG) on the supplier survey forms. The type of LPG (such as propane or propane-butane mix) was not specified. Since most of the LPG supplied to commercial buildings is propane, LPG consumption was assumed to be entirely propane, and Btu conversion factors for propane were used.

⁴The results presented in this report represent estimates of total consumption of energy by commercial buildings in the United States, and expenditures for that energy. Since the estimates are based on findings for the sample surveyed, they are subject to sampling error. The ' \pm ' number in parentheses after each estimate, which is 1.96 times the standard error of the estimate, indicates the approximate 95 percent confidence limits, as discussed in Appendix C. The standard errors used to calculate the limits shown in the text were calculated individually for each table cell, rather than by using the row and column RSE factors described in Appendix C.

Table 1. Number of Buildings Using Major Fuels Alone or in Combination, 1983
(Thousand Buildings)

Building Characteristics	All Buildings	Any Buildings using Major Fuels ^a	Electricity	Natural Gas	Fuel Oil	Propane	Purchased Steam
All Buildings	3,948	3,774	3,764	2,239	538	250	59
Year Constructed							
1900 or Before	288	279	279	193	70	24	2
1901 to 1920	388	369	368	254	69	24	7
1921 to 1945	726	685	680	462	111	33	17
1946 to 1960	946	883	881	525	147	70	19
1961 to 1970	721	700	700	398	74	33	9
1971 to 1973	209	207	207	103	25	23	2
1974 to 1979	530	517	516	229	36	39	1
1980 to 1983	140	135	135	74	6	6	2
Square Footage Category							
5,000 or Less	2,248	2,112	2,108	1,112	263	162	4
5,001 to 10,000	725	705	702	473	105	44	8
10,001 to 25,000	567	560	558	372	101	29	13
25,001 to 50,000	222	216	216	152	32	8	13
50,001 to 100,000	107	104	103	71	17	3	9
100,001 to 200,000	50	49	49	38	10	3	5
Over 200,000	29	29	28	21	9	1	6
Principal Activity Within Building							
Assembly	457	452	449	267	86	52	8
Educational	177	177	177	115	31	6	8
Food Sales/Service	380	380	379	227	36	42	3
Health Care	61	61	61	37	11	1	5
Lodging	106	106	106	65	13	14	10
Mercantile/Services	1,071	1,055	1,053	649	163	76	3
Office	575	575	573	342	68	16	9
Residential	236	235	235	177	48	11	2
Warehouse	425	387	387	191	45	18	1
Other	179	167	167	74	20	15	6
Vacant	281	180	177	94	15	1	4
Census Region							
Northeast	670	653	651	427	227	27	16
North Central	1,211	1,157	1,153	906	102	61	22
South	1,493	1,415	1,412	581	172	144	10
West	574	549	549	324	37	18	11

^a Data may not sum to totals due to use of more than one fuel in a building, for heating or for water heating, etc.

Note: See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 2. Square Footage of Buildings Using Major Fuels, Alone or in Combination, 1983
(Million Square Feet)

Building Characteristics	All Buildings	All Buildings Using a Major Fuel*	Electricity	Natural Gas	Fuel Oil	Propane	Purchased Steam
All Buildings	52,325	51,280	51,146	36,088	10,205	2,721	4,538
Year Constructed							
1900 or Before	2,940	2,884	2,884	2,204	685	145	283
1901 to 1920	5,453	5,228	5,207	3,814	1,174	183	494
1921 to 1945	8,639	8,269	8,197	5,857	1,843	326	1,001
1946 to 1960	9,612	9,434	9,419	7,148	2,668	619	892
1961 to 1970	9,947	9,873	9,863	7,257	1,475	584	1,000
1971 to 1973	3,442	3,411	3,404	2,245	525	275	230
1974 to 1979	6,616	6,550	6,547	3,882	940	435	320
1980 to 1983	5,675	5,631	5,624	3,681	896	154	319
Square Footage Category							
5,000 or Less	4,908	4,680	4,666	2,644	628	361	18
5,001 to 10,000	5,246	5,083	5,060	3,447	730	296	65
10,001 to 25,000	8,912	8,795	8,769	5,847	1,489	479	235
25,001 to 50,000	7,692	7,470	7,470	5,281	1,135	296	427
50,001 to 100,000	7,168	6,963	6,956	4,823	1,180	186	627
100,001 to 200,000	6,642	6,613	6,611	5,091	1,374	438	690
Over 200,000	11,757	11,675	11,613	8,956	3,669	665	2,476
Principal Activity Within Building							
Assembly	5,483	5,475	5,449	4,022	759	330	501
Educational	6,044	6,044	6,038	4,448	1,431	346	408
Food Sales/Service	2,051	2,050	2,048	1,443	283	260	81
Health Care	2,277	2,277	2,277	2,049	1,221	94	392
Lodging	2,241	2,241	2,241	1,722	522	125	512
Mercantile/Services	10,427	10,347	10,342	7,951	1,515	608	477
Office	8,454	8,444	8,414	5,581	1,610	89	1,228
Residential	2,454	2,442	2,439	1,977	749	126	54
Warehouse	6,791	6,700	6,700	4,354	1,116	596	155
Other	2,760	2,738	2,738	1,267	647	116	443
Vacant	3,342	2,522	2,460	1,275	353	30	287
Census Region							
Northeast	11,615	11,413	11,341	8,071	4,789	530	1,336
North Central	16,059	15,718	15,685	13,503	1,862	462	1,907
South	17,049	16,883	16,854	9,366	2,934	1,657	769
West	7,602	7,467	7,467	5,148	621	72	526

* Data may not sum to totals due to use of more than one fuel in a building, for heating or for water heating, etc.

Note: See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Overall Consumption and Expenditure Patterns

All energy sources for commercial buildings were identified in the NBECS. In terms of total energy consumed, the major energy sources were electricity and natural gas. In 1983, on-site consumption of electricity⁵ in commercial buildings totaled 2.24 ($\pm .41$) quadrillion Btu; consumption of natural gas totaled 2.23 ($\pm .38$) quadrillion Btu (Figure 1). Fuel oil,⁶ with .35 ($\pm .10$) quadrillion Btu was next in importance, followed by purchased steam, with .29 ($\pm .11$) quadrillion Btu. Estimates of consumption and expenditures by fuel type are summarized in Table 3.

For electricity, natural gas, and purchased steam, the consumption estimates from the 1983 NBECS were approximately the same as those from the 1979 NBECS. For fuel oil, however, consumption was significantly lower in 1983 than in 1979. This change can be attributed largely to a reduction of nearly one-third in the number of buildings in which fuel oil was a source of energy.⁷

Electricity was the most commonly used fuel, consumed in nearly every commercial building--3.76 ($\pm .38$) million out of 3.95 ($\pm .38$) million buildings. Next most common was natural gas, which was used in 2.24 ($\pm .30$) million buildings. Fuel oil was used in a much smaller number of buildings, 538,000 ($\pm 96,000$). Although the total consumption estimates for purchased steam and fuel oil were nearly equal, steam was used in only 59,000 ($\pm 16,000$) buildings. Propane, on the other hand, although it provided less than 1 percent of the total energy consumed in commercial buildings in the Nation (.04 ($\pm .02$) quadrillion Btu), was used in many more buildings than steam--250,000 ($\pm 87,000$) buildings.⁸

Wood was used in 134,000 ($\pm 46,000$) commercial buildings and coal in 55,000 ($\pm 26,000$) buildings. However, supplier data for these fuels are incomplete and do not permit reliable estimates of national consumption and expenditures. The fuels referred to as "major fuels" in this report are those for which the data are adequate to support such estimates.

A comparison of expenditures for the five major fuels (electricity, natural gas, fuel oil, propane, and purchased steam) is shown in Figure 2. Although consumption of electricity and natural gas were nearly equal, expenditures for electricity (\$41.6 (± 7.0) billion) were more than three times as high as those for natural gas (\$12.3 (± 2.0) billion). Fuel oil and purchased steam, on the other hand, were similar in terms of both consumption and expenditures: \$2.4 ($\pm .7$) billion for fuel oil and \$2.6 (± 1.1) billion for steam. The relatively high expenditures for electricity reflect the fact that electricity is a "derived fuel," with substantial energy losses in the conversion from primary fuels (such as coal or oil) to electricity.

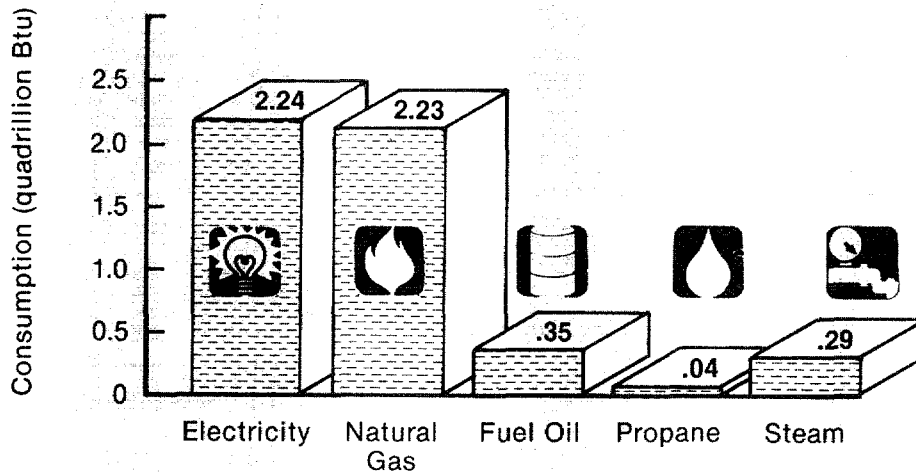
⁵Electricity consumption is reported here only as on-site consumption, with no adjustment for the primary fuels used to generate the electricity.

⁶For fuel oil and propane, the data on consumption and expenditures represent total deliveries for 1983 and the corresponding expenditures. (See the section on "Annual Consumption and Expenditures" in Appendix C.)

⁷For comparison of the results from the two surveys, note that the breakdowns of consumption and expenditures from the 1979 NBECS by building activity categories have been updated on the basis of revised building classifications. The updated breakdowns are shown in Appendix C, Table C9.

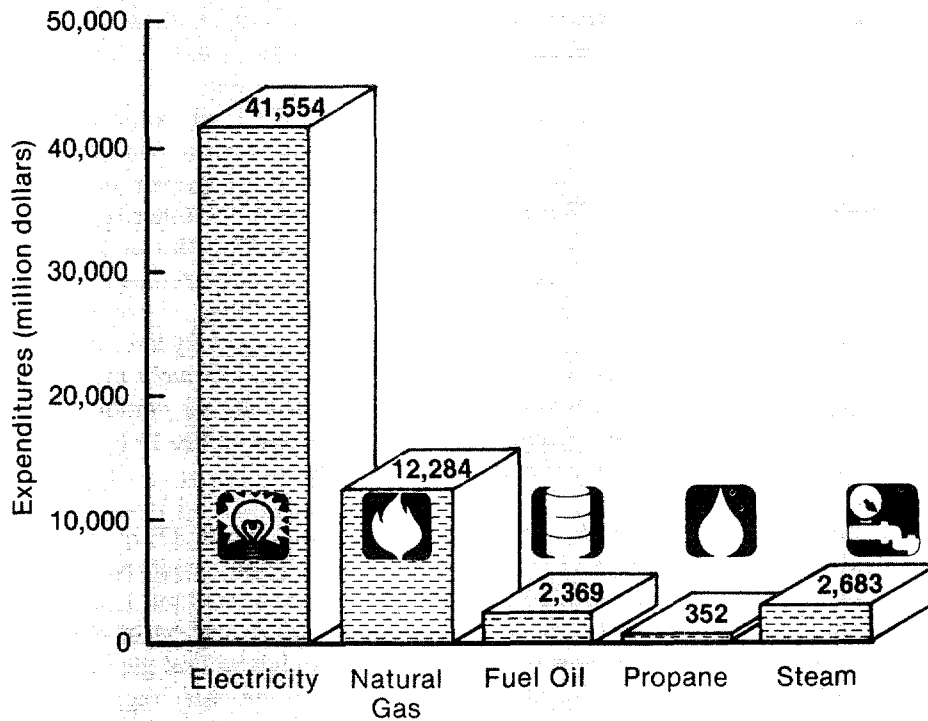
⁸The counts of buildings using each major fuel differ somewhat from those given in the first 1983 NBECS report, because this report includes information from the survey of energy suppliers (not available at the time of the previous report). The original count and the revised counts are shown in Appendix C, Table C8.

Figure 1. Consumption of Major Fuels



Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey: Table 3.

Figure 2. Expenditures for Major Fuels



Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey: Table 3.

Table 3. Consumption and Expenditures by Major Fuel, 1983

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)
	Number of Buildings (thousands)	Square Feet (millions)									
All Major Fuels	3,774	51,280	13.6	5.150	1,364	100	66	59,242	15.7	1.16	11.50
Electricity	3,764	51,146	13.6	2.237	594	44	29	41,554	11.0	.81	18.58
Natural Gas	2,239	36,088	16.1	2.227	994	62	42	12,284	5.5	.34	5.52
Fuel Oil	538	10,205	19.0	.354	659	35	22	2,369	4.4	.23	6.69
Propane	250	2,721	10.9	.038	150	14	9	352	1.4	.13	9.38
Purchased Steam	59	4,538	77.5	.294	5,028	65	36	2,683	45.8	.59	9.12

Note: See Glossary for definition of terms used in this report.
 Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Regional Variation in Consumption Patterns

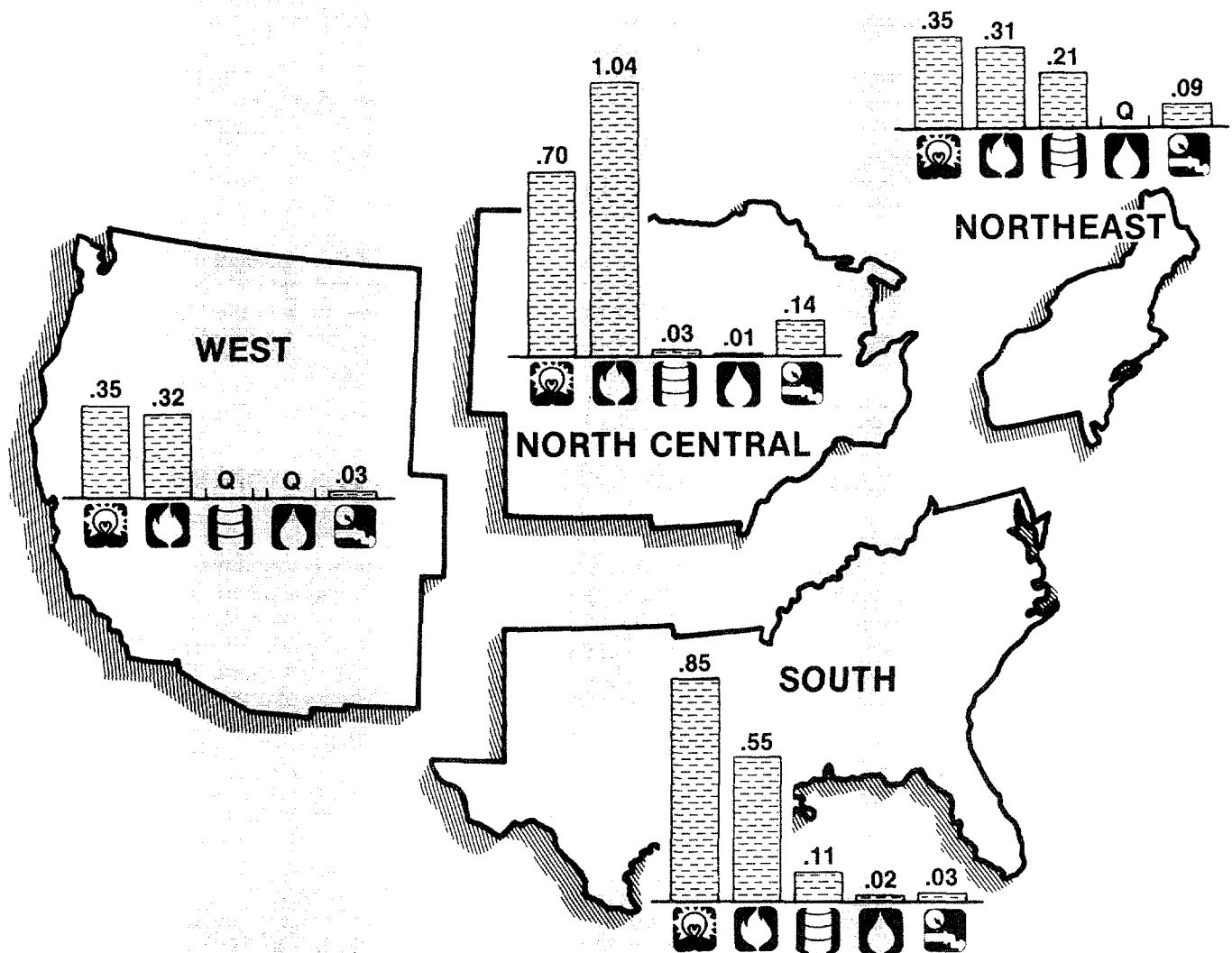
Many of the overall consumption patterns seen for the Nation as a whole were also seen for each of the four Census regions individually. (See Appendix F for a map of the U.S. Census regions.) In each region, electricity and natural gas, in roughly equal portions, accounted for the major part of the energy consumed in commercial buildings, with fuel oil and purchased steam making up most of the rest. The relative shares of these four fuels did vary, however, from region to region. In all four Census regions, propane provided only a small fraction of the energy consumed. Figure 3 shows the total consumption of each major fuel in each Census region. This figure illustrates the differences in total consumption of the major fuels in the four regions, as well as the differences among fuels within each region.

The Northeast accounted for .95 (\pm .20) quadrillion Btu, or 19 (\pm 2) percent of the total national consumption of major fuels in commercial buildings in 1983. The most striking feature of consumption in this region was the importance of fuel oil. Fuel oil consumption in the Northeast region was .21 (\pm .04) quadrillion Btu, representing 22 (\pm 3) percent of the region's total energy consumption, as compared with 7 (\pm 4) percent or less in the other regions. Steam also was responsible for a large share of the total in this region, with .09 (\pm .07) quadrillion Btu or 9 (\pm 4) percent of the region's total. Thus, in contrast to the other regions, the Northeast can be characterized as a four-fuel region.

The rate of energy consumption in commercial buildings in the Northeast region was relatively low, at 84,000 (\pm 6,000) Btu per square foot, while the expenditure rate, at \$14.23 (\pm .73) per million Btu, was relatively high. The net effect was that the expenditure per square foot, \$1.19 (\pm .12), was about the same as that for the Nation overall, namely \$1.16 (\pm .10). The high overall fuel cost in this region reflects a high electricity cost of \$26.15 (\pm 2.20) per million Btu, as compared with \$18.58 (\pm .87) per million Btu for the Nation as a whole.

Total energy consumption in commercial buildings in the North Central region, 1.92 (\pm .37) quadrillion Btu, was twice as great as that in the Northeast and represented 37 (\pm 6) percent of the Nation's total. Natural gas was the dominant fuel in the North Central region, with consumption totalling 1.04 (\pm .26) quadrillion Btu--an amount that represented 54 (\pm 8) percent of the region's total energy consumption and 47 (\pm 9) percent of the Nation's total consumption of natural gas. The North Central region was the only region in which natural gas was the dominant fuel. Although electricity accounted for the largest portion of consumption in all the other regions, it represented only 36 (\pm 5) percent of the North Central total, or .70 (\pm .12) quadrillion Btu. The .14 (\pm .05) quadrillion Btu of purchased steam amounted to another 7 (\pm 2) percent of the region's total. These three fuels--natural gas, electricity, and purchased steam-- together accounted for 98 (\pm 1) percent of the energy consumed in commercial buildings in the North Central region.

Figure 3. Major Fuel Consumption by Census Region
(Quadrillion Btu)



Electricity	Natural Gas	Fuel Oil	Propane	Steam

Q = Data withheld either because the RSE was more than 50 percent, or because fewer than 20 buildings were sampled.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey: Table 8.

A high level of energy consumption in terms of both Btu per employee (85 (± 13) million) and Btu per square foot (122,000 ($\pm 13,000$)) was estimated for the North Central region. On the other hand, expenditures per square foot, \$1.21 ($\pm .15$), were similar to those in the Northeast (\$1.19 ($\pm .12$) per square foot) and South (\$1.15 ($\pm .25$) per square foot), reflecting the relatively low cost of energy in the North Central region. The average fuel cost for commercial buildings in this region was \$9.88 ($\pm .70$) per million Btu, as compared with \$11.50 ($\pm .70$) per million Btu for the Nation as a whole. This low energy cost in turn reflects the predominance in this region of natural gas, which at \$5.52 ($\pm .16$) per million Btu was the least expensive of the five major energy sources.

In the South, the amount of energy consumed in commercial buildings was 1.56 ($\pm .40$) quadrillion Btu, comparable to that in the North Central region. Like the North Central region, the South was dominated by three major fuels. In the South, however, the rankings of electricity and natural gas were reversed, and the third major energy source was fuel oil rather than steam. Consumption of electricity was .85 ($\pm .23$) quadrillion Btu, or 54 (± 9) percent of the region's total; natural gas consumption was .55 ($\pm .20$) quadrillion Btu, or 35 (± 11) percent of the total; and fuel oil consumption was .11 ($\pm .07$) quadrillion Btu, or 7 (± 4) percent of the total.

The West Census region, with .71 ($\pm .13$) quadrillion Btu, accounted for only 14 (± 2) percent of the Nation's total consumption of energy in commercial buildings. The amounts of electricity and natural gas used--.35 ($\pm .16$) quadrillion Btu and .32 ($\pm .08$) quadrillion Btu--were similar to the totals for those fuels in the Northeast region. In the West, however, these two fuels alone accounted for 94 (± 18) percent of the region's total major fuel consumption in commercial buildings.

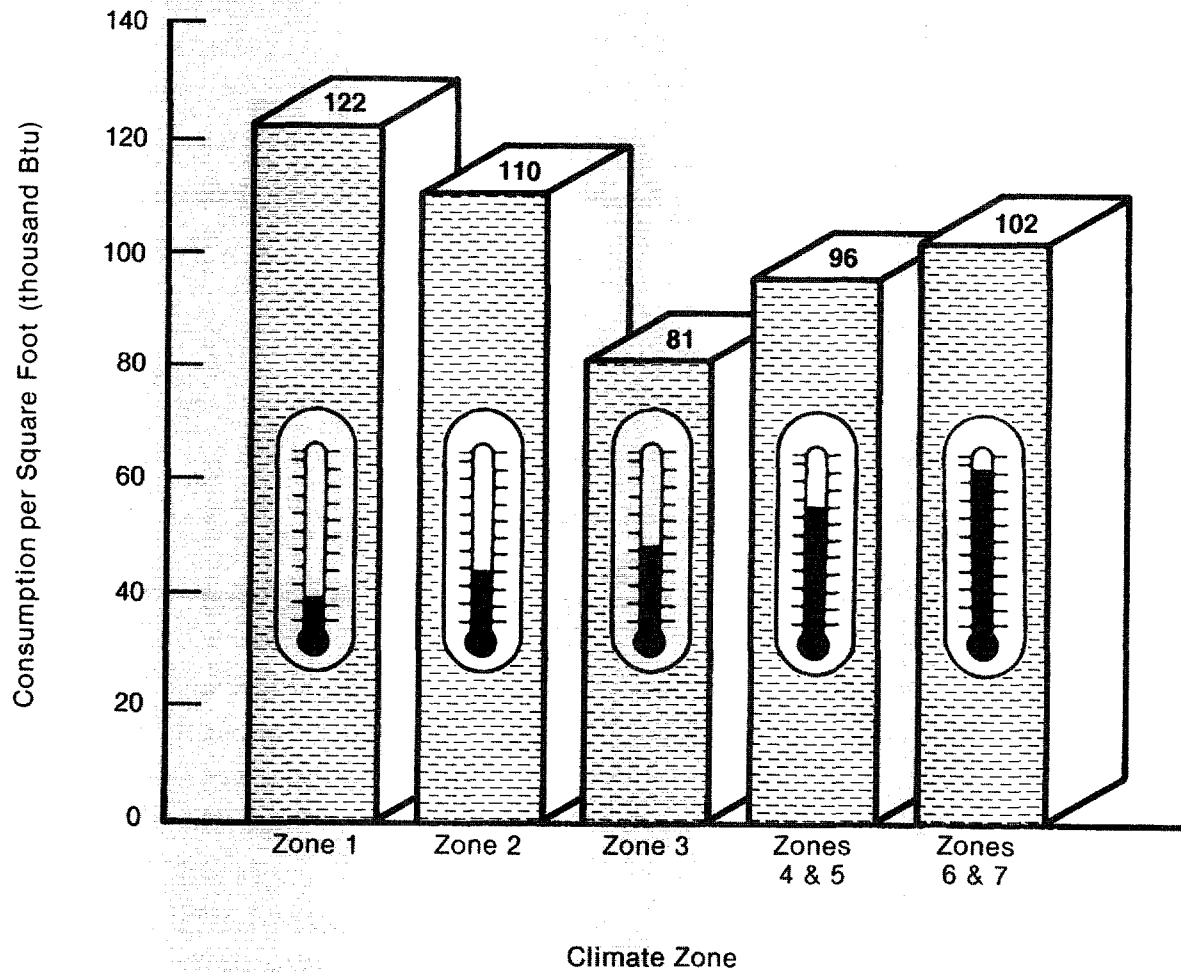
Characteristics Related to Energy Consumption

Despite the fact that energy is consumed in commercial buildings in a variety of ways, certain broad patterns of energy consumption can be discerned. Climate zone, which might be expected to be a major determinant of energy use, was not found to be strongly related to energy consumption rates. (See Appendix F for a map showing climate zones.) The estimated rates were highest in the most extreme climate zones and lowest in the most moderate (Figure 4), but no statistically significant difference in consumption rates was found between any two zones. Three other factors, however, did seem to be strongly related to consumption: (1) size of building, (2) hours of operation, and (3) principal activity in the building.

Size of Building

As would be expected, the overall energy consumption per building was greater for larger buildings. Consumption per building ranged from .41 ($\pm .09$) billion Btu for buildings 5,000 square feet or less to 38.05 (± 5.44) billion Btu for buildings larger than 200,000 square feet. However, energy consumption per square foot was significantly higher in buildings 5,000 square feet or less (186,000 ($\pm 40,000$) Btu per square foot) than in buildings of more than 5,000 square feet (92,000 ($\pm 19,000$) Btu per square foot). The relationship between consumption per square foot and building size is shown in Figure 5.

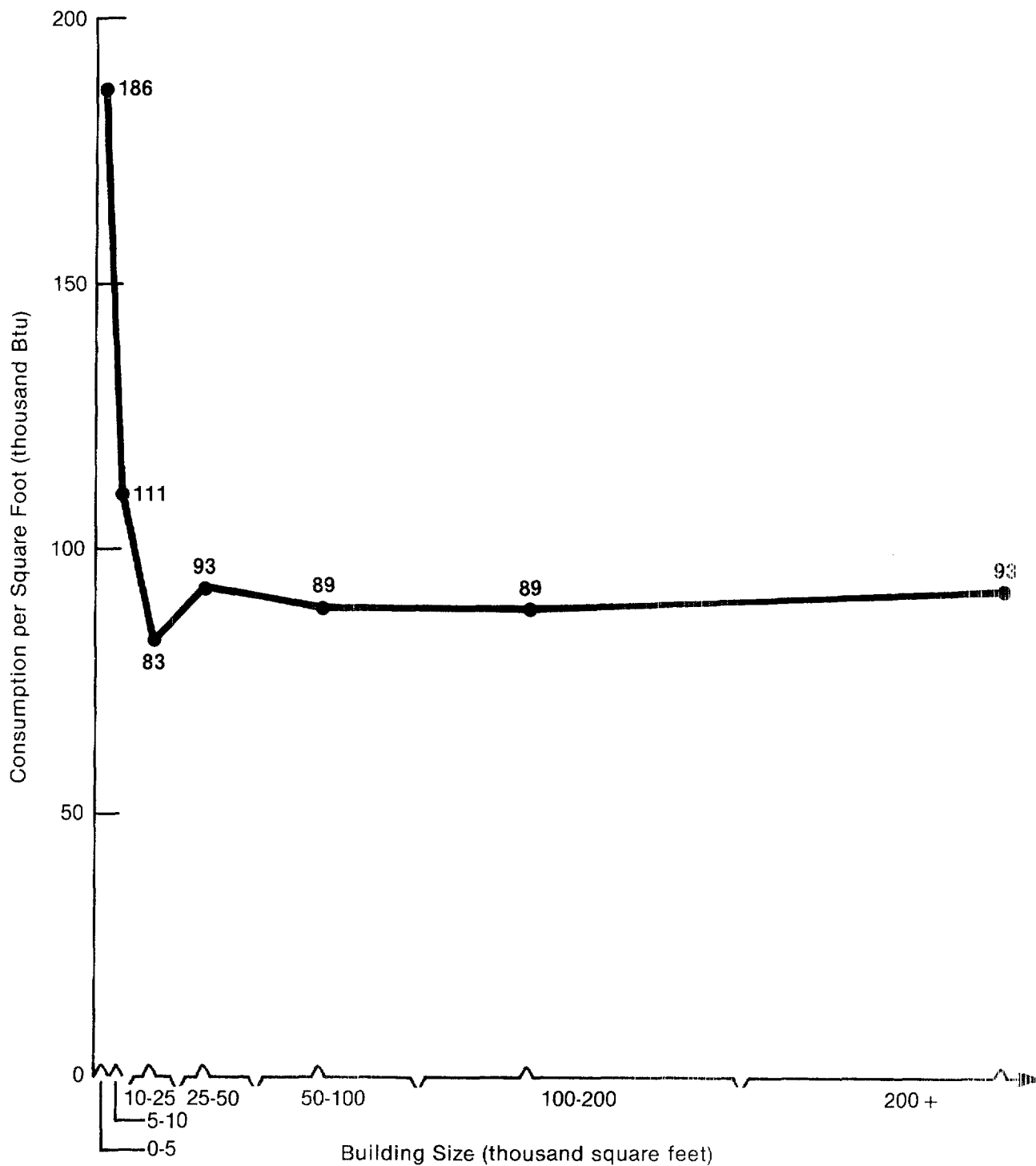
Figure 4. Major Fuel Consumption per Square Foot by Climate Zone



Note: Climate Zone 1 is the coldest zone. Climate Zone 7 is the warmest zone. See Glossary for further explanation of Climate Zones.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey: Table 5.

Figure 5. Major Fuel Consumption per Square Foot by Square Footage Category



Note: Consumption per square foot for each size category is plotted at the average square footage per building in that category.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey: Table 5.

Operating Hours

The number of hours a building remained open during a typical week was another important factor associated with energy consumption (Figure 6). Consumption per square foot ranged from 64,000 ($\pm 19,000$) Btu per square foot for buildings open 39 or fewer hours during a typical week to 164,000 ($\pm 38,000$) Btu per square foot for buildings open continuously (168 hours per week).

Both size of building and hours of operation contributed to consumption per square foot (Table 4). Within each category of operating hours, buildings 5,000 square feet or less in size had notably higher rates of consumption. Within each size category, buildings open the most hours per week tended to have the highest consumption per square foot. Small buildings (5,000 square feet or less) open continuously consumed energy at the rate of 400,000 ($\pm 209,000$) Btu per square foot.

Table 4. Consumption of Major Fuels per Square Foot, by Hours of Operation, 1983
(Thousand Btu per Square Foot)

Building Characteristics	All Buildings	Hours of Operation During a Typical Week					
		39 or Fewer Hours	40 to 48 Hours	49 to 60 Hours	61 to 84 Hours	85 to 167 Hours	168 Hours
All Buildings	100	64	72	82	102	123	164
Square Footage Category							
5,000 or Less	186	106	102	170	203	343	400
5,001 to 10,000	111	62	93	92	154	152	179
10,001 to 25,000	83	36	75	72	93	124	126
25,001 to 50,000	93	78	60	66	107	137	171
50,001 to 100,000	89	48	65	65	101	105	179
100,001 to 200,000	89	Q	54	51	79	106	154
Over 200,000	93	42	60	93	78	74	142

^a Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

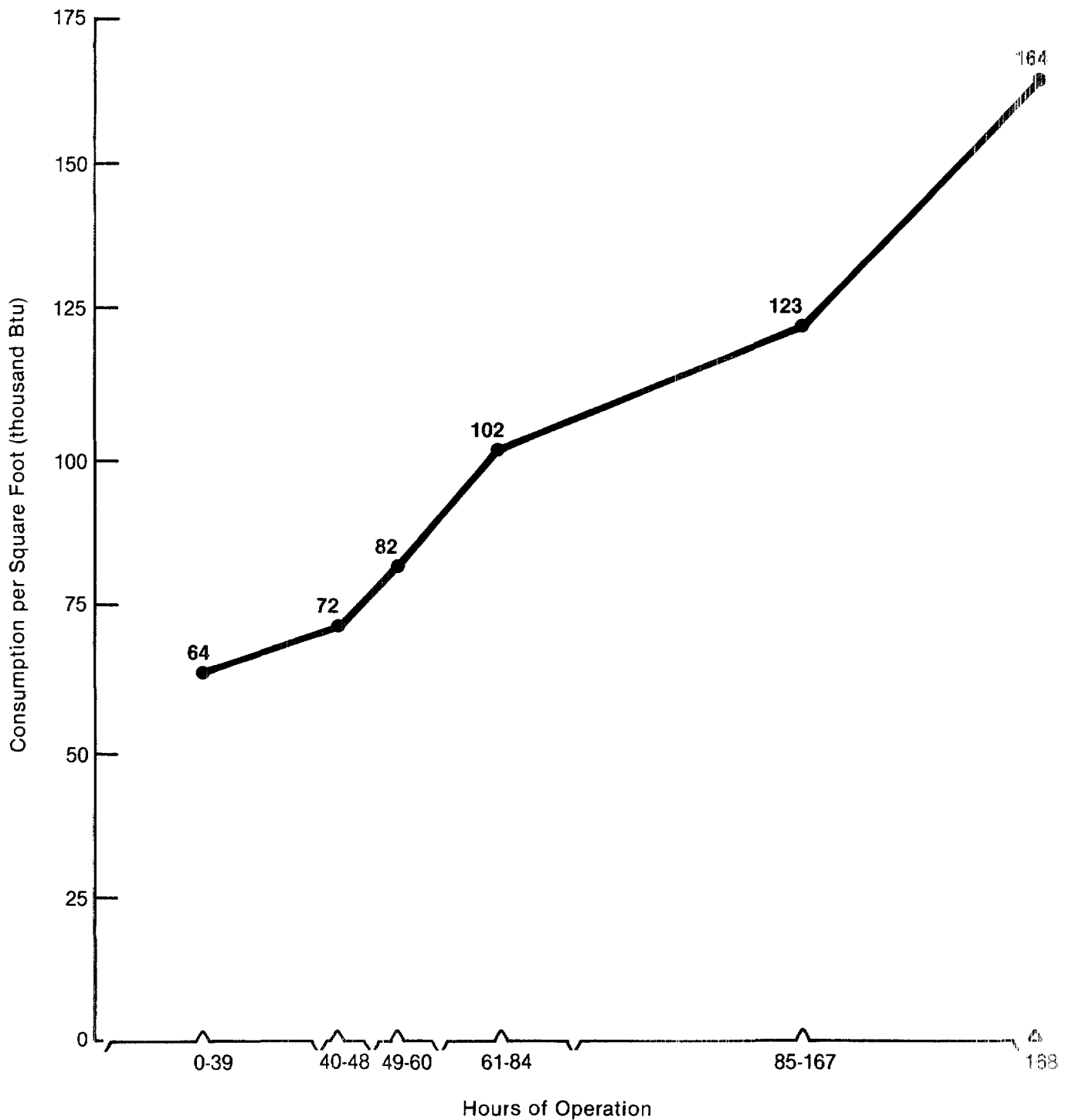
Note: See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Principal Building Activity

The third factor correlated with energy consumption in buildings was the principal building activity, or how the building was used. As shown in Figure 7, total energy consumption was highest for two activity categories, office and mercantile. These two categories together accounted for 36 (± 4) percent of the total energy consumption in commercial buildings during 1983.

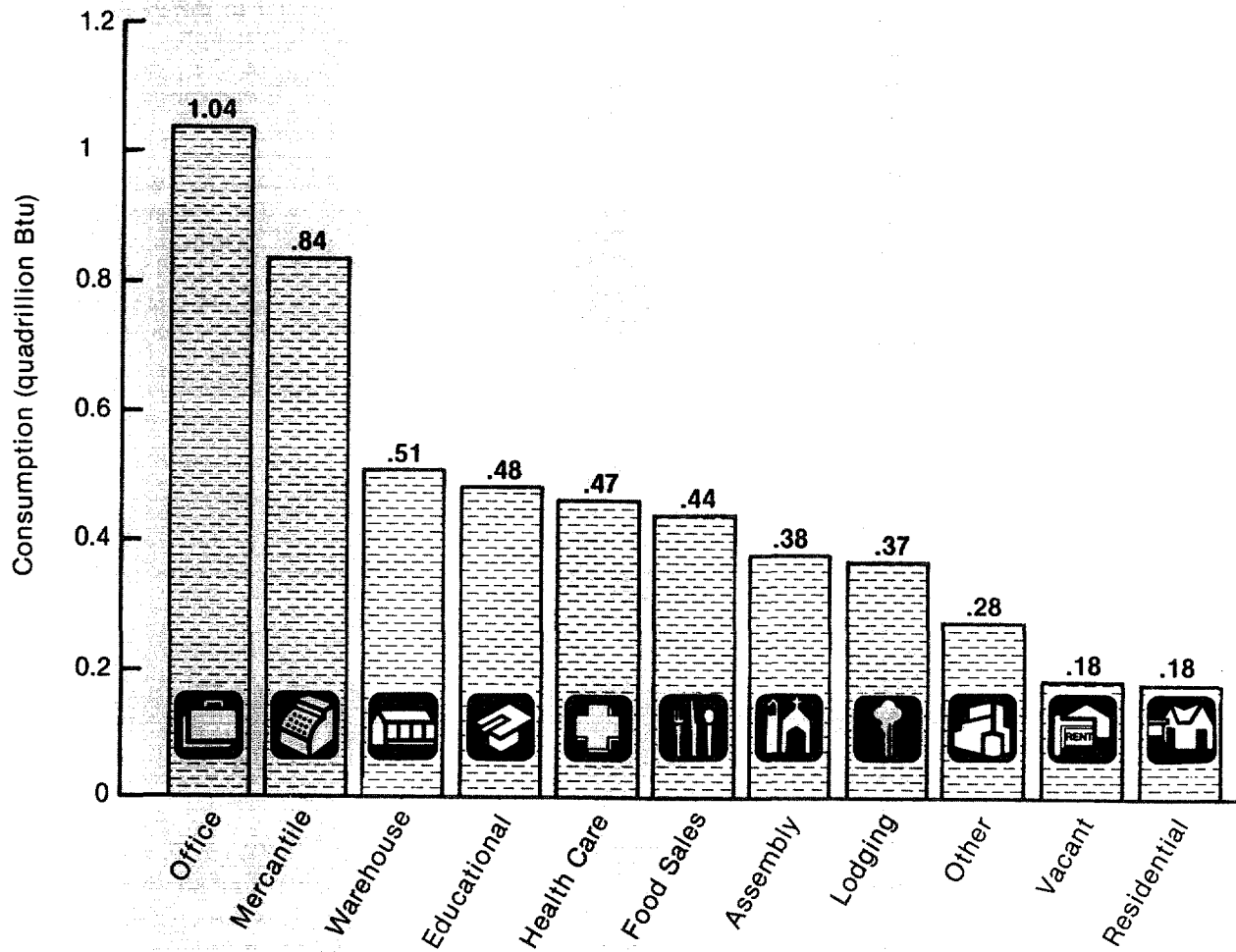
Figure 6. Major Fuel Consumption per Square Foot by Hours of Operation During a Typical Week



Note: Consumption per square foot in each hours of operation category is plotted at the midpoint for that category.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey: Table 5.

Figure 7. Major Fuel Consumption by Principal Building Activity



Note: Refer to Appendix D for explanation of how buildings were assigned to activity categories for the 1983 Nonresidential Buildings Energy Consumption Survey.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey: Table 5.

Consumption patterns differed considerably among the different building categories, as shown in Figure 8. For buildings that served principally as lodgings, both consumption per square foot (163,000 ($\pm 31,000$) Btu per square foot) and consumption per employee (154 (± 62) million Btu per employee) were relatively high. For food sales and service and for health-care buildings, consumption per employee was close to the level for all buildings, but consumption per square foot was relatively high (213,000 ($\pm 35,000$) Btu per square foot and 204,000 ($\pm 57,000$) Btu per square foot, respectively). For office buildings, energy consumption per square foot was relatively high (123,000 ($\pm 20,000$) Btu), but consumption per employee was relatively low (40 (± 7) million Btu).

In general, consumption patterns for different building activity categories were related to differences in size of buildings and operating hours. For example, food sales and service buildings, with high consumption per square foot, were the smallest buildings, averaging 5,400 (± 600) square feet per building. Furthermore, the percentage of food sales and service buildings open for more than 84 hours per week, 51 (± 5) percent, was considerably higher than the 20 (± 1) percent of all buildings open for that many hours per week.

The one notable exception to the relationship between building size and consumption per square foot was found among health-care buildings; larger buildings had higher rates of consumption per square foot than did smaller buildings. This exception can be explained by the fact that the health-care category consists of two groups of buildings, out-patient health care and in-patient health care buildings. Out-patient buildings tend to be small and usually are closed for some part of the week, while in-patient buildings tend to be large and usually are open continuously. Of the 2.28 ($\pm .75$) billion square feet contained in health-care buildings, 1.53 ($\pm .35$) billion square feet were contained in buildings that were open continuously.

Fuel Choices

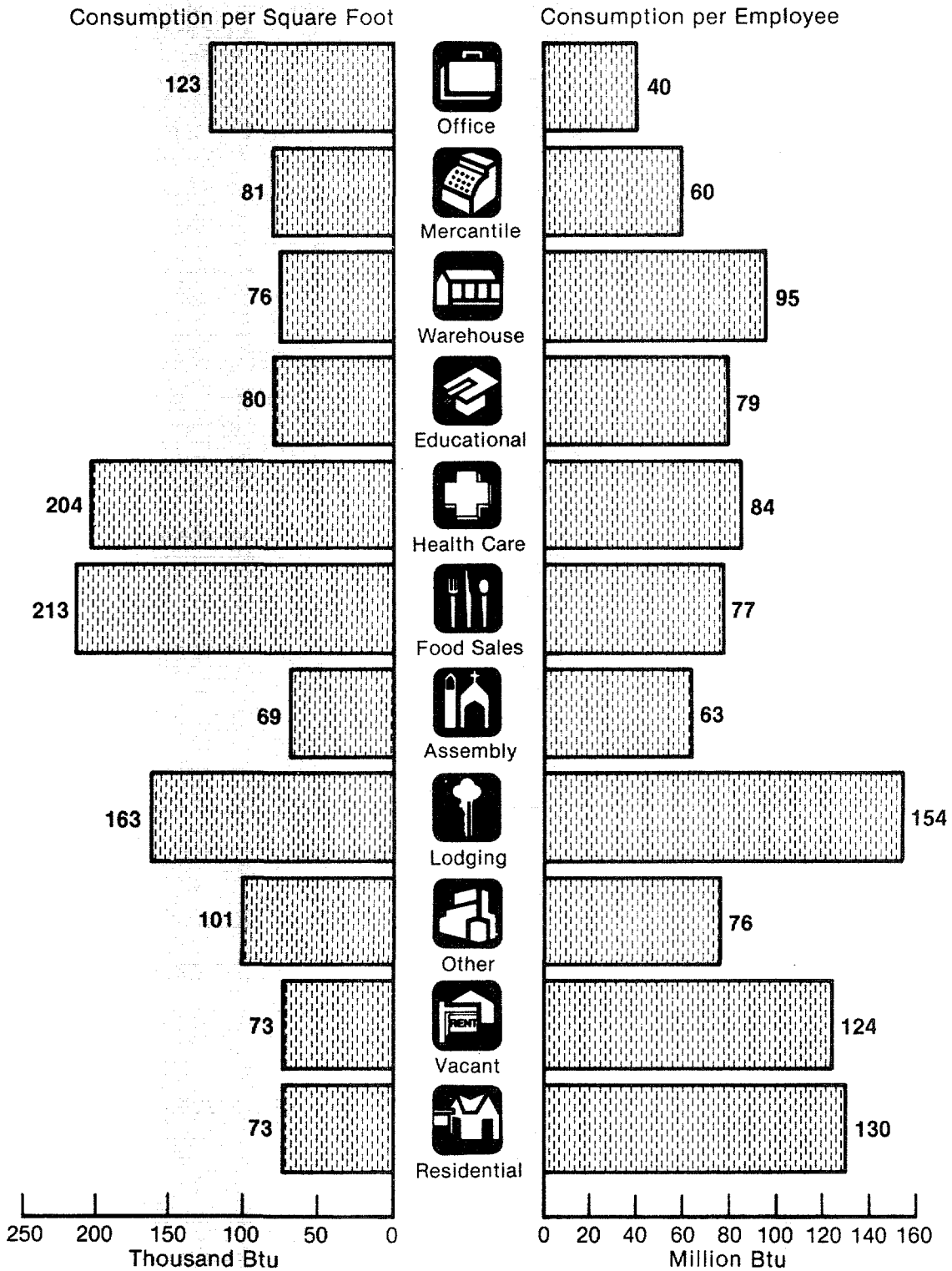
Factors such as Census region, activity in the building, and size of building were related not only to the rate at which energy was consumed but also to the choice of fuels. For example, in the two coldest climate zones, 36 (± 4) percent of the total energy consumed in commercial buildings was derived from electricity--a relatively expensive fuel--compared with 59 (± 15) percent in the warmest zone.

Buildings where purchased steam was used tended to be relatively large, averaging 77,500 ($\pm 19,400$) square feet. Buildings of more than 200,000 square feet accounted for almost half (48 (± 16) percent) of all purchased steam but only 21 (± 4) percent of all the major fuels used in commercial buildings. Metropolitan areas contained 83 (± 13) percent of the total number and 92 (± 14) percent of the floor space of commercial buildings using purchased steam, and accounted for 88 (± 34) percent of the consumption of this fuel in commercial buildings. Two major consumers of steam were health-care buildings (.07 ($\pm .04$) quadrillion Btu) and mercantile buildings (.07 ($\pm .04$) quadrillion Btu). Together, these two types of building accounted for 47 (± 6) percent of the total national consumption of purchased steam in commercial buildings. Government-occupied buildings consumed 36 (± 14) percent of all purchased steam. A final factor related to steam consumption was climate zone. The three coldest zones accounted for 93 (± 13) percent of the steam purchased, compared with 70 (± 12) percent of all major fuels used in commercial buildings.

The pattern for the use of propane was essentially the opposite of that for purchased steam. Almost half (45 (± 18) percent) of the propane consumed in commercial buildings was used in buildings of 5,000 square feet or less. Metropolitan buildings accounted for only 26 (± 10) percent of the commercial buildings using propane, 34 (± 11) percent of the floor area, and 24 (± 15) percent of the total consumption of propane. The major classes of buildings using propane were assembly, food sales, and mercantile; together those types consumed .024 ($\pm .009$) quadrillion Btu or about two-thirds of the total amount of propane used in commercial buildings (.038 ($\pm .015$) quadrillion Btu). Buildings in the South Census region accounted for .023 ($\pm .015$) quadrillion Btu of propane usage.

Perhaps the most distinctive building activity class with respect to fuel mix was the residential group. For all other classes of buildings, electricity and natural gas were the dominant fuels, each providing one-third to one-half of the total energy consumed. For predominantly residential buildings, natural gas provided 53 (± 13) percent of the total energy consumed; electricity represented only 23 (± 6) percent of the total, comparable to the share for fuel oil, 20 (± 13) percent.

Figure 8. Major Fuel Consumption per Square Foot and per Employee by Principal Building Activity



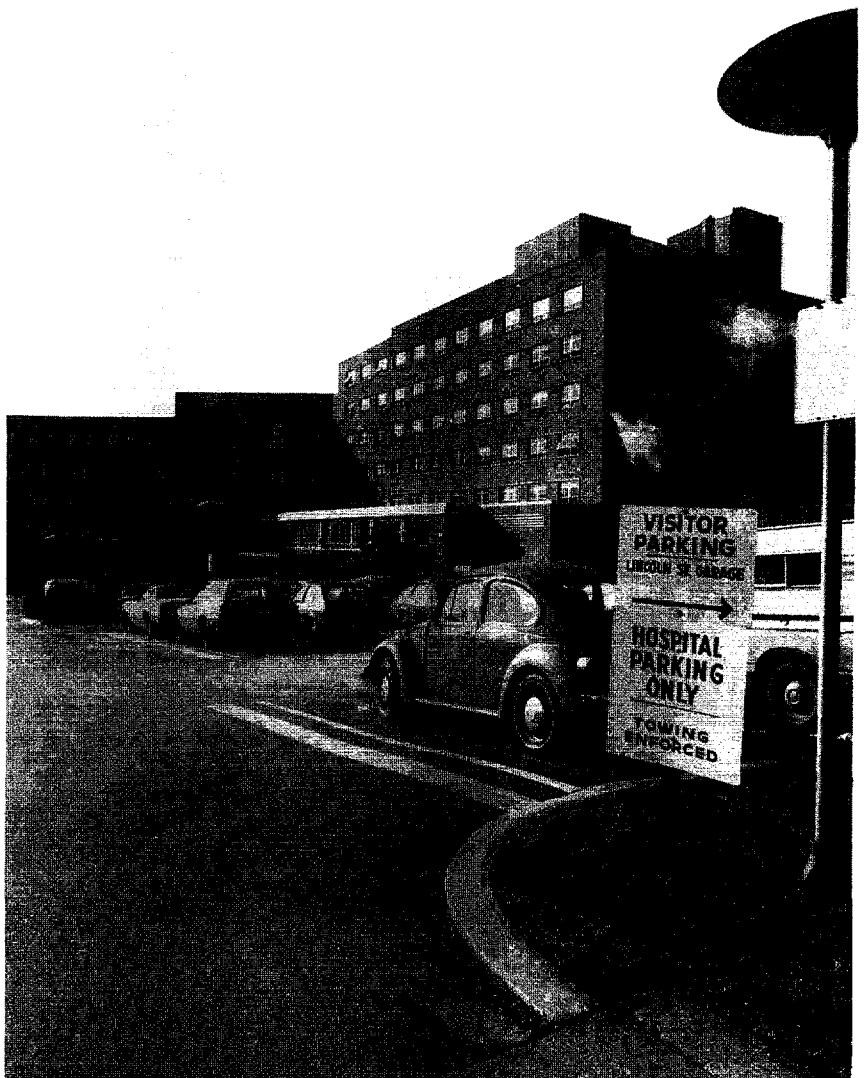
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey: Table 5.

Guide to the Report

The following section contains detailed tabulations of data from the 1983 NBECS. Background material on the NBECS is presented in the Appendices to this report. Appendix A describes the survey methodology, and Appendix B details the sample design. The procedures used to estimate annual energy consumption and expenditures from the survey data are described in Appendix C, along with the statistical procedures for developing and using standard errors. Appendix C also discusses the types of statistics presented in the main data summaries of the report. Appendix D provides a list of the building types included in the principal building activity categories. Appendix E shows the survey questionnaire; maps of the U.S. weather zones and Census regions are provided in Appendix F. Appendix G gives a list of Energy Information Administration publications that are related to the data presented here. Finally, the Glossary provides definitions of the terms used in this report.

Detailed Tables

Hospitals are included in the health care building activity, along with rehabilitation facilities, outpatient medical and dental clinics and also veterinary clinics.





Detailed Tables

The following tables provide summaries of the 1983 NBECS data on energy consumption and expenditures for commercial buildings. Energy consumption and expenditure totals and indices (such as consumption per square foot) for all major fuels combined are shown in Tables 5 through 9. The data are detailed by building characteristics such as age, size, Census region, and principal activity. Data on total fuel consumption for all commercial buildings are shown in Table 5; total fuel consumption in each of the four Census regions is shown in Table 6; and total fuel consumption for each principal activity category is shown in Table 7. Tables 8 and 9 show total consumption and total expenditures for each major fuel type for all commercial buildings.

Fuel-specific data are presented in Tables 10 through 19, along with additional information on end uses. Summaries are given for all buildings combined in Tables 10 through 14 and separately by Census region in Tables 15 through 19.

Tables 20 through 26 show summary data on the use of major fuels for heating and cooling, with breakdowns according to factors related to heating (or cooling) demand, such as type of heating system and energy conservation activities. Electricity use in commercial buildings where this fuel was used for heating, for both heating and cooling, and for cooling but not heating is shown in Tables 20, 21, and 22, respectively. Data on the use of natural gas, fuel oil, propane, and steam in commercial buildings heated with each of these fuels are shown in Tables 23 through 26.

Tables 10 through 26 show the combinations of fuels that occurred most frequently in the data. For example, Table 10 on electricity gives breakdowns by several different combinations of heating fuels. The corresponding table on fuel oil (Table 12) gives fewer heating fuel combinations, since many combinations that are common among buildings using electricity are infrequent in buildings using fuel oil.

The row labels in the tables describe characteristics of the buildings, not a fuel or its use. Thus, in the first group of tables, breakdowns according to which fuels are used in the building should not be interpreted as breakdowns of consumption of each fuel. For example, the row labeled "Electricity" in line 2 of Table 5 gives summary statistics on the total of all fuels for buildings that use electricity, not statistics on electricity consumption. In the second and third groups of tables, tabulations of energy consumption are presented according to which end uses were represented in the building. These breakdowns should not be interpreted as tabulations of the amount of energy used for each end use; such breakdowns cannot be made from these data. For example, the row indicating "Electricity Used for Heating" in line 2 of Table 10 summarizes electricity used for all purposes in electrically heated buildings, not electricity used for heating only.

Table 5. Major Fuels: Consumption and Expenditures, 1983

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1.031	1.183	0.875	1.262	1.119	0.950	1.053	1.274	1.113	0.934	0.501	
All Buildings	3,774	51,280	13.6	5.150	1,364	100	66	59,242	15.7	1.16	11.50	4.97
Fuel Used Alone or in Combination^a												
Electricity	3,764	51,146	13.6	5.145	1,367	101	66	59,217	15.7	1.16	11.51	4.96
Natural Gas	2,239	36,088	16.1	4.084	1,824	113	76	43,109	19.3	1.19	10.56	5.90
Fuel Oil	538	10,205	19.0	1.105	2,055	108	67	12,657	23.5	1.24	11.46	8.07
Propane	250	2,721	10.9	.255	1,019	94	61	3,190	12.7	1.17	12.50	16.01
Purchased Steam	59	4,538	77.5	.668	11,411	147	81	7,612	130.0	1.68	11.40	13.33
Other	204	3,320	16.2	.313	1,532	94	63	3,604	17.6	1.09	11.51	13.14
Year Constructed												
1900 or Before	279	2,884	10.3	.194	696	67	52	2,149	7.7	.75	11.07	10.14
1901 to 1920	369	5,228	14.2	.354	958	68	62	3,918	10.6	.75	11.08	10.68
1921 to 1945	685	8,269	12.1	.846	1,235	102	77	9,355	13.7	1.13	11.05	8.84
1946 to 1960	883	9,434	10.7	.938	1,063	99	67	10,406	11.8	1.10	11.09	8.62
1961 to 1970	700	9,873	14.1	1.099	1,570	111	70	12,713	18.2	1.29	11.57	6.35
1971 to 1973	207	3,411	16.5	.366	1,769	107	59	4,742	22.9	1.39	12.96	9.33
1974 to 1979	517	6,550	12.7	.861	1,667	131	67	10,004	19.4	1.53	11.62	8.93
1980 to 1983	135	5,631	41.7	.491	3,639	87	60	5,954	44.1	1.06	12.12	16.80
Square Footage Category												
5,000 or Less	2,112	4,680	2.2	.871	412	186	63	10,016	4.7	2.14	11.50	7.46
5,001 to 10,000	705	5,083	7.2	.562	797	111	64	6,323	9.0	1.24	11.25	8.53
10,001 to 25,000	560	8,795	15.7	.727	1,299	83	61	8,872	15.9	1.01	12.21	6.59
25,001 to 50,000	216	7,470	34.6	.695	3,221	93	74	8,142	37.8	1.09	11.72	6.81
50,001 to 100,000	104	6,963	67.2	.616	5,951	89	83	6,956	67.1	1.00	11.28	7.98
100,001 to 200,000	49	6,613	134.1	.589	11,938	89	74	6,468	131.1	.98	10.98	5.88
Over 200,000	29	11,675	407.7	1.090	38,051	93	60	12,464	435.2	1.07	11.44	9.06
Number of Floors												
One	2,195	17,074	7.8	1.798	820	105	70	21,123	9.6	1.24	11.75	8.35
Two	860	11,512	13.4	1.017	1,183	88	64	11,564	13.4	1.00	11.37	6.53
Three or More	720	22,694	31.5	2.334	3,243	103	65	26,555	36.9	1.17	11.38	6.11
Principal Activity Within Building												
Assembly	452	5,475	12.1	.377	835	69	63	4,147	9.2	.76	10.99	11.49
Educational	177	6,044	34.2	.484	2,737	80	79	4,843	27.4	.80	10.01	12.12
Food Sales/Service	380	2,050	5.4	.437	1,149	213	77	5,510	14.5	2.69	12.61	7.62
Health Care	61	2,277	37.6	.465	7,680	204	84	4,385	72.4	1.93	9.43	13.28
Lodging	106	2,241	21.1	.365	3,429	163	154	3,932	36.9	1.75	10.77	12.83
Mercantile/Services	1,055	10,347	9.8	.838	795	81	60	10,338	9.8	1.00	12.33	10.35
Office	575	8,444	14.7	1.039	1,806	123	40	13,097	22.8	1.55	12.61	6.87
Residential	235	2,442	10.4	.179	759	73	130	1,856	7.9	.76	10.39	11.04
Warehouse	387	6,700	17.3	.506	1,309	76	95	5,530	14.3	.83	10.92	10.17
Other	167	2,738	16.4	.276	1,655	101	76	3,377	20.3	1.23	12.24	17.54
Vacant	180	2,522	14.0	.184	1,022	73	124	2,226	12.4	.88	12.12	14.34
Census Region												
Northeast	653	11,413	17.5	.954	1,462	84	57	13,580	20.8	1.19	14.23	6.78
North Central	1,157	15,718	13.6	1.922	1,662	122	85	18,991	16.4	1.21	9.88	7.02
South	1,415	16,683	11.8	1.563	1,104	94	59	19,218	13.6	1.15	12.30	10.10
West	549	7,467	13.6	.710	1,293	95	59	7,454	13.6	1.00	10.50	14.29

See footnotes at end of table.

Table 5. Major Fuels: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1.031	1.183	0.875	1.262	1.119	0.950	1.053	1.274	1.113	0.934	0.501	
Climate Zones:												
45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above 7,000 HDD												
	399	5,520	13.8	0.673	1,687	122	88	6,711	16.8	1.22	9.98	20.56
Below 2,000 CDD and 5,500-7,000 HDD												
	1,115	16,729	15.0	1.846	1,656	110	75	19,187	17.2	1.15	10.40	6.92
Below 2,000 CDD and 4,000-5,499 HDD												
	971	13,541	13.9	1.093	1,125	81	57	14,240	14.7	1.05	13.03	13.31
Below 2,000 CDD and Below 4,000 HDD												
	638	7,281	11.4	.702	1,101	96	60	8,302	13.0	1.14	11.82	14.37
Above 2,000 CDD and Below 4,000 HDD												
	651	8,208	12.6	.836	1,285	102	58	10,802	16.6	1.32	12.92	20.31
Metropolitan Status												
Metropolitan	2,176	36,898	17.0	3,859	1,773	105	66	45,440	20.9	1.23	11.78	5.27
Nonmetropolitan	1,598	14,382	9.0	1,291	808	90	67	13,802	8.6	.96	10.69	11.76
Number of Establishments in Building												
Vacant	59	873	14.7	.047	784	53	Q	605	10.2	.69	13.01	21.87
Single Establishment	3,077	34,858	11.3	3,858	1,254	111	76	42,508	13.8	1.22	11.02	4.79
Multiple Establishment	638	15,548	24.4	1,245	1,952	80	46	16,129	25.3	1.04	12.96	9.08
Government Occupancy												
Any Government Occupancy	336	10,002	29.7	1,035	3,076	103	60	11,239	33.4	1.12	10.86	10.34
Federal	60	3,110	52.2	.285	4,788	92	44	3,598	60.4	1.16	12.62	23.37
State	100	3,353	33.7	.395	3,963	118	62	4,156	41.7	1.24	10.53	11.01
Local	212	4,839	22.8	.489	2,306	101	67	5,125	24.2	1.06	10.49	8.42
Number of Employees												
Fewer than 10	2,475	14,221	5.7	1,143	462	80	124	12,669	5.1	.89	11.08	7.82
10 to 19	535	6,165	11.5	.500	935	81	73	5,910	11.0	.96	11.81	9.10
20 to 49	502	10,082	20.1	1,084	2,160	108	73	12,472	24.8	1.24	11.50	7.55
50 to 99	141	5,247	37.2	.574	4,066	109	65	6,652	47.1	1.27	11.59	8.33
100 or More	121	15,564	128.8	1,848	15,293	119	49	21,538	178.3	1.38	11.66	8.53
Hours of Operation During a Typical Week												
39 or Fewer Hours	616	4,528	7.3	.290	471	64	73	3,032	4.9	.67	10.44	13.09
40 to 48 Hours	861	9,429	11.0	.682	792	72	60	7,812	9.1	.83	11.45	8.42
49 to 60 Hours	890	11,673	13.1	.957	1,075	82	58	11,344	12.7	.97	11.85	7.54
61 to 84 Hours	653	11,057	16.9	1,128	1,728	102	62	13,420	20.6	1.21	11.90	9.73
85 to 167 Hours	461	7,398	16.1	.914	1,982	123	71	10,972	23.8	1.48	12.01	8.47
168 Hours	293	7,196	24.6	1,178	4,021	164	80	12,662	43.2	1.76	10.75	9.14
Percentage of Exterior Glass												
Less than 25 Percent	2,520	28,000	11.1	2,543	1,009	91	71	29,453	11.7	1.05	11.58	5.85
25 to 49 Percent	946	15,171	16.0	1,672	1,766	110	69	18,658	19.7	1.23	11.16	6.15
50 to 74 Percent	247	5,782	23.4	.689	2,789	119	66	7,954	32.2	1.38	11.55	9.10
75 Percent or More	61	2,327	38.1	.246	4,025	106	51	3,177	52.0	1.37	12.92	14.09
Insulation/Special Glass												
Any Present	2,659	40,280	15.1	4,264	1,603	106	66	48,829	18.4	1.21	11.45	5.51
Special Glass	1,465	27,553	18.8	2,995	2,044	109	63	33,881	23.1	1.23	11.31	6.61
Roof/Ceiling Insulation	1,858	29,007	15.6	3,109	1,673	107	67	35,376	19.0	1.22	11.38	5.62
Exterior Wall Insulation	1,332	19,259	14.5	2,050	1,539	106	60	23,985	18.0	1.25	11.70	7.51
None Present	1,115	10,999	9.9	.885	794	81	69	10,413	9.3	.95	11.76	5.93

See footnotes at end of table.

Table 5. Major Fuels: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1.031	1.183	0.875	1.262	1.119	0.950	1.053	1.274	1.113	0.934	0.501	
Passive Solar												
In Use	34	749	22.0	0.083	2,436	111	39	925	27.1	1.24	11.15	15.03
Not in Use	3,506	48,873	13.9	4.990	1,423	102	67	57,330	16.3	1.17	11.49	5.98
Computerized Energy Management System												
In Use	105	6,426	61.4	.768	7,347	120	59	8,951	85.6	1.39	11.65	8.21
Not in Use	3,451	43,403	12.6	4.329	1,254	100	68	49,587	14.4	1.14	11.45	5.43
Professional Energy Audits												
Performed in Past Year	433	13,370	30.9	1.444	3,331	108	59	16,912	39.0	1.26	11.71	9.23
Measures Taken	187	6,590	35.3	.774	4,147	118	63	8,581	46.0	1.30	11.08	11.20
Measures Not Taken	247	6,779	27.5	.669	2,714	99	56	8,331	33.8	1.23	12.45	12.86
Not Performed	3,341	37,910	11.3	3.706	1,109	98	70	42,330	12.7	1.12	11.42	4.90

^a Consumption and Expenditures in this table are summed over electricity, natural gas, fuel oil, propane and purchased steam. Data may not sum to totals due to use of more than one fuel in a building, for heating or for water heating, etc.

^{NC} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 6. Major Fuels: Consumption and Expenditures by Census Region, 1983

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1.091	1.115	0.893	1.203	1.243	0.894	1.001	1.220	1.279	0.930	0.475	
Census Region: Northeast												
All Buildings	653	11,413	17.5	0.954	1,462	84	57	13,580	20.8	1.19	14.23	6.78
Fuel Used Alone or in Combination^a												
Electricity	651	11,341	17.4	.953	1,463	84	57	13,569	20.8	1.20	14.24	6.59
Natural Gas	427	8,071	18.9	.712	1,667	88	59	9,400	22.0	1.16	13.20	7.51
Fuel Oil	227	4,789	21.1	.429	1,889	90	61	5,721	25.2	1.19	13.32	10.71
Propane	Q	530	19.6	.055	Q	104	96	684	Q	1.29	12.44	26.68
Purchased Steam	16	1,336	83.3	.154	Q	115	64	2,568	Q	1.92	16.66	26.83
Other	32	904	28.4	.051	Q	56	63	836	Q	.92	16.42	27.44
Year Constructed												
1900 or Before	101	1,266	12.5	.076	753	60	63	1,030	10.2	.81	13.51	16.94
1901 to 1920	92	1,805	19.5	.096	1,037	53	65	1,426	15.4	.79	14.89	16.39
1921 to 1945	157	2,320	14.7	.188	1,194	81	58	2,582	16.4	1.11	13.74	11.14
1946 to 1960	127	2,073	16.3	.167	1,312	81	44	2,294	18.0	1.11	13.72	14.35
1961 to 1970	88	1,773	20.2	.208	2,367	117	69	2,941	33.5	1.66	14.13	15.84
1971 to 1973	26	643	25.0	.074	2,869	115	57	1,020	39.7	1.59	13.82	17.40
1974 to 1979	47	708	15.2	.096	2,052	135	57	1,537	32.9	2.17	16.03	13.39
1980 to 1983	14	824	59.3	.050	3,568	60	59	751	54.0	.91	15.15	20.56
Square Footage Category												
5,000 or Less	293	751	2.6	.104	357	139	55	1,609	5.5	2.14	15.40	11.04
5,001 to 10,000	131	938	7.2	.087	666	93	54	1,225	9.4	1.31	14.06	11.67
10,001 to 25,000	128	1,918	15.0	.153	1,192	80	61	1,961	15.3	1.02	12.84	11.18
25,001 to 50,000	57	1,900	33.2	.133	2,320	70	53	1,977	34.6	1.04	14.90	15.46
50,001 to 100,000	26	1,715	65.7	.146	5,613	85	86	2,008	76.9	1.17	13.71	13.04
100,001 to 200,000	12	1,594	136.0	.118	10,033	74	70	1,644	140.3	1.03	13.99	9.00
Over 200,000	6	2,596	419.4	.213	34,461	82	46	3,157	510.0	1.22	14.80	15.05
Number of Floors												
One	216	2,217	10.3	.200	923	90	61	2,945	13.6	1.33	14.75	12.69
Two	154	1,924	12.5	.170	1,105	88	69	2,344	15.2	1.22	13.80	12.36
Three or More	283	7,272	25.7	.585	2,069	80	54	8,290	29.3	1.14	14.18	8.88
Principal Activity Within Building												
Assembly	61	1,053	17.4	.061	1,001	58	92	883	14.6	.84	14.54	18.37
Educational	28	1,374	49.8	.100	3,638	73	58	1,195	43.4	.87	11.92	19.39
Food Sales/Service	58	392	6.8	.067	1,149	170	77	980	16.9	2.50	14.73	15.70
Health Care	11	502	44.9	.102	Q	203	82	1,144	Q	2.28	11.24	22.42
Lodging	13	422	31.4	.053	3,963	126	186	738	54.9	1.75	13.84	24.95
Mercantile/Services	183	2,025	11.1	.143	783	71	47	2,061	11.3	1.02	14.40	14.76
Office	97	1,774	18.2	.180	1,855	102	29	3,190	32.8	1.80	17.69	10.07
Residential	97	1,336	13.8	.082	845	61	137	907	9.4	.68	11.09	14.40
Warehouse	52	1,200	23.1	.088	Q	73	77	1,198	Q	1.00	13.63	26.94
Other	19	826	42.8	.053	2,727	64	68	857	44.5	1.04	16.30	23.09
Vacant	34	508	15.0	.026	768	51	131	427	12.6	.84	16.37	22.70
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above 7,000 HDD	Q	1,122	11.7	.091	947	81	72	Q	11.8	1.01	12.48	18.48
Below 2,000 CDD and 5,500-7,000 HDD	338	5,988	17.7	.523	1,550	87	56	6,532	19.3	1.09	12.48	9.13
Below 2,000 CDD and 4,000-5,499 HDD	219	4,303	19.7	.340	1,554	79	56	5,913	27.0	1.37	17.38	11.33

See footnotes at end of table.

**Table 6. Major Fuels: Consumption and Expenditures by Census Region, 1983
(Continued)**

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1,091	1,115	0,893	1,203	1,243	0,894	1,001	1,220	1,279	0,930	0,475	
Census Region: Northeast												
Climate Zones:												
45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Below 4,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Above 2,000 CDD and Below 4,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Metropolitan Status												
Metropolitan	519	9,843	19.0	0.821	1,582	83	56	11,799	22.7	1.20	14.37	7.49
Nonmetropolitan	134	1,570	11.7	.134	998	85	68	1,781	13.3	1.13	13.34	8.06
Number of Establishments in Building												
Vacant	7	170	22.9	Q	Q	Q	Q	Q	Q	Q	Q	43.66
Single Establishment	502	7,100	14.2	.627	1,250	88	64	8,672	17.3	1.22	13.83	7.60
Multiple Establishment	143	4,142	28.9	.316	2,205	76	46	4,722	32.9	1.14	14.93	10.37
Government Occupancy												
Any Government Occupancy	61	2,242	37.0	.177	2,923	79	34	2,521	41.6	1.12	14.23	12.88
Federal	15	609	39.9	.043	2,803	70	Q	772	50.6	1.27	18.03	33.22
State	15	882	58.2	.072	4,782	82	36	1,015	67.0	1.15	14.02	25.57
Local	38	1,007	26.3	.095	2,475	94	45	1,222	31.9	1.21	12.90	14.45
Number of Employees												
Fewer than 10	417	3,496	8.4	.195	468	56	121	2,542	6.1	.73	13.01	10.32
10 to 19	100	1,562	15.6	.123	1,226	79	94	1,718	17.2	1.10	13.99	16.49
20 to 49	83	1,796	21.6	.176	2,115	98	71	2,478	29.8	1.38	14.10	10.81
50 to 99	23	1,067	46.9	.094	4,149	88	62	1,319	58.0	1.24	13.99	15.15
100 or More	29	3,491	118.7	.366	12,453	105	38	5,522	187.8	1.58	15.08	13.91
Hours of Operation During a Typical Week												
39 or Fewer Hours	83	971	11.7	.043	521	44	84	565	6.8	.58	13.09	17.02
40 to 48 Hours	152	2,053	13.5	.137	903	67	65	1,721	11.3	.84	12.54	12.16
49 to 60 Hours	161	2,657	16.5	.181	1,128	68	52	2,856	17.8	1.08	15.74	9.72
61 to 84 Hours	131	2,253	17.1	.206	1,564	91	56	2,888	22.0	1.28	14.04	16.68
85 to 167 Hours	82	1,844	22.5	.156	1,902	85	61	2,306	28.2	1.25	14.80	11.34
168 Hours	44	1,636	37.6	.231	5,306	141	54	3,244	74.5	1.98	14.04	20.49
Percentage of Exterior Glass												
Less than 25 Percent	404	5,466	13.5	.384	951	70	65	5,547	13.7	1.01	14.43	6.25
25 to 49 Percent	178	3,940	22.1	.383	2,147	97	51	5,225	29.3	1.33	13.64	11.72
50 to 74 Percent	62	1,516	24.5	.144	2,330	95	66	2,009	32.5	1.33	13.93	15.37
75 Percent or More	8	492	61.0	.043	5,300	87	42	799	99.2	1.63	18.72	17.40
Insulation/Special Glass												
Any Present	459	9,042	19.7	.757	1,650	84	57	10,604	23.1	1.17	14.02	7.50
Special Glass	253	6,170	24.4	.520	2,053	84	51	7,157	28.3	1.16	13.77	9.28
Roof/Ceiling Insulation	309	6,278	20.3	.539	1,747	86	58	7,628	24.7	1.22	14.15	9.30
Exterior Wall Insulation	229	4,243	18.5	.349	1,523	82	50	5,082	22.2	1.20	14.58	10.26
None Present	194	2,371	12.2	.198	1,019	83	59	2,976	15.3	1.26	15.05	8.86

See footnotes at end of table.

**Table 6. Major Fuels: Consumption and Expenditures by Census Region, 1983
(Continued)**

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
	RSE Column Factor:	1.091	1.115	0.893	1.203	1.243	0.894	1.001	1.220	1.279	0.930	
Census Region: Northeast												
Passive Solar												
In Use	10	180	18.8	0.016	Q	89	Q	260	Q	1.45	16.20	28.85
Not in Use	617	11,051	17.9	.929	1,506	84	58	13,137	21.3	1.19	14.14	6.60
Computerized Energy Management System												
In Use	24	1,556	64.2	.156	6,447	100	48	2,437	100.5	1.57	15.59	15.83
Not in Use	605	9,682	16.0	.790	1,307	82	59	10,983	18.2	1.13	13.90	6.88
Professional Energy Audits												
Performed in Past Year	81	2,811	34.5	.301	3,698	107	53	4,331	53.2	1.54	14.40	13.19
Measures Taken	45	1,656	36.9	.176	3,926	107	50	2,518	56.0	1.52	14.28	18.03
Measures Not Taken	36	1,154	31.7	.124	3,416	108	57	1,813	49.8	1.57	14.58	15.84
Not Performed	571	8,602	15.1	.654	1,144	76	60	9,248	16.2	1.08	14.15	7.75

See footnotes at end of table.

**Table 6. Major Fuels: Consumption and Expenditures by Census Region, 1983
(Continued)**

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1.091	1.115	0.893	1.203	1.243	0.894	1.001	1.220	1.279	0.930	0.475	
Census Region: North Central												
All Buildings	1,157	15,718	13.6	1,922	1,662	122	85	18,991	16.4	1.21	9.88	7.02
Fuel Used Alone or in Combination^a												
Electricity	1,153	15,685	13.6	1,921	1,666	122	85	18,981	16.5	1.21	9.88	7.01
Natural Gas	906	13,503	14.9	1,738	1,917	129	91	16,644	18.4	1.23	9.58	7.63
Fuel Oil	102	1,862	18.3	.220	2,161	118	101	2,190	21.5	1.18	9.97	18.38
Propane	61	462	Q	.065	Q	141	116	646	Q	1.40	9.89	31.50
Purchased Steam	22	1,807	88.5	.328	15,211	172	92	3,151	146.2	1.65	9.61	18.69
Other	49	857	17.3	.125	2,521	145	85	1,184	23.9	1.38	9.50	24.40
Year Constructed												
1900 or Before	110	1,117	10.2	.084	766	75	59	760	6.9	.68	9.03	18.59
1901 to 1920	150	1,815	12.1	.143	953	79	61	1,379	9.2	.76	9.63	10.74
1921 to 1945	206	2,583	12.5	.363	1,761	140	110	3,547	17.2	1.37	9.78	15.91
1946 to 1960	259	3,110	12.0	.372	1,435	119	97	3,710	14.3	1.19	9.98	13.00
1961 to 1970	184	3,026	16.5	.387	2,108	128	88	3,605	19.6	1.19	9.32	9.84
1971 to 1973	59	953	16.3	.124	2,120	130	70	1,279	21.8	1.34	10.30	15.45
1974 to 1979	159	2,149	13.5	.316	1,982	147	80	3,280	20.6	1.53	10.39	13.79
1980 to 1983	31	965	31.6	.134	4,384	139	82	1,431	46.9	1.48	10.69	22.65
Square Footage Category												
5,000 or Less	647	1,463	2.3	.255	395	175	62	2,665	4.1	1.82	10.43	11.22
5,001 to 10,000	229	1,643	7.2	.207	903	126	78	1,992	8.7	1.21	9.64	12.74
10,001 to 25,000	160	2,578	16.1	.265	1,653	103	76	2,853	17.8	1.11	10.77	10.72
25,001 to 50,000	64	2,202	34.4	.280	4,369	127	107	2,815	43.9	1.28	10.06	10.22
50,001 to 100,000	31	2,102	68.7	.247	8,084	118	103	2,279	74.5	1.08	9.21	16.40
100,001 to 200,000	16	2,115	134.8	.258	16,440	122	94	2,381	151.8	1.13	9.23	9.16
Over 200,000	11	3,614	340.7	.410	38,678	114	89	4,006	377.7	1.11	9.76	10.86
Number of Floors												
One	589	4,251	7.2	.565	960	133	83	5,869	10.0	1.38	10.38	11.20
Two	308	3,857	12.5	.399	1,295	104	78	3,945	12.8	1.02	9.88	10.15
Three or More	260	7,610	29.3	.958	3,685	126	90	9,178	35.3	1.21	9.58	12.47
Principal Activity Within Building												
Assembly	149	1,755	11.8	.173	1,160	98	78	1,469	9.9	.84	8.50	13.91
Educational	39	1,834	46.5	.204	5,177	111	121	1,717	43.6	.94	8.41	21.77
Food Sales/Service	120	722	6.0	.195	1,621	270	87	2,189	18.2	3.03	11.24	12.86
Health Care	21	1,015	48.7	.174	8,369	172	88	1,619	77.7	1.59	9.29	24.78
Lodging	12	669	54.4	.089	7,206	132	128	794	64.6	1.19	8.97	15.64
Mercantile/Services	347	3,185	9.2	.307	885	96	72	3,558	10.2	1.12	11.58	11.72
Office	176	2,174	12.4	.326	1,858	150	54	3,455	19.7	1.59	10.59	11.41
Residential	78	717	9.1	.071	911	100	155	632	8.1	.88	8.85	19.60
Warehouse	118	2,088	17.8	.210	1,789	101	150	1,830	15.6	.88	8.70	15.45
Other	47	871	18.7	.109	2,345	126	88	1,145	24.5	1.31	10.47	19.45
Vacant	50	687	13.8	.063	1,271	92	175	582	11.7	.85	9.22	22.90
Climate Zones:												
45 Year Average												
Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above 7,000 HDD	236	3,811	16.2	.509	2,159	134	94	4,920	20.9	1.29	9.67	23.45
Below 2,000 CDD and 5,500-7,000 HDD	621	8,981	14.5	1.119	1,801	125	89	11,007	17.7	1.23	9.83	11.58
Below 2,000 CDD and 4,000-5,499 HDD	Q	Q	9.8	Q	981	101	64	Q	10.2	1.05	10.42	25.97

See footnotes at end of table.

**Table 6. Major Fuels: Consumption and Expenditures by Census Region, 1983
(Continued)**

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1.091	1.115	0.893	1.203	1.243	0.894	1.001	1.220	1.279	0.930	0.475	
Census Region: North Central												
Climate Zones:												
45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Below 4,000 HDD												
4,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Above 2,000 CDD and Below 4,000 HDD												
4,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Metropolitan Status												
Metropolitan	650	11,385	17.5	1,504	2,313	132	89	15,038	23.1	1.32	10.00	7.94
Nonmetropolitan	507	4,333	8.6	.418	826	97	73	3,954	7.8	.91	9.45	13.50
Number of Establishments in Building												
Vacant	10	238	Q	.014	Q	60	Q	119	Q	.50	8.32	47.70
Single Establishment	965	12,037	12.5	1,540	1,595	128	94	14,751	15.3	1.23	9.58	7.88
Multiple Establishment	181	3,443	19.0	.368	2,031	107	59	4,121	22.7	1.20	11.20	8.95
Government Occupancy												
Any Government Occupancy	97	2,838	29.2	.383	3,933	135	84	3,739	38.4	1.32	9.77	11.70
Federal	9	442	49.1	.086	9,530	194	97	996	110.6	2.25	11.61	22.88
State	27	951	35.3	.135	5,018	142	71	1,278	47.4	1.34	9.45	21.01
Local	68	1,655	24.4	.192	2,838	116	87	1,794	26.5	1.08	9.34	12.86
Number of Employees												
Fewer than 10	768	4,325	5.6	.374	487	86	130	3,651	4.8	.84	9.77	10.98
10 to 19	158	1,706	10.8	.184	1,165	108	92	1,863	11.8	1.09	10.14	10.02
20 to 49	146	3,363	23.0	.423	2,889	126	97	4,251	29.0	1.26	10.06	12.27
50 to 99	48	1,771	36.7	.270	5,600	153	91	2,760	57.2	1.56	10.21	13.92
100 or More	36	4,553	125.8	.672	18,556	148	65	6,466	178.7	1.42	9.63	8.20
Hours of Operation During a Typical Week												
39 or Fewer Hours	190	1,272	6.7	.097	509	76	65	828	4.4	.65	8.56	15.40
40 to 48 Hours	217	2,289	10.6	.207	954	90	78	2,132	9.8	.93	10.31	14.58
49 to 60 Hours	297	3,644	12.3	.370	1,249	102	73	3,633	12.2	1.00	9.81	14.12
61 to 84 Hours	221	3,265	14.8	.440	1,990	135	92	4,456	20.2	1.36	10.13	8.63
85 to 167 Hours	156	2,757	17.7	.413	2,652	150	94	4,419	28.4	1.60	10.70	13.42
168 Hours	77	2,490	32.4	.396	5,145	159	95	3,524	45.8	1.42	8.91	9.84
Percentage of Exterior Glass												
Less than 25 Percent	802	8,309	10.4	.978	1,219	118	88	9,814	12.2	1.18	10.04	7.52
25 to 49 Percent	283	5,081	18.0	.624	2,206	123	79	6,065	21.5	1.19	9.73	9.94
50 to 74 Percent	62	1,770	28.8	.267	4,337	151	101	2,564	41.7	1.45	9.61	18.41
75 Percent or More	11	558	49.6	.055	4,862	98	57	548	48.7	.98	10.02	20.27
Insulation/Special Glass												
Any Present	844	12,574	14.9	1.622	1,922	129	84	15,965	18.9	1.27	9.84	6.85
Special Glass	504	8,790	17.4	1.234	2,451	140	85	12,031	23.9	1.37	9.75	7.10
Roof/Ceiling Insulation	584	9,221	15.8	1.166	1,997	126	83	11,379	19.5	1.23	9.76	7.96
Exterior Wall Insulation	445	6,109	13.7	.737	1,656	121	74	7,470	16.8	1.22	10.13	8.59
None Present	313	3,143	10.1	.300	959	95	89	3,026	9.7	.96	10.09	11.43

See footnotes at end of table.

**Table 6. Major Fuels: Consumption and Expenditures by Census Region, 1983
(Continued)**

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1.091	1.115	0.893	1.203	1.243	0.894	1.001	1.220	1.279	0.930	0.475	
Census Region: North Central												
Passive Solar												
In Use	10	283	27.7	0.043	4,263	154	57	401	39.3	1.42	9.22	29.34
Not in Use	1,096	15,124	13.8	1.868	1,705	124	87	18,444	16.8	1.22	9.87	7.09
Computerized Energy Management System												
In Use	36	2,363	65.6	.345	9,574	146	74	3,542	98.3	1.50	10.27	13.06
Not in Use	1,076	13,068	12.1	1.569	1,457	120	88	15,326	14.2	1.17	9.77	7.88
Professional Energy Audits												
Performed in Past Year	120	3,646	30.4	.464	3,865	127	79	4,687	39.1	1.29	10.11	11.40
Measures Taken	54	1,849	34.0	.244	4,490	132	83	2,249	41.4	1.22	9.22	14.31
Measures Not Taken	66	1,797	27.4	.220	3,348	122	76	2,438	37.2	1.36	11.10	15.58
Not Performed	1,037	12,071	11.6	1.459	1,407	121	87	14,304	13.8	1.18	9.80	7.57

See footnotes at end of table.

**Table 6. Major Fuels: Consumption and Expenditures by Census Region, 1983
(Continued)**

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1.091	1.115	0.893	1.203	1.243	0.894	1.001	1.220	1.279	0.930	0.475	
Census Region: South												
All Buildings	1,415	16,683	11.8	1,563	1,104	94	59	19,218	13.6	1.15	12.30	10.10
Fuel Used Alone or in Combination^a												
Electricity	1,412	16,654	11.8	1,562	1,107	94	59	19,213	13.6	1.15	12.30	10.11
Natural Gas	581	9,366	16.1	1,081	1,859	115	80	11,484	19.7	1.23	10.62	14.42
Fuel Oil	172	2,934	17.1	.356	2,074	122	58	3,951	23.0	1.35	11.08	12.49
Propane	144	1,657	11.5	.128	884	77	45	1,774	12.3	1.07	13.90	21.03
Purchased Steam	Q	769	Q	.116	Q	151	Q	1,260	Q	1.64	10.81	45.41
Other	79	1,141	14.4	.101	1,279	89	52	1,222	15.4	1.07	12.07	24.51
Year Constructed												
1900 or Before	45	335	7.4	.026	563	76	29	295	6.5	.88	11.55	24.15
1901 to 1920	92	1,077	11.7	.083	Q	Q	67	836	9.0	Q	10.05	33.28
1921 to 1945	209	2,150	10.3	.173	827	80	58	2,016	9.7	.94	11.68	21.41
1946 to 1960	366	3,192	8.7	.270	739	85	57	3,127	8.5	.98	11.56	14.60
1961 to 1970	335	3,561	10.6	.377	1,127	106	68	4,766	14.2	1.34	12.64	11.84
1971 to 1973	87	1,273	14.6	.110	1,265	87	56	1,613	18.5	1.27	14.62	13.96
1974 to 1979	219	2,450	11.2	.316	1,443	129	67	3,735	17.1	1.52	11.83	17.68
1980 to 1983	62	2,644	42.5	.208	3,342	79	49	2,830	45.5	1.07	13.61	27.41
Square Footage Category												
5,000 or Less	891	1,864	2.1	.365	410	196	66	4,376	4.9	2.35	11.98	14.10
5,001 to 10,000	230	1,638	7.1	.136	593	83	48	1,746	7.6	1.07	12.82	11.98
10,001 to 25,000	182	2,889	15.9	.216	1,183	75	53	2,953	16.2	1.02	13.70	13.14
25,001 to 50,000	58	2,108	36.5	.187	3,238	89	73	2,251	39.0	1.07	12.04	14.83
50,001 to 100,000	31	2,101	68.3	.144	4,673	68	65	1,879	61.1	.89	13.08	11.29
100,001 to 200,000	15	2,062	133.6	.141	9,158	69	59	1,733	112.3	.84	12.26	12.91
Over 200,000	9	4,021	435.5	.374	40,508	93	56	4,279	463.5	1.06	11.44	14.08
Number of Floors												
One	1,033	7,592	7.4	.691	669	91	65	8,708	8.4	1.15	12.61	15.02
Two	272	3,906	14.4	.320	1,180	82	54	3,909	14.4	1.00	12.20	15.64
Three or More	111	5,185	46.7	.552	4,970	106	57	6,601	59.5	1.27	11.97	12.68
Principal Activity Within Building												
Assembly	197	1,827	9.3	.104	530	57	45	1,406	7.1	.77	13.48	17.47
Educational	79	2,082	26.5	.132	1,679	63	68	1,501	19.1	.72	11.37	16.20
Food Sales/Service	145	616	4.2	.119	822	194	73	1,660	11.4	2.70	13.89	15.03
Health Care	20	567	28.6	.137	6,891	241	79	1,199	60.3	2.11	8.76	22.43
Lodging	57	803	14.1	.151	2,648	188	155	1,825	32.0	2.27	12.08	19.60
Mercantile/Services	375	3,813	10.2	.262	697	69	57	3,441	9.2	.90	13.14	23.17
Office	191	2,903	15.2	.366	1,920	126	40	4,605	24.2	1.59	12.59	14.98
Residential	44	299	6.7	.017	373	Q	75	239	5.4	Q	14.46	35.66
Warehouse	154	2,270	14.7	.152	986	67	82	1,788	11.6	.79	11.74	15.40
Other	81	640	7.9	.060	744	94	48	830	10.2	1.30	13.75	20.39
Vacant	72	862	12.0	.062	865	72	98	723	10.0	.84	11.60	27.17
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above 7,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Below 2,000 CDD and 5,500-7,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Below 2,000 CDD and 4,000-5,499 HDD	384	5,158	13.4	.381	994	74	53	4,662	12.2	.90	12.22	25.13

See footnotes at end of table.

**Table 6. Major Fuels: Consumption and Expenditures by Census Region, 1983
(Continued)**

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1.091	1.115	0.893	1.203	1.243	0.894	1.001	1.220	1.279	0.930	0.475	
Census Region: South												
Climate Zones:												
45 Year Average												
Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Below 4,000 HDD												
	420	4,404	Q	0.415	Q	94	68	4,567	Q	1.04	11.01	30.99
Above 2,000 CDD and Below 4,000 HDD												
	611	7,121	11.6	.767	1,254	108	59	9,989	16.3	1.40	13.03	20.0
Metropolitan Status												
Metropolitan	621	9,531	15.4	.977	1,574	103	58	12,542	20.2	1.32	12.84	9.49
Nonmetropolitan	795	7,152	9.0	.586	737	82	63	6,675	8.4	.93	11.40	20.84
Number of Establishments in Building												
Vacant	36	301	8.4	.015	413	49	Q	189	5.3	.63	12.73	29.65
Single Establishment	1,188	11,115	9.4	1.155	972	104	68	13,756	11.6	1.24	11.91	9.65
Multiple Establishment	191	5,267	27.5	.393	2,054	75	42	5,273	27.5	1.00	13.41	21.45
Government Occupancy												
Any Government Occupancy	122	3,541	29.1	.321	2,634	91	63	3,644	29.9	1.03	11.36	21.59
Federal	26	Q	Q	Q	Q	69	43	Q	Q	.85	12.33	40.23
State	38	1,036	27.5	.106	2,798	102	67	1,178	31.2	1.14	11.16	15.55
Local	72	1,389	19.3	.138	1,915	99	76	1,525	21.2	1.10	11.04	19.03
Number of Employees												
Fewer than 10	972	4,573	4.7	.418	431	91	120	4,865	5.0	1.06	11.63	16.72
10 to 19	193	2,115	11.0	.120	620	57	48	1,716	8.9	.81	14.36	16.9
20 to 49	170	3,083	18.1	.291	1,715	95	58	3,684	21.7	1.19	12.64	10.30
50 to 99	44	1,519	34.9	.136	3,114	89	50	1,731	39.8	1.14	12.77	13.37
100 or More	38	5,392	142.8	.598	15,835	111	47	7,222	191.2	1.34	12.08	15.44
Hours of Operation During a Typical Week												
39 or Fewer Hours	283	1,790	6.3	.125	442	70	82	1,364	4.8	.76	10.90	25.78
40 to 48 Hours	336	3,293	9.8	.189	563	57	43	2,440	7.3	.74	12.89	15.59
49 to 60 Hours	310	3,745	12.1	.291	939	78	56	3,675	11.9	.98	12.64	14.62
61 to 84 Hours	213	4,088	19.2	.303	1,427	74	48	4,102	19.3	1.00	13.52	20.25
85 to 167 Hours	145	1,843	12.7	.263	1,814	142	62	3,272	22.6	1.78	12.46	20.11
168 Hours	129	1,924	14.9	.392	3,031	204	84	4,364	33.8	2.27	11.14	12.92
Percentage of Exterior Glass												
Less than 25 Percent	967	9,969	10.3	.823	851	83	61	10,117	10.5	1.01	12.29	12.34
25 to 49 Percent	331	4,057	12.3	.437	1,321	108	61	5,244	15.8	1.29	11.99	13.22
50 to 74 Percent	89	1,719	19.2	.203	2,266	118	52	2,520	28.2	1.47	12.43	17.54
75 Percent or More	28	938	33.7	.100	Q	106	54	1,337	48.1	1.42	13.41	21.63
Insulation/Special Glass												
Any Present	973	13,036	13.4	1.300	1,336	100	59	16,123	16.6	1.24	12.40	11.23
Special Glass	474	8,585	18.1	.796	1,678	93	53	9,977	21.0	1.16	12.53	13.11
Roof/Ceiling Insulation	694	9,569	13.8	1.001	1,443	105	60	12,130	17.5	1.27	12.11	10.47
Exterior Wall Insulation	465	6,201	13.3	.675	1,451	109	56	8,333	17.9	1.34	12.34	15.50
None Present	443	3,646	8.2	.263	594	72	64	3,095	7.0	.85	11.76	12.10

See footnotes at end of table.

**Table 6. Major Fuels: Consumption and Expenditures by Census Region, 1983
(Continued)**

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1.091	1.115	0.893	1.203	1.243	0.894	1.001	1.220	1.279	0.930	0.475	
Census Region: South												
Passive Solar												
In Use	6	133	23.0	0.009	Q	70	42	123	Q	0.93	13.19	31.45
Not in Use	1,302	15,763	12.1	1.514	1,163	96	59	18,615	14.3	1.18	12.29	10.20
Computerized Energy Management System												
In Use	27	1,539	58.0	.183	6,891	119	62	2,022	76.2	1.31	11.06	13.00
Not in Use	1,288	14,532	11.3	1.362	1,057	94	59	16,953	13.2	1.17	12.45	11.08
Professional Energy Audits												
Performed in Past Year	154	4,349	28.2	.443	2,874	102	52	5,480	35.5	1.26	12.37	19.30
Measures Taken	58	1,675	29.1	.218	3,786	130	59	2,442	42.4	1.46	11.21	18.33
Measures Not Taken	97	2,674	Q	.225	2,332	84	46	3,038	31.4	1.14	13.49	26.33
Not Performed	1,261	12,333	9.8	1.120	888	91	63	13,738	10.9	1.11	12.27	10.35

See footnotes at end of table.

**Table 6. Major Fuels: Consumption and Expenditures by Census Region, 1983
(Continued)**

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
	RSE Column Factor:	1.091	1.115	0.893	1.203	1.243	0.894	1.001	1.220	1.279	0.930	
Census Region: West												
All Buildings	549	7,467	13.6	0.710	1,293	95	59	7,454	13.6	1.00	10.50	14.29
Fuel Used Alone or in Combination^a												
Electricity	549	7,467	13.6	.710	1,293	95	59	7,454	13.6	1.00	10.50	14.29
Natural Gas	324	5,148	15.9	.553	1,709	107	63	5,581	17.2	1.08	10.09	17.31
Fuel Oil	37	621	Q	.099	Q	160	93	795	Q	1.28	8.01	39.49
Propane	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	41.17
Purchased Steam	11	526	49.7	.070	Q	132	88	633	Q	1.20	9.10	32.68
Other	44	419	9.5	.036	830	87	49	363	8.2	.87	9.94	20.25
Year Constructed												
1900 or Before	23	Q	7.4	Q	Q	Q	Q	Q	Q	Q	Q	39.24
1901 to 1920	34	531	15.5	.031	Q	59	50	277	Q	Q	8.80	40.72
1921 to 1945	113	1,215	10.8	.123	1,091	101	84	1,210	10.7	1.00	9.83	22.76
1946 to 1960	130	1,058	8.1	.129	Q	122	76	1,275	Q	1.21	9.89	25.85
1961 to 1970	94	1,512	16.1	.127	1,351	84	45	1,401	15.0	.93	11.07	15.09
1971 to 1973	35	542	15.4	.058	1,632	106	50	830	23.5	1.53	14.42	26.94
1974 to 1979	92	1,243	13.5	.134	1,456	108	53	1,452	15.8	1.17	10.86	20.20
1980 to 1983	28	Q	42.2	.100	3,524	Q	68	943	33.2	.79	9.41	31.38
Square Footage Category												
5,000 or Less	282	601	2.1	.146	517	243	64	1,366	4.8	2.27	9.36	21.51
5,001 to 10,000	116	864	7.5	.132	Q	Q	80	1,361	Q	Q	10.31	24.56
10,001 to 25,000	89	1,409	15.8	.094	1,052	67	47	1,106	12.4	.78	11.80	15.77
25,001 to 50,000	37	1,260	34.4	.095	2,594	76	58	1,099	30.0	.87	11.56	22.33
50,001 to 100,000	16	1,045	64.7	.079	4,888	76	68	790	48.9	.76	10.00	17.00
100,001 to 200,000	6	843	130.0	.072	11,107	85	61	710	109.5	.84	9.86	16.60
Over 200,000	3	Q	554.0	.092	35,325	64	43	1,022	391.9	.71	11.10	26.16
Number of Floors												
One	357	3,014	8.4	.343	960	114	72	3,601	10.1	1.19	10.50	18.03
Two	126	1,825	14.5	.128	1,013	70	52	1,366	10.8	.75	10.70	16.55
Three or More	66	2,628	39.9	.239	3,629	91	50	2,486	37.7	.95	10.39	22.49
Principal Activity Within Building												
Assembly	45	Q	Q	.039	Q	47	50	388	Q	.46	9.87	47.35
Educational	31	754	24.1	.048	1,523	63	61	429	13.7	.57	9.01	20.96
Food Sales/Service	57	320	5.6	.056	991	176	60	682	12.0	2.13	12.11	16.68
Health Care	Q	193	Q	.052	Q	269	92	424	Q	2.20	8.17	29.11
Lodging	24	346	Q	.072	Q	208	Q	574	Q	1.66	7.97	43.25
Mercantile/Services	149	1,324	8.9	.126	845	95	63	1,279	8.6	.97	10.13	16.54
Office	112	1,593	14.3	.166	1,489	104	34	1,847	16.5	1.16	11.11	15.91
Residential	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	31.96
Warehouse	63	1,141	18.2	.056	887	49	60	714	11.4	.63	12.81	19.42
Other	20	401	20.4	Q	Q	Q	Q	Q	Q	Q	10.19	55.17
Vacant	24	465	19.2	.032	1,335	69	113	Q	20.4	1.06	15.32	29.36
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above												
7,000 HDD	Q	Q	8.8	Q	Q	Q	Q	Q	Q	Q	9.03	76.35
Below 2,000 CDD and												
5,500-7,000 HDD	156	1,761	11.3	.203	1,305	115	75	1,648	10.6	.94	8.11	25.00
Below 2,000 CDD and												
4,000-5,499 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	62.87

See footnotes at end of table.

**Table 6. Major Fuels: Consumption and Expenditures by Census Region, 1983
(Continued)**

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1.091	1.115	0.893	1.203	1.243	0.894	1.001	1.220	1.279	0.930	0.475	
Census Region: West												
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Below 4,000 HDD												
	218	2,877	13.2	0.287	1,320	100	51	3,735	17.2	1.30	13.00	13.85
Above 2,000 CDD and Below 4,000 HDD												
	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	94.75
Metropolitan Status												
Metropolitan	386	6,139	15.9	.557	1,442	91	56	6,062	15.7	.99	10.89	11.97
Nonmetropolitan	Q	Q	8.1	.153	Q	Q	Q	1,392	Q	Q	9.09	57.08
Number of Establishments in Building												
Vacant	6	164	Q	Q	Q	Q	Q	Q	Q	Q	Q	52.19
Single Establishment	422	4,606	10.9	.536	1,271	116	72	5,330	12.6	1.16	9.94	13.06
Multiple Establishment	121	2,697	22.2	.167	1,375	62	36	2,012	16.6	.75	12.05	21.04
Government Occupancy												
Any Government Occupancy	57	1,381	24.3	.154	2,715	112	68	1,335	23.5	.97	8.65	21.14
Federal	10	288	Q	.034	Q	118	43	318	Q	1.11	9.35	34.16
State	20	485	24.4	.082	4,120	169	98	686	34.6	1.42	8.39	24.78
Local	34	789	23.3	.064	1,881	81	55	584	17.3	.74	9.18	17.35
Number of Employees												
Fewer than 10	318	1,827	5.8	.155	489	85	124	1,611	5.1	.88	10.36	18.67
10 to 19	85	783	9.2	.074	878	95	69	614	7.2	.78	8.25	18.80
20 to 49	103	1,840	17.9	.194	1,894	106	66	2,060	20.1	1.12	10.60	23.34
50 to 99	27	889	33.4	.074	2,767	83	44	842	31.7	.95	11.45	20.42
100 or More	17	2,128	121.8	.212	12,142	100	42	2,327	133.2	1.09	10.97	17.86
Hours of Operation During a Typical Week												
39 or Fewer Hours	60	495	8.2	.025	420	51	57	275	4.6	.56	10.85	23.81
40 to 48 Hours	156	1,794	11.5	.149	953	83	66	1,520	9.7	.85	10.22	25.07
49 to 60 Hours	123	1,627	13.2	.115	933	71	41	1,180	9.6	.73	10.27	15.19
61 to 84 Hours	88	1,451	16.5	.179	2,042	123	54	1,974	22.5	1.36	11.02	24.99
85 to 167 Hours	79	954	12.1	.082	1,048	86	50	975	12.4	1.02	11.85	15.24
168 Hours	43	Q	Q	.159	3,684	Q	101	1,530	35.4	1.34	9.60	33.68
Percentage of Exterior Glass												
Less than 25 Percent	347	4,257	12.3	.358	1,033	84	67	3,975	11.5	.93	11.10	17.08
25 to 49 Percent	155	2,093	13.5	.228	1,475	109	58	2,124	13.7	1.01	9.32	17.11
50 to 74 Percent	34	778	22.8	.075	2,198	96	44	861	25.3	1.11	11.49	20.10
75 Percent or More	14	339	Q	Q	Q	Q	47	493	Q	1.45	10.10	46.42
Insulation/Special Glass												
Any Present	384	5,628	14.7	.585	1,525	104	58	6,138	16.0	1.09	10.49	18.97
Special Glass	234	4,008	17.1	.445	1,902	111	57	4,716	20.2	1.18	10.60	22.28
Roof/Ceiling Insulation	272	3,939	14.5	.402	1,479	102	61	4,238	15.6	1.08	10.54	21.91
Exterior Wall Insulation	193	2,705	14.0	.290	1,504	107	58	3,101	16.1	1.15	10.71	29.38
None Present	165	1,839	11.1	.125	754	68	66	1,315	8.0	.72	10.55	17.14

See footnotes at end of table.

**Table 6. Major Fuels: Consumption and Expenditures by Census Region, 1983
(Continued)**

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	1.091	1.115	0.893	1.203	1.243	0.894	1.001	1.220	1.279	0.930	0.475	
Census Region: West												
Passive Solar												
In Use	8	153	18.0	0.014	1,660	92	Q	141	16.6	0.92	9.99	26.54
Not in Use	492	6,935	14.1	.679	1,381	98	60	7,134	14.5	1.03	10.51	16.26
Computerized Energy Management System												
In Use	18	967	54.4	.084	Q	87	40	950	Q	.98	11.27	29.95
Not in Use	482	6,120	12.7	.609	1,262	99	63	6,325	13.1	1.03	10.39	15.59
Professional Energy Audits												
Performed in Past Year	78	2,563	32.9	.236	3,031	92	56	2,414	31.0	.94	10.22	18.24
Measures Taken	30	1,410	Q	.136	4,552	Q	62	1,371	45.8	.97	10.06	30.53
Measures Not Taken	48	1,153	24.0	.100	2,081	87	49	1,042	Q	.90	10.44	25.94
Not Performed	471	4,904	10.4	.474	1,005	97	61	5,040	10.7	1.03	10.64	14.13

^a Consumption and Expenditures in this table are summed over electricity, natural gas, fuel oil, propane and purchased steam. Data may not sum to totals due to use of more than one fuel in a building, for heating or for water heating, etc.

^{nc} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Assembly												
All Buildings	452	5,475	12.1	0.377	835	69	63	4,147	9.2	0.76	10.99	11.49
Fuel Used Alone or in Combination*												
Electricity	449	5,449	12.1	.376	837	69	63	4,140	9.2	.76	11.01	11.56
Natural Gas	267	4,022	15.1	.300	1,121	74	78	3,021	11.3	.75	10.09	13.58
Fuel Oil	86	759	8.8	.054	626	71	42	690	8.0	.91	12.76	22.40
Propane	52	330	6.3	.035	677	107	37	504	9.6	1.53	14.22	24.13
Purchased Steam	8	501	59.6	Q	8,156	Q	Q	672	Q	1.34	9.80	47.69
Other	25	269	10.8	.028	1,140	106	92	Q	16.5	1.53	14.47	33.33
Year Constructed												
1900 or Before	51	373	7.3	.021	406	55	22	218	4.3	.59	10.55	26.60
1901 to 1920	64	784	12.3	.041	635	52	48	412	6.4	Q	10.16	30.95
1921 to 1945	69	799	11.6	.087	1,262	109	109	797	11.5	1.00	9.15	29.19
1946 to 1960	102	1,142	11.2	.056	554	49	56	607	6.0	.53	10.77	16.92
1961 to 1970	87	896	10.3	.081	931	91	71	1,022	11.7	1.14	12.59	13.69
1971 to 1973	19	318	Q	.033	Q	103	124	335	Q	1.05	10.19	32.20
1974 to 1979	47	653	14.1	.041	880	63	58	539	11.6	.83	13.19	21.57
1980 to 1983	14	Q	Q	.018	1,292	Q	56	Q	15.9	Q	12.28	48.80
Square Footage Category												
5,000 or Less	203	477	2.3	.051	252	107	27	539	2.7	1.13	10.54	14.23
5,001 to 10,000	122	901	7.4	.093	760	103	76	933	7.6	1.04	10.05	20.13
10,001 to 25,000	86	1,390	16.2	.076	889	55	60	904	10.5	.65	11.84	18.75
25,001 to 50,000	27	912	34.2	.055	2,079	61	78	572	21.5	.63	10.32	16.58
50,001 to 100,000	9	621	69.7	.042	4,726	68	Q	505	56.7	.81	12.00	17.18
100,001 to 200,000	3	412	125.0	.031	9,498	76	Q	285	86.4	.69	9.10	27.60
Over 200,000	1	Q	523.0	Q	Q	Q	Q	Q	Q	Q	Q	59.97
Number of Floors												
One	208	1,829	8.8	.092	442	50	41	1,198	5.7	.65	13.00	20.07
Two	161	1,658	10.3	.121	751	73	53	1,298	8.1	.78	10.75	15.84
Three or More	82	1,988	24.1	.164	1,994	83	110	1,651	20.0	.83	10.04	17.88
Census Region												
Northeast	61	1,053	17.4	.061	1,001	58	92	883	14.6	.84	14.54	18.37
North Central	149	1,755	11.8	.173	1,160	98	78	1,469	9.9	.84	8.50	13.91
South	197	1,827	9.3	.104	530	57	45	1,406	7.1	.77	13.48	17.47
West	45	Q	Q	.039	Q	47	50	388	Q	.46	9.87	47.35
Climate Zones:												
45 Year Average												
Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above 7,000 HDD												
40	554	13.9	.049	1,222	88	93	439	11.1	.79	9.05	22.82	
Below 2,000 CDD and 5,500-7,000 HDD												
141	1,760	12.5	.159	1,125	90	80	1,392	9.9	.79	8.76	20.39	
Below 2,000 CDD and 4,000-5,499 HDD												
148	1,631	11.0	.070	474	43	38	933	6.3	.57	13.28	23.90	
Below 2,000 CDD and Below 4,000 HDD												
57	460	8.0	.037	638	80	57	402	7.0	.87	10.97	38.18	
Above 2,000 CDD and Below 4,000 HDD												
65	Q	Q	.063	967	59	63	980	15.0	.92	15.57	34.29	

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Assembly												
Metropolitan Status												
Metropolitan	213	3,576	16.8	0.270	1,267	75	76	3,017	14.2	0.84	11.18	15.00
Nonmetropolitan	239	1,899	7.9	.108	450	57	44	1,130	4.7	.60	10.50	17.89
Number of Establishments in Building												
Vacant	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Single Establishment	401	4,344	10.8	.320	798	74	60	3,532	8.8	.81	11.05	11.47
Multiple Establishment	51	1,131	Q	.058	1,134	Q	89	615	12.1	.54	10.69	32.76
Government Occupancy												
Any Government Occupancy	43	644	14.8	.087	1,995	135	153	900	20.7	1.40	10.39	19.93
Federal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	59.44
State	Q	Q	Q	.034	Q	150	237	360	Q	1.60	10.65	35.98
Local	33	410	12.6	.055	1,694	134	126	575	17.7	1.40	10.43	24.08
Number of Employees												
Fewer than 10	290	2,159	7.5	.138	477	64	143	1,287	4.4	.60	9.31	16.84
10 to 19	68	982	14.4	.059	861	60	70	680	10.0	.69	11.62	25.13
20 to 49	75	1,175	15.7	.099	1,326	85	48	1,230	16.4	1.05	12.38	15.20
50 to 99	12	383	Q	.020	Q	53	Q	220	Q	Q	10.89	42.00
100 or More	7	Q	Q	.061	8,655	Q	42	729	103.5	Q	11.96	39.60
Hours of Operation During a Typical Week												
39 or Fewer Hours	253	1,869	7.4	.092	365	49	45	959	3.8	.51	10.38	17.59
40 to 48 Hours	57	620	10.9	.033	577	53	32	337	5.9	.54	10.30	14.16
49 to 60 Hours	52	750	14.4	.065	1,251	87	89	553	10.6	.74	8.45	31.31
61 to 84 Hours	49	752	15.4	.064	1,321	86	66	850	17.4	1.13	13.19	19.80
85 to 167 Hours	34	897	26.5	.093	2,751	104	107	1,105	32.6	1.23	11.86	21.23
168 Hours	7	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	52.24
Percentage of Exterior Glass												
Less than 25 Percent	294	3,573	12.1	.231	784	65	59	2,591	8.8	.73	11.23	15.96
25 to 49 Percent	118	1,296	10.9	.100	842	77	63	944	8.0	.73	9.47	12.63
50 to 74 Percent	29	467	16.0	.028	969	61	89	307	10.5	.66	10.84	28.56
75 Percent or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	57.53
Insulation/Special Glass												
Any Present	356	4,658	13.1	.306	861	66	59	3,316	9.3	.71	10.83	13.51
Special Glass	236	3,503	14.8	.224	946	64	63	2,386	10.1	.68	10.67	17.31
Roof/Ceiling Insulation	243	3,582	14.7	.241	989	67	68	2,604	10.7	.73	10.83	16.42
Exterior Wall Insulation	162	2,054	12.7	.102	632	50	43	1,155	7.1	.56	11.30	20.83
None Present	96	817	8.5	.071	741	87	90	831	8.6	1.02	11.66	17.21
Passive Solar												
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	74.98
Not in Use	436	5,417	12.4	.373	856	69	63	4,103	9.4	.76	11.00	11.74
Computerized Energy Management System												
In Use	12	341	29.3	.039	3,318	113	104	498	42.8	1.46	12.90	28.54
Not in Use	432	5,121	11.9	.339	784	66	60	3,644	8.4	.71	10.76	12.66

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Assembly												
Professional Energy Audits												
Performed in Past Year	52	1,373	26.3	0.081	1,544	59	57	936	17.9	0.68	11.62	23.71
Measures Taken	24	Q	Q	.042	1,805	Q	82	490	20.8	.55	11.54	33.95
Measures Not Taken	29	480	16.8	.038	1,329	79	43	446	15.6	.93	11.71	23.98
Not Performed	400	4,102	10.3	.297	743	72	65	3,211	8.0	.78	10.82	12.28

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Educational												
All Buildings	177	6,044	34.2	0.484	2,737	80	79	4,843	27.4	0.80	10.01	12.12
Fuel Used Alone or in Combination^a												
Electricity	177	6,038	34.1	.483	2,733	80	79	4,839	27.4	.80	10.01	12.14
Natural Gas	115	4,448	38.6	.400	3,473	90	90	3,717	32.3	.84	9.30	14.42
Fuel Oil	31	1,431	46.1	.121	3,890	84	110	1,186	38.2	.83	9.82	17.12
Propane	6	346	55.7	.019	Q	55	78	238	38.4	.69	12.52	25.10
Purchased Steam	8	408	50.3	.058	7,175	143	Q	501	Q	1.23	8.60	39.64
Other	7	458	62.1	Q	Q	Q	Q	384	52.0	.84	10.34	36.12
Year Constructed												
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	36.54
1901 to 1920	11	435	38.0	.022	1,941	51	41	277	24.2	.64	12.49	27.64
1921 to 1945	24	1,084	45.3	.087	Q	80	96	Q	Q	Q	10.25	38.89
1946 to 1960	58	1,623	27.9	.161	2,756	99	74	1,415	24.3	.87	8.81	15.62
1961 to 1970	45	1,494	33.0	.117	2,591	78	87	1,142	25.2	.76	9.74	13.95
1971 to 1973	6	357	62.7	.026	4,583	73	99	314	55.3	.88	12.06	19.66
1974 to 1979	20	674	33.1	.040	1,944	59	69	486	23.9	.72	12.27	16.63
1980 to 1983	10	274	27.9	.022	2,233	80	80	233	23.7	.85	10.63	23.81
Square Footage Category												
5,000 or Less	45	113	2.5	Q	646	Q	Q	Q	7.3	2.90	11.26	37.71
5,001 to 10,000	24	182	7.4	.013	541	73	39	143	5.8	.79	10.81	24.73
10,001 to 25,000	33	560	17.0	.047	1,434	84	64	461	14.0	.82	9.77	13.50
25,001 to 50,000	37	1,322	35.9	.090	2,432	68	52	829	22.5	.63	9.26	13.68
50,001 to 100,000	24	1,619	67.4	.125	5,219	77	98	1,416	58.9	.87	11.29	20.10
100,001 to 200,000	11	1,449	136.3	.101	9,538	70	110	1,006	94.6	.69	9.92	10.37
Over 200,000	3	799	279.8	.078	27,341	98	164	659	230.8	.83	8.44	17.87
Number of Floors												
One	90	1,849	20.6	.133	1,483	72	65	1,368	15.3	.74	10.29	14.18
Two	47	1,654	35.0	.128	2,700	77	77	1,205	25.5	.73	9.44	10.67
Three or More	40	2,541	63.7	.223	5,598	88	92	2,270	56.9	.89	10.16	20.46
Census Region												
Northeast	28	1,374	49.8	.100	3,638	73	58	1,195	43.4	.87	11.92	19.39
North Central	39	1,834	46.5	.204	5,177	111	121	1,717	43.6	.94	8.41	21.77
South	79	2,082	26.5	.132	1,679	63	68	1,501	19.1	.72	11.37	16.20
West	31	754	24.1	.048	1,523	63	61	429	13.7	.57	9.01	20.96
Climate Zones:												
45 Year Average												
Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above												
7,000 HDD	18	722	40.3	Q	4,945	123	133	Q	Q	1.25	10.19	42.02
Below 2,000 CDD and												
5,500-7,000 HDD	47	2,055	43.6	.187	3,968	91	81	1,559	33.1	.76	8.33	11.46
Below 2,000 CDD and												
4,000-5,499 HDD	42	1,597	37.8	.100	2,359	62	69	1,132	26.8	.71	11.35	15.23
Below 2,000 CDD and Below												
4,000 HDD	28	697	24.8	.050	1,798	72	59	526	18.7	.75	10.41	21.79
Above 2,000 CDD and Below												
4,000 HDD	Q	973	23.5	.058	1,400	60	66	722	17.4	.74	12.46	27.88

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Educational												
Metropolitan Status												
Metropolitan	117	4,295	36.7	0.361	3,080	84	83	3,595	30.7	0.84	9.96	15.59
Nonmetropolitan	60	1,749	29.3	.123	2,063	70	70	1,248	20.9	.71	10.13	15.40
Number of Establishments in Building												
Vacant	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Single Establishment	164	5,640	34.4	.453	2,766	80	78	4,518	27.6	.80	9.97	12.52
Multiple Establishment	Q	404	30.9	.031	2,368	77	87	325	24.9	.80	10.50	25.66
Government Occupancy												
Any Government Occupancy	57	2,625	46.0	.210	3,682	80	90	1,985	34.8	.76	9.46	11.75
Federal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	49.50
State	18	728	39.4	.062	3,366	85	106	574	31.0	.79	9.22	25.78
Local	43	2,031	47.5	.153	3,574	75	81	1,500	35.1	.74	9.81	10.55
Number of Employees												
Fewer than 10	49	377	7.7	Q	666	Q	155	Q	6.6	Q	9.98	40.20
10 to 19	31	437	14.1	.035	1,122	79	89	300	9.7	.68	8.64	18.32
20 to 49	58	2,311	39.6	.156	2,672	67	82	1,566	26.8	.68	10.04	10.14
50 to 99	24	1,453	60.1	.135	5,587	93	92	1,404	58.1	.97	10.40	25.52
100 or More	14	1,466	103.2	.126	8,841	86	58	1,246	87.7	.85	9.92	15.69
Hours of Operation During a Typical Week												
39 or Fewer Hours	42	560	13.4	.045	1,070	80	55	404	9.7	.72	9.03	23.67
40 to 48 Hours	51	1,449	28.5	.101	1,981	70	72	992	19.5	.68	9.84	11.37
49 to 60 Hours	41	1,594	39.2	.110	2,704	69	79	1,169	28.7	.73	10.61	15.79
61 to 84 Hours	33	1,823	54.8	.158	4,746	87	79	1,629	48.8	.89	10.28	23.48
85 to 167 Hours	7	570	79.8	.064	9,018	113	133	601	84.2	1.05	9.33	24.60
168 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	101.15
Percentage of Exterior Glass												
Less than 25 Percent	87	2,303	26.5	.167	1,927	73	72	1,842	21.2	.80	11.00	12.84
25 to 49 Percent	56	2,248	40.1	.196	3,506	87	77	1,745	31.1	.78	8.88	14.14
50 to 74 Percent	29	1,258	43.3	.107	3,683	85	102	1,101	Q	Q	10.28	29.83
75 Percent or More	5	236	Q	.013	Q	56	63	Q	Q	.66	11.91	39.10
Insulation/Special Glass												
Any Present	136	4,673	34.3	.388	2,848	83	82	3,885	28.5	.83	10.01	14.09
Special Glass	84	2,887	34.5	.230	2,757	80	75	2,279	27.3	.79	9.89	11.61
Roof/Ceiling Insulation	98	3,616	36.9	.308	3,147	85	83	3,048	31.1	.84	9.89	17.16
Exterior Wall Insulation	58	1,709	29.5	.123	2,121	72	57	1,285	22.2	.75	10.47	12.87
None Present	41	1,371	33.8	.096	2,364	70	68	958	23.6	.70	9.98	12.71
Passive Solar												
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	37.58
Not in Use	173	5,994	34.7	.479	2,775	80	82	4,787	27.7	.80	9.99	12.21
Computerized Energy Management System												
In Use	17	1,244	74.9	.098	5,919	79	104	1,011	60.9	.81	10.28	12.38
Not in Use	160	4,798	29.9	.386	2,407	80	74	3,832	23.9	.80	9.94	13.96

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Educational												
Professional Energy Audits												
Performed in Past Year	49	2,018	41.6	0.145	2,982	72	72	1,473	30.3	0.73	10.17	10.98
Measures Taken	24	1,137	47.1	.082	3,401	72	75	808	33.5	.71	9.85	15.21
Measures Not Taken	24	881	36.1	.063	2,569	71	69	665	27.2	.75	10.60	16.03
Not Performed	128	4,026	31.4	.339	2,644	84	82	3,370	26.3	.84	9.93	15.50

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Food Sales/Service												
All Buildings	380	2,050	5.4	0.437	1,149	213	77	5,510	14.5	2.69	12.61	7.62
Fuel Used Alone or in Combination^a												
Electricity	379	2,048	5.4	.437	1,154	213	77	5,509	14.6	2.69	12.61	7.60
Natural Gas	227	1,443	6.4	.357	1,573	247	88	4,150	18.3	2.88	11.64	9.27
Fuel Oil	36	283	7.8	.028	773	100	72	406	11.1	1.44	14.43	22.00
Propane	42	260	6.2	.039	Q	148	56	Q	Q	2.15	14.49	34.26
Purchased Steam	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	41.70
Other	32	160	5.0	Q	Q	Q	Q	Q	Q	Q	Q	23.09
Year Constructed												
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	15.14
1901 to 1920	43	249	5.8	.029	674	117	62	350	8.1	1.40	12.03	20.01
1921 to 1945	55	206	3.8	.036	650	173	106	391	7.1	1.90	10.96	29.03
1946 to 1960	78	368	4.7	.067	859	182	78	972	12.5	2.64	14.51	17.82
1961 to 1970	76	390	5.2	.093	1,225	238	84	1,134	15.0	2.91	12.23	14.69
1971 to 1973	23	163	7.1	.036	1,555	220	49	508	22.0	3.12	14.17	19.54
1974 to 1979	70	376	5.4	.130	1,870	347	87	1,576	22.6	4.19	12.08	19.53
1980 to 1983	12	171	14.3	.032	2,675	187	66	427	35.7	2.50	13.34	19.94
Square Footage Category												
5,000 or Less	287	636	2.2	.199	694	313	70	2,649	9.2	4.17	13.30	9.08
5,001 to 10,000	48	342	7.0	.091	1,878	267	87	1,015	20.9	2.97	11.15	16.87
10,001 to 25,000	35	568	16.3	.083	2,372	146	80	1,119	32.0	1.97	13.49	15.58
25,001 to 50,000	6	209	32.5	.027	4,259	131	78	365	56.9	1.75	13.36	16.67
50,001 to 100,000	3	179	66.6	Q	Q	Q	Q	Q	Q	Q	Q	20.89
100,001 to 200,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	40.74
Over 200,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	81.40
Number of Floors												
One	276	1,157	4.2	.307	1,112	266	80	3,985	14.4	3.45	12.97	9.75
Two	59	463	7.8	.084	1,426	182	77	965	16.3	2.08	11.45	17.02
Three or More	45	430	9.6	.046	1,017	106	60	560	12.5	1.30	12.30	19.43
Census Region												
Northeast	58	392	6.8	.067	1,149	170	77	980	16.9	2.50	14.73	15.70
North Central	120	722	6.0	.195	1,621	270	87	2,189	18.2	3.03	11.24	12.86
South	145	616	4.2	.119	822	194	73	1,680	11.4	2.70	13.89	15.03
West	57	320	5.6	.056	991	176	60	682	12.0	2.13	12.11	16.68
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above 7,000 HDD	51	302	5.9	.049	960	162	64	535	10.5	1.77	10.97	19.63
Below 2,000 CDD and 5,500-7,000 HDD	99	740	7.5	.170	1,715	229	89	2,053	20.8	2.78	12.11	15.00
Below 2,000 CDD and 4,000-5,499 HDD	88	368	4.2	.085	964	230	75	1,083	12.3	2.94	12.79	19.17
Below 2,000 CDD and Below 4,000 HDD	72	311	4.3	.071	992	230	85	874	12.1	2.81	12.24	24.09
Above 2,000 CDD and Below 4,000 HDD	71	329	4.7	Q	885	190	62	Q	13.7	2.93	15.42	21.11

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Food Sales/Service												
Metropolitan Status												
Metropolitan	221	1,300	5.9	0.314	1,423	241	85	3,900	17.7	3.00	12.43	9.32
Nonmetropolitan	160	750	4.7	.123	772	164	63	1,611	10.1	2.15	13.08	14.30
Number of Establishments in Building												
Vacant	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Single Establishment	339	1,750	5.2	.391	1,156	224	81	4,866	14.4	2.78	12.43	8.08
Multiple Establishment	42	300	7.2	.046	1,096	152	54	644	15.5	2.15	14.12	18.72
Government Occupancy												
Any Government Occupancy	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	35.17
Federal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	82.24
State	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	60.79
Local	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.15
Number of Employees												
Fewer than 10	229	691	3.0	.089	389	129	91	1,255	5.5	1.82	14.12	12.18
10 to 19	61	257	4.2	.059	956	228	73	803	13.1	3.12	13.68	14.99
20 to 49	68	564	8.3	.171	2,506	303	80	2,180	31.9	3.86	12.74	11.79
50 to 99	17	296	17.0	.078	4,467	262	72	848	48.8	2.87	10.92	20.92
100 or More	5	242	53.5	.041	Q	168	62	424	93.9	1.76	10.44	27.44
Hours of Operation During a Typical Week												
39 or Fewer Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	35.59
40 to 48 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	26.47
49 to 60 Hours	47	241	5.1	.025	535	105	55	316	6.7	1.31	12.46	19.39
61 to 84 Hours	100	515	5.2	.105	1,049	203	92	1,345	13.5	2.61	12.87	19.68
85 to 167 Hours	163	969	6.0	.220	1,353	227	72	2,768	17.0	2.86	12.58	10.49
168 Hours	32	173	5.4	.078	2,427	449	94	951	29.7	5.48	12.22	20.07
Percentage of Exterior Glass												
Less than 25 Percent	237	1,193	5.0	.249	1,050	209	85	3,020	12.7	2.53	12.14	10.04
25 to 49 Percent	106	639	6.0	.144	1,356	225	67	1,933	18.2	3.02	13.41	12.29
50 to 74 Percent	35	152	4.4	.038	1,092	249	69	483	13.9	3.18	12.77	20.80
75 Percent or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	154.50
Insulation/Special Glass												
Any Present	280	1,711	6.1	.377	1,346	221	78	4,578	16.3	2.68	12.13	8.57
Special Glass	168	1,093	6.5	.267	1,591	244	76	3,143	18.7	2.88	11.76	10.16
Roof/Ceiling Insulation	186	1,184	6.4	.229	1,228	193	73	2,881	15.5	2.43	12.59	9.27
Exterior Wall Insulation	153	802	5.2	.176	1,150	219	70	2,314	15.1	2.89	13.17	11.06
None Present	100	339	3.4	.059	597	176	70	932	9.4	2.75	15.67	13.68
Passive Solar												
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	69.41
Not in Use	371	2,018	5.4	.433	1,167	215	79	5,451	14.7	2.70	12.58	7.67
Computerized Energy Management System												
In Use	13	213	16.2	.038	2,857	177	79	560	42.4	2.62	14.84	27.79
Not in Use	362	1,828	5.1	.399	1,103	218	77	4,946	13.7	2.71	12.39	8.11

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Food Sales/Service												
Professional Energy Audits												
Performed in Past Year	44	376	8.5	0.087	1,948	230	80	1,057	23.8	2.81	12.21	20.39
Measures Taken	15	180	Q	.052	Q	288	99	605	Q	3.35	11.63	34.38
Measures Not Taken	29	195	6.7	.035	1,194	177	63	453	15.6	2.32	13.09	24.90
Not Performed	336	1,674	5.0	.350	1,044	209	76	4,453	13.3	2.66	12.71	8.44

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Health Care												
All Buildings	61	2,277	37.6	0.465	7,680	204	84	4,385	72.4	1.93	9.43	13.28
Fuel Used Alone or in Combination^a												
Electricity	61	2,277	37.6	.465	7,680	204	84	4,385	72.4	1.93	9.43	13.28
Natural Gas	37	2,049	54.9	.427	11,452	209	88	3,886	104.1	1.90	9.09	15.90
Fuel Oil	11	1,221	109.2	.244	Q	199	91	2,271	Q	1.86	9.32	24.16
Propane	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	53.64
Purchased Steam	Q	392	Q	.133	25,127	339	133	1,220	230.4	3.11	9.17	26.46
Other	2	259	Q	.064	35,230	247	91	648	357.7	2.50	10.15	25.52
Year Constructed												
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	116.98
1901 to 1920	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	112.89
1921 to 1945	8	215	Q	.049	Q	226	93	459	Q	2.13	9.44	35.25
1946 to 1960	19	751	Q	.134	Q	178	105	1,199	Q	1.60	8.96	31.75
1961 to 1970	10	346	Q	.086	Q	247	81	813	Q	2.35	9.49	25.37
1971 to 1973	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	47.55
1974 to 1979	12	505	42.0	.118	9,773	233	83	1,189	98.9	2.35	10.12	24.92
1980 to 1983	3	130	Q	.030	Q	232	62	248	Q	1.91	8.22	35.57
Square Footage Category												
5,000 or Less	31	80	2.6	.009	292	114	41	102	3.3	1.28	11.24	26.18
5,001 to 10,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	36.35
10,001 to 25,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	37.84
25,001 to 50,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	40.07
50,001 to 100,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	17.81
100,001 to 200,000	3	433	124.0	.088	25,120	203	67	829	237.6	1.92	9.46	17.92
Over 200,000	4	1,328	371.8	.283	79,278	213	96	2,557	715.9	1.93	9.03	20.55
Number of Floors												
One	24	277	11.3	.047	1,904	Q	63	520	21.2	Q	11.15	36.15
Two	19	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.80
Three or More	17	1,623	92.8	.390	22,281	240	87	3,483	199.1	2.15	8.94	11.90
Census Region												
Northeast	11	502	44.9	.102	Q	203	82	1,144	Q	2.28	11.24	22.42
North Central	21	1,015	48.7	.174	8,369	172	88	1,619	77.7	1.59	9.29	24.78
South	20	567	28.6	.137	6,891	241	79	1,199	60.3	2.11	8.76	22.43
West	Q	193	Q	.052	Q	269	92	424	Q	2.20	8.17	29.11
Climate Zones:												
45 Year Average												
Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above												
7,000 HDD	5	201	Q	Q	Q	Q	Q	Q	Q	Q	Q	43.75
Below 2,000 CDD and												
5,500-7,000 HDD	25	1,213	48.1	.217	8,597	179	91	2,071	82.1	1.71	9.55	20.41
Below 2,000 CDD and												
4,000-5,499 HDD	12	272	Q	.050	Q	186	66	577	Q	2.13	11.44	40.06
Below 2,000 CDD and Below												
4,000 HDD	Q	400	Q	.095	Q	237	90	819	Q	2.05	8.63	57.12
Above 2,000 CDD and Below												
4,000 HDD	10	Q	18.6	.056	5,506	297	72	485	47.3	2.55	8.59	29.87

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Health Care												
Metropolitan Status												
Metropolitan	40	1,760	43.6	0.368	9,111	209	90	3,460	85.8	1.97	9.41	15.55
Nonmetropolitan	20	516	25.6	.097	4,819	188	67	925	45.8	1.79	9.51	21.61
Number of Establishments in Building												
Vacant	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Single Establishment	56	2,053	36.9	.416	7,478	203	83	3,920	70.5	1.91	9.42	13.47
Multiple Establishment	5	224	Q	.049	Q	218	97	465	Q	2.07	9.51	32.63
Government Occupancy												
Any Government Occupancy	13	552	42.4	.125	Q	227	112	1,177	Q	2.13	9.40	21.98
Federal	Q	158	Q	.041	Q	262	97	392	Q	2.48	9.48	48.62
State	Q	287	Q	.063	Q	220	107	554	Q	1.93	8.78	37.94
Local	10	262	Q	.062	Q	236	132	633	Q	2.42	10.23	35.52
Number of Employees												
Fewer than 10	35	166	4.7	.010	294	Q	56	108	3.0	Q	10.33	28.91
10 to 19	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	53.31
20 to 49	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	57.66
50 to 99	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.70
100 or More	9	1,656	178.8	.401	43,258	242	82	3,592	387.9	2.17	8.97	11.28
Hours of Operation During a Typical Week												
39 or Fewer Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	82.15
40 to 48 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	47.68
49 to 60 Hours	17	242	14.5	Q	Q	Q	Q	Q	Q	Q	Q	35.84
61 to 84 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	52.81
85 to 167 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	90.86
168 Hours	9	1,525	165.3	.374	40,543	245	82	3,304	358.1	2.17	8.83	11.80
Percentage of Exterior Glass												
Less than 25 Percent	38	630	16.7	.112	2,961	178	78	1,140	30.1	1.81	10.18	18.71
25 to 49 Percent	16	1,191	74.0	.242	15,039	203	83	2,285	141.9	1.92	9.43	20.86
50 to 74 Percent	5	324	Q	.103	Q	319	104	886	Q	2.73	8.57	29.76
75 Percent or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	157.16
Insulation/Special Glass												
Any Present	55	2,159	39.2	.445	8,074	206	83	4,188	76.0	1.94	9.41	13.44
Special Glass	32	1,892	58.7	.392	12,163	207	84	3,688	114.3	1.95	9.40	14.94
Roof/Ceiling Insulation	46	1,948	42.7	.394	8,629	202	85	3,756	82.2	1.93	9.53	15.08
Exterior Wall Insulation	34	1,121	32.9	.242	7,110	216	77	2,325	68.3	2.07	9.60	13.89
None Present	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	66.17
Passive Solar												
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	37.02
Not in Use	60	2,249	37.3	.453	7,507	201	84	4,282	71.0	1.90	9.46	13.24
Computerized Energy Management System												
In Use	3	482	Q	.140	Q	291	98	1,103	Q	2.29	7.86	21.56
Not in Use	58	1,795	31.0	.324	5,610	181	80	3,282	56.7	1.83	10.11	14.71

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Health Care												
Professional Energy Audits												
Performed in Past Year	18	1,107	63.1	0.238	13,531	215	90	2,290	130.4	2.07	9.64	21.72
Measures Taken	Q	562	Q	.136	Q	241	78	1,248	Q	2.22	9.21	21.41
Measures Not Taken	12	Q	Q	.102	Q	Q	112	1,042	Q	1.91	10.21	50.91
Not Performed	43	1,170	27.2	.227	5,289	194	79	2,095	48.8	1.79	9.22	13.73

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Lodging												
All Buildings	106	2,241	21.1	0.365	3,429	163	154	3,932	36.9	1.75	10.77	12.83
Fuel Used Alone or in Combination*												
Electricity	106	2,241	21.1	.365	3,429	163	154	3,932	36.9	1.75	10.77	12.83
Natural Gas	65	1,722	26.5	.315	4,839	183	161	3,157	48.5	1.83	10.02	16.10
Fuel Oil	13	522	40.1	.106	Q	203	Q	1,015	78.0	1.94	9.58	36.26
Propane	14	125	9.2	.016	Q	131	90	258	Q	2.06	15.70	37.43
Purchased Steam	10	512	Q	.076	Q	148	Q	809	Q	1.58	10.71	45.38
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	24.17
Year Constructed												
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	71.71
1901 to 1920	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.64
1921 to 1945	15	523	34.5	.059	3,872	112	199	647	Q	1.24	11.03	27.54
1946 to 1960	35	301	8.6	.039	1,116	129	Q	479	13.7	1.59	12.32	27.84
1961 to 1970	27	647	23.9	.108	3,975	166	150	1,225	45.2	1.89	11.38	19.92
1971 to 1973	12	255	21.4	.043	3,618	169	110	530	44.4	2.08	12.27	25.61
1974 to 1979	7	213	Q	.031	Q	146	104	334	Q	1.57	10.69	35.98
1980 to 1983	3	154	48.1	.044	13,815	288	Q	354	110.3	2.29	7.98	37.57
Square Footage Category												
5,000 or Less	42	95	2.3	.051	Q	Q	Q	487	11.7	5.10	9.48	37.61
5,001 to 10,000	23	166	7.1	.032	1,367	193	156	369	15.7	2.22	11.48	22.34
10,001 to 25,000	19	310	16.5	.033	1,769	107	143	Q	23.5	1.42	13.30	23.23
25,001 to 50,000	14	495	34.8	.102	7,137	205	Q	1,060	74.5	2.14	10.44	24.83
50,001 to 100,000	5	318	69.4	.042	9,086	131	133	429	93.5	1.35	10.29	16.02
100,001 to 200,000	2	303	130.0	.039	16,751	129	Q	439	188.1	1.45	11.23	21.27
Over 200,000	1	553	426.8	.066	51,043	120	127	707	546.3	1.28	10.70	20.01
Number of Floors												
One	48	265	5.5	.071	1,456	266	Q	676	13.9	2.55	9.58	29.21
Two	28	430	15.6	.069	2,506	160	148	791	28.7	1.84	11.46	20.16
Three or More	30	1,545	50.7	.225	7,401	146	170	2,465	80.9	1.60	10.93	19.74
Census Region												
Northeast	13	422	31.4	.053	3,963	126	186	738	54.9	1.75	13.84	24.95
North Central	12	669	54.4	.089	7,206	132	128	794	64.6	1.19	8.97	15.64
South	57	803	14.1	.151	2,648	188	155	1,825	32.0	2.27	12.08	19.60
West	24	346	Q	.072	Q	208	Q	574	Q	1.66	7.97	43.25
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above												
7,000 HDD	7	146	20.6	Q	Q	Q	Q	Q	Q	Q	Q	34.50
Below 2,000 CDD and												
5,500-7,000 HDD	26	728	Q	.123	Q	168	200	1,090	Q	1.50	8.89	29.19
Below 2,000 CDD and												
4,000-5,499 HDD	20	537	26.7	.062	3,079	115	118	781	38.8	1.45	12.61	21.46
Below 2,000 CDD and Below												
4,000 HDD	25	292	Q	.054	Q	185	Q	631	Q	2.16	11.68	44.66
Above 2,000 CDD and Below												
4,000 HDD	Q	Q	18.7	.111	3,858	207	186	1,277	Q	2.37	11.49	37.18

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Lodging												
Metropolitan Status												
Metropolitan	49	1,617	32.9	0.268	5,455	166	152	2,905	59.2	1.80	10.85	14.66
Nonmetropolitan	57	624	10.9	.097	1,695	156	160	1,026	17.9	1.65	10.56	23.40
Number of Establishments in Building												
Vacant	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Single Establishment	94	1,819	19.4	.308	3,285	169	154	3,255	34.7	1.79	10.57	14.29
Multiple Establishment	13	422	33.2	.057	4,490	135	153	677	53.2	1.60	11.84	22.82
Government Occupancy												
Any Government Occupancy	Q	258	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.13
Federal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	80.21
State	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	52.91
Local	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	36.93
Number of Employees												
Fewer than 10	73	701	9.7	.145	2,002	207	568	1,469	20.2	2.09	10.10	24.58
10 to 19	7	139	18.6	Q	Q	Q	Q	Q	Q	Q	Q	31.32
20 to 49	15	422	27.8	.064	4,237	152	141	769	50.6	1.82	11.95	19.04
50 to 99	7	283	40.8	.042	Q	148	Q	466	Q	1.65	11.14	26.92
100 or More	4	695	165.9	.098	23,280	140	90	1,029	245.4	1.48	10.54	19.93
Hours of Operation During a Typical Week												
39 or Fewer Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	89.81
40 to 48 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	47.20
49 to 60 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	189.62
61 to 84 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	49.12
85 to 167 Hours	13	225	Q	Q	Q	Q	Q	Q	Q	Q	Q	35.14
168 Hours	73	1,732	23.7	.277	3,798	160	137	2,913	39.9	1.68	10.51	14.04
Percentage of Exterior Glass												
Less than 25 Percent	55	794	14.4	.124	2,243	156	134	1,321	23.9	1.66	10.67	19.37
25 to 49 Percent	36	850	23.3	.136	3,723	160	157	1,547	42.4	1.82	11.40	22.78
50 to 74 Percent	12	506	43.0	.085	7,205	168	197	829	70.4	1.64	9.77	27.27
75 Percent or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	43.69
Insulation/Special Glass												
Any Present	77	1,865	24.1	.312	4,036	167	161	3,224	41.7	1.73	10.39	13.58
Special Glass	36	1,075	30.0	.217	6,055	202	179	2,122	59.2	1.97	9.77	19.30
Roof/Ceiling Insulation	61	1,426	23.3	.254	4,156	178	180	2,539	41.5	1.78	9.99	15.66
Exterior Wall Insulation	43	961	22.5	.158	3,713	165	149	1,659	38.9	1.73	10.48	22.84
None Present	29	376	12.9	.053	1,818	141	120	708	24.3	1.88	13.37	26.73
Passive Solar												
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	63.76
Not in Use	103	2,216	21.4	.363	3,513	164	155	3,913	37.8	1.77	10.77	12.84
Computerized Energy Management System												
In Use	8	389	Q	.058	Q	148	99	622	Q	1.60	10.77	26.53
Not in Use	96	1,842	19.2	.307	3,205	167	172	3,306	34.5	1.79	10.77	13.96

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
	RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	
Principal Activity Within Building												
Lodging												
Professional Energy Audits												
Performed in Past Year	24	728	30.5	0.128	5,355	176	138	1,346	56.4	1.85	10.53	19.06
Measures Taken	11	357	32.2	.064	5,744	179	Q	529	47.6	1.48	8.29	34.60
Measures Not Taken	13	371	29.0	.064	5,017	173	125	818	64.0	2.20	12.76	20.89
Not Performed	83	1,513	18.3	.237	2,872	157	164	2,585	31.3	1.71	10.90	16.41

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Mercantile/Services												
All Buildings	1,055	10,347	9.8	0.838	795	81	60	10,338	9.8	1.00	12.33	10.35
Fuel Used Alone or in Combination^a												
Electricity	1,053	10,342	9.8	.838	796	81	60	10,337	9.8	1.00	12.33	10.37
Natural Gas	649	7,951	12.3	.715	1,102	90	67	8,266	12.7	1.04	11.56	12.24
Fuel Oil	163	1,515	9.3	.103	634	68	43	1,298	8.0	.86	12.57	17.00
Propane	76	Q	Q	.027	359	45	46	379	5.0	.62	13.96	26.39
Purchased Steam	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	38.52
Other	59	392	6.7	.025	420	63	45	263	4.5	.67	10.66	23.64
Year Constructed												
1900 or Before	69	458	6.6	.029	414	63	64	308	4.4	.67	10.75	17.18
1901 to 1920	95	882	9.3	.046	483	52	58	539	5.7	.61	11.71	16.05
1921 to 1945	192	1,314	6.8	.159	826	121	78	1,868	9.7	1.42	11.77	18.10
1946 to 1960	303	2,112	7.0	.157	518	74	46	1,832	6.0	.87	11.67	15.92
1961 to 1970	184	1,969	10.7	.182	987	92	71	2,234	12.1	1.13	12.28	15.69
1971 to 1973	52	736	14.2	.055	1,048	74	45	719	13.8	.98	13.19	21.51
1974 to 1979	137	1,484	10.8	.111	809	75	53	1,580	11.5	1.06	14.27	16.19
1980 to 1983	21	Q	Q	Q	Q	72	74	Q	58.7	.90	12.51	40.89
Square Footage Category												
5,000 or Less	654	1,414	2.2	.193	295	136	65	2,235	3.4	1.58	11.60	10.57
5,001 to 10,000	217	1,562	7.2	.122	564	78	57	1,385	6.4	.89	11.33	14.57
10,001 to 25,000	128	1,967	15.3	.157	1,221	80	71	1,913	14.9	.97	12.22	13.46
25,001 to 50,000	29	1,049	35.7	.093	3,157	89	85	1,196	40.6	1.14	12.87	17.02
50,001 to 100,000	17	1,089	65.9	.084	5,062	77	75	1,096	66.3	1.01	13.09	17.36
100,001 to 200,000	6	800	135.0	.061	10,356	77	65	849	143.2	1.06	13.83	16.27
Over 200,000	4	Q	583.2	Q	30,433	52	38	Q	393.8	.68	12.94	28.42
Number of Floors												
One	751	5,731	7.6	.494	658	86	70	5,941	7.9	1.04	12.02	14.54
Two	190	2,260	11.9	.175	924	78	56	2,323	12.2	1.03	13.25	14.87
Three or More	114	2,356	20.8	.169	1,485	72	46	2,075	18.3	.88	12.31	13.22
Census Region												
Northeast	183	2,025	11.1	.143	783	71	47	2,061	11.3	1.02	14.40	14.76
North Central	347	3,185	9.2	.307	885	96	72	3,558	10.2	1.12	11.58	11.72
South	375	3,813	10.2	.262	697	69	57	3,441	9.2	.90	13.14	23.17
West	149	1,324	8.9	.126	845	95	63	1,279	8.6	.97	10.13	16.54
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above												
7,000 HDD	122	1,321	10.9	.140	Q	106	68	1,554	Q	1.18	11.10	24.11
Below 2,000 CDD and												
5,500-7,000 HDD	297	2,444	8.2	.220	743	90	72	2,604	8.8	1.07	11.83	10.34
Below 2,000 CDD and												
4,000-5,499 HDD	270	3,466	12.9	.238	883	69	55	3,106	11.5	.90	13.04	29.95
Below 2,000 CDD and Below												
4,000 HDD	184	1,489	8.1	.121	658	81	54	1,427	7.7	.96	11.77	24.74
Above 2,000 CDD and Below												
4,000 HDD	183	Q	8.9	.119	649	73	55	1,646	9.0	1.01	13.89	28.34

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor	
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449		
Principal Activity Within Building													
Mercantile/Services													
Metropolitan Status													
Metropolitan	611	6,602	10.8	0.610	998	92	62	7,671	12.6	1.16	12.58	9.64	
Nonmetropolitan	444	3,746	8.4	.229	515	61	57	2,667	6.0	.71	11.67	21.75	
Number of Establishments in Building													
Vacant	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
Single Establishment	914	6,306	6.9	.568	622	90	70	6,743	7.4	1.07	11.86	7.37	
Multiple Establishment	141	4,041	28.7	.270	1,915	67	47	3,595	25.5	.89	13.32	23.02	
Government Occupancy													
Any Government Occupancy	32	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	12.71	48.45
Federal	21	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	12.83	65.14
State	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.58
Local	9	212	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	44.07
Number of Employees													
Fewer than 10	803	3,472	4.3	.247	307	71	79	2,897	3.6	.83	11.73	8.94	
10 to 19	142	1,356	9.5	.109	764	80	62	1,294	9.1	.95	11.91	15.31	
20 to 49	72	1,226	17.1	.135	1,876	110	68	1,471	20.5	1.20	10.91	13.75	
50 to 99	18	764	42.9	.101	5,696	133	82	1,332	74.8	1.74	13.14	21.16	
100 or More	19	3,529	181.1	.246	12,643	70	43	3,345	171.6	.95	13.57	22.25	
Hours of Operation During a Typical Week													
39 or Fewer Hours	60	158	2.6	.014	Q	Q	Q	92	1.5	.58	6.56	35.48	
40 to 48 Hours	254	1,581	6.2	.112	441	71	64	1,149	4.5	.73	10.26	15.96	
49 to 60 Hours	341	2,688	7.9	.205	601	76	63	2,513	7.4	.93	12.26	15.28	
61 to 84 Hours	235	4,011	17.1	.313	1,332	78	63	3,893	16.6	.97	12.43	18.90	
85 to 167 Hours	133	1,507	11.4	.147	1,112	98	62	1,947	14.7	1.29	13.21	18.31	
168 Hours	32	Q	Q	.047	Q	Q	Q	743	Q	Q	15.97	55.85	
Percentage of Exterior Glass													
Less than 25 Percent	738	6,906	9.4	.546	740	79	64	6,813	9.2	.99	12.47	12.44	
25 to 49 Percent	251	2,850	11.3	.217	862	76	49	2,731	10.9	.96	12.61	15.25	
50 to 74 Percent	50	445	8.9	.045	894	100	65	513	10.3	1.15	11.51	20.79	
75 Percent or More	16	145	9.2	Q	Q	Q	Q	Q	Q	Q	Q	60.90	
Insulation/Special Glass													
Any Present	657	7,836	11.9	.607	923	77	57	7,696	11.7	.98	12.69	12.55	
Special Glass	308	4,659	15.1	.357	1,159	77	54	4,339	14.1	.93	12.14	17.84	
Roof/Ceiling Insulation	472	5,374	11.4	.397	841	74	52	5,158	10.9	.96	13.00	11.90	
Exterior Wall Insulation	286	4,051	14.2	.289	1,009	71	53	3,687	12.9	.91	12.78	20.38	
None Present	397	2,512	6.3	.232	583	92	72	2,642	6.6	1.05	11.41	11.93	
Passive Solar													
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	92.86	
Not in Use	1,000	10,141	10.1	.816	815	80	60	10,134	10.1	1.00	12.42	10.69	
Computerized Energy Management System													
In Use	15	1,175	76.3	Q	Q	80	35	1,259	Q	1.07	13.42	36.02	
Not in Use	991	9,020	9.1	.725	731	80	66	8,902	9.0	.99	12.28	11.56	

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Mercantile/Services												
Professional Energy Audits												
Performed in Past Year	85	Q	Q	0.151	1,789	64	54	1,967	23.2	0.83	12.99	26.43
Measures Taken	36	771	21.6	.063	1,769	82	41	822	23.0	1.07	13.03	17.64
Measures Not Taken	49	Q	Q	Q	Q	55	69	Q	Q	.72	12.96	39.00
Not Performed	970	7,982	8.2	.687	708	86	62	8,371	8.6	1.05	12.19	8.77

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
	RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	
Principal Activity Within Building												
Office												
All Buildings	575	8,444	14.7	1,039	1,806	123	40	13,097	22.8	1.55	12.61	6.87
Fuel Used Alone or in Combination^a												
Electricity	573	8,414	14.7	1,038	1,810	123	40	13,093	22.8	1.56	12.61	6.90
Natural Gas	342	5,581	16.3	.749	2,190	134	46	8,723	25.5	1.56	11.64	8.97
Fuel Oil	68	1,610	23.5	.244	3,569	152	39	3,352	49.0	2.08	13.74	18.94
Propane	16	89	5.7	.014	872	152	44	165	10.6	1.85	12.18	29.22
Purchased Steam	9	1,228	142.5	.156	18,146	127	37	2,257	261.9	1.84	14.44	14.69
Other	19	611	32.5	.071	Q	117	37	928	Q	1.52	13.00	26.49
Year Constructed												
1900 or Before	35	429	12.2	.042	Q	97	35	610	Q	1.42	14.63	29.25
1901 to 1920	41	715	17.4	.060	1,466	84	34	751	18.3	1.05	12.45	12.91
1921 to 1945	107	1,382	12.9	.178	1,658	129	43	2,145	20.0	1.55	12.06	18.77
1946 to 1960	97	966	9.9	.121	1,240	125	38	1,488	15.3	1.54	12.34	18.51
1961 to 1970	121	1,769	14.6	.195	1,611	110	36	2,669	22.0	1.51	13.66	11.75
1971 to 1973	45	625	13.8	.071	1,576	114	34	1,105	24.5	1.77	15.52	13.43
1974 to 1979	100	1,370	13.7	.229	2,295	167	52	2,345	23.5	1.71	10.25	19.95
1980 to 1983	28	1,189	42.5	.143	5,100	120	36	1,984	70.8	1.67	13.89	16.69
Square Footage Category												
5,000 or Less	328	749	2.3	.174	529	232	61	1,632	5.0	2.18	9.39	17.79
5,001 to 10,000	109	803	7.3	.080	727	99	33	928	8.5	1.16	11.66	14.30
10,001 to 25,000	81	1,236	15.2	.123	1,514	99	33	1,517	18.7	1.23	12.36	15.86
25,001 to 50,000	27	972	35.8	.141	5,174	145	49	1,854	68.2	1.91	13.19	15.24
50,001 to 100,000	14	927	66.5	.104	7,463	112	44	1,378	98.8	1.49	13.24	12.34
100,001 to 200,000	8	1,086	135.4	.114	14,150	105	37	1,473	183.6	1.36	12.98	8.77
Over 200,000	7	2,671	388.5	.304	44,278	114	34	4,315	627.8	1.62	14.18	8.21
Number of Floors												
One	289	1,368	4.7	.232	802	169	49	2,403	8.3	1.76	10.36	19.32
Two	153	1,458	9.5	.179	1,172	123	47	2,054	13.4	1.41	11.46	13.12
Three or More	133	5,618	42.3	.627	4,726	112	36	8,640	65.1	1.54	13.77	7.71
Census Region												
Northeast	97	1,774	18.2	.180	1,855	102	29	3,190	32.8	1.80	17.69	10.07
North Central	176	2,174	12.4	.326	1,858	150	54	3,455	19.7	1.59	10.59	11.41
South	191	2,903	15.2	.366	1,920	126	40	4,605	24.2	1.59	12.59	14.98
West	112	1,593	14.3	.166	1,489	104	34	1,847	16.5	1.16	11.11	15.91
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above 7,000 HDD	54	728	13.6	Q	2,125	157	64	Q	19.1	1.41	8.98	35.15
Below 2,000 CDD and 5,500-7,000 HDD	191	2,607	13.6	.328	1,713	126	38	4,013	21.0	1.54	12.24	12.80
Below 2,000 CDD and 4,000-5,499 HDD	125	2,031	16.3	.238	1,911	117	38	3,492	28.0	1.72	14.67	16.69
Below 2,000 CDD and Below 4,000 HDD	92	1,342	14.6	.130	1,414	97	33	1,677	18.2	1.25	12.88	24.06
Above 2,000 CDD and Below 4,000 HDD	113	1,736	15.3	.229	2,018	132	40	2,892	25.5	1.67	12.65	26.67

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Office												
Metropolitan Status												
Metropolitan	360	7,030	19.5	0.862	2,397	123	38	11,227	31.2	1.60	13.02	7.83
Nonmetropolitan	215	1,414	6.6	.177	820	125	48	1,870	8.7	1.32	10.59	20.50
Number of Establishments in Building												
Vacant	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Single Establishment	363	3,462	9.5	.525	1,447	152	48	5,782	15.9	1.67	11.01	9.11
Multiple Establishment	212	4,982	23.5	.514	2,422	103	34	7,315	34.5	1.47	14.24	8.81
Government Occupancy												
Any Government Occupancy	79	2,197	27.7	.277	3,487	126	35	3,520	44.3	1.60	12.71	14.68
Federal	14	1,054	74.2	.130	9,156	123	35	1,777	125.2	1.69	13.67	20.42
State	30	861	29.1	.111	3,750	129	30	1,456	49.2	1.69	13.11	18.75
Local	46	722	15.7	.079	1,712	109	39	944	20.5	1.31	11.98	25.07
Number of Employees												
Fewer than 10	268	784	2.9	.106	395	135	81	1,039	3.9	1.32	9.80	24.55
10 to 19	113	634	5.6	.074	657	117	50	779	6.9	1.23	10.52	19.37
20 to 49	108	1,263	11.6	.180	1,659	142	57	2,036	18.8	1.61	11.31	17.49
50 to 99	41	873	21.4	.090	2,212	103	36	1,128	27.6	1.29	12.49	15.38
100 or More	45	4,890	109.6	.588	13,183	120	33	8,115	181.8	1.66	13.79	8.12
Hours of Operation During a Typical Week												
39 or Fewer Hours	34	175	5.2	Q	Q	95	38	180	5.3	1.03	10.76	32.91
40 to 48 Hours	218	1,997	9.2	.204	937	102	45	2,614	12.0	1.31	12.81	14.70
49 to 60 Hours	189	2,544	13.5	.297	1,573	117	40	3,752	19.8	1.47	12.62	11.75
61 to 84 Hours	101	2,132	21.0	.266	2,619	125	37	3,155	31.1	1.48	11.88	13.88
85 to 167 Hours	18	788	44.8	.143	8,137	182	40	1,728	98.2	2.19	12.07	31.77
168 Hours	15	807	52.4	.112	7,265	139	37	1,668	108.3	2.07	14.91	13.81
Percentage of Exterior Glass												
Less than 25 Percent	355	2,885	8.1	.369	1,038	128	46	4,249	12.0	1.47	11.53	12.71
25 to 49 Percent	166	2,875	17.4	.363	2,195	126	40	4,436	26.8	1.54	12.21	11.63
50 to 74 Percent	39	1,567	39.7	.177	4,491	113	33	2,634	66.8	1.68	14.87	11.19
75 Percent or More	15	1,117	74.2	.130	8,618	116	36	1,778	118.1	1.59	13.71	18.73
Insulation/Special Glass												
Any Present	488	7,468	15.3	.936	1,919	125	40	11,881	24.4	1.59	12.69	7.47
Special Glass	299	5,934	19.9	.724	2,423	122	38	9,451	31.6	1.59	13.05	8.05
Roof/Ceiling Insulation	332	5,310	16.0	.675	2,030	127	41	8,457	25.4	1.59	12.53	8.69
Exterior Wall Insulation	274	3,841	14.0	.504	1,838	131	41	6,509	23.8	1.69	12.92	10.76
None Present	87	976	11.2	.102	1,177	105	35	1,217	14.0	1.25	11.87	17.94
Passive Solar												
In Use	12	364	31.0	.031	Q	85	22	436	Q	1.20	14.10	24.12
Not in Use	556	7,903	14.2	.987	1,777	125	40	12,423	22.4	1.57	12.59	7.05
Computerized Energy Management System												
In Use	25	1,711	68.9	.215	8,655	126	39	2,801	112.7	1.64	13.02	14.43
Not in Use	543	6,727	12.4	.823	1,516	122	40	10,294	19.0	1.53	12.50	7.68

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Office												
Professional Energy Audits												
Performed in Past Year	88	2,962	33.8	0.388	4,433	131	36	5,278	60.3	1.78	13.59	11.75
Measures Taken	39	1,444	36.6	.206	5,211	142	40	2,622	66.4	1.82	12.75	19.05
Measures Not Taken	48	1,518	31.6	.183	3,795	120	32	2,655	55.2	1.75	14.55	15.50
Not Performed	487	5,482	11.2	.650	1,335	119	43	7,819	16.0	1.43	12.02	8.23

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Residential												
All Buildings	235	2,442	10.4	0.179	759	73	130	1,856	7.9	0.76	10.39	11.04
Fuel Used Alone or in Combination²												
Electricity	235	2,439	10.4	.178	757	73	130	1,852	7.9	.76	10.40	11.04
Natural Gas	177	1,977	11.2	.154	869	78	147	1,527	8.6	.77	9.92	12.65
Fuel Oil	48	749	15.5	.048	1,004	65	177	457	9.5	.61	9.43	19.84
Propane	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	38.97
Purchased Steam	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	69.63
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	36.01
Year Constructed												
1900 or Before	54	609	11.3	.034	621	55	92	348	6.4	.57	10.37	24.03
1901 to 1920	44	505	11.4	.029	664	58	131	272	6.2	.54	9.26	22.65
1921 to 1945	69	721	10.5	.069	1,001	96	181	652	9.5	.91	9.46	21.61
1946 to 1960	38	278	7.3	.020	523	71	90	225	5.9	.81	11.34	27.79
1961 to 1970	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	31.07
1971 to 1973	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	131.01
1974 to 1979	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	58.02
1980 to 1983	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	57.41
Square Footage Category												
5,000 or Less	131	325	2.5	.037	286	115	86	422	3.2	1.30	11.31	13.74
5,001 to 10,000	37	265	7.1	.023	626	88	73	306	8.2	1.16	13.06	17.33
10,001 to 25,000	48	748	15.5	.053	1,101	71	215	512	10.6	.68	9.61	29.61
25,001 to 50,000	13	432	32.9	Q	Q	Q	Q	Q	Q	Q	Q	34.03
50,001 to 100,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	16.96
100,001 to 200,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	24.13
Over 200,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.24
Number of Floors												
One	28	57	2.0	Q	Q	Q	Q	Q	Q	Q	Q	39.24
Two	48	208	4.3	.016	323	75	79	195	4.0	.94	12.51	24.73
Three or More	159	2,178	13.7	.150	945	69	136	1,533	9.6	.70	10.19	13.18
Census Region												
Northeast	97	1,336	13.8	.082	845	61	137	907	9.4	.68	11.09	14.40
North Central	78	717	9.1	.071	911	100	155	632	8.1	.88	8.85	19.60
South	44	299	6.7	.017	373	Q	75	239	5.4	Q	14.46	35.66
West	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	31.96
Climate Zones:												
45 Year Average												
Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above												
7,000 HDD	37	330	8.8	.026	Q	78	Q	263	Q	.80	10.28	48.07
Below 2,000 CDD and												
5,500-7,000 HDD	86	973	11.3	.079	923	82	153	694	8.1	.71	8.74	17.17
Below 2,000 CDD and												
4,000-5,499 HDD	90	970	10.7	.062	691	64	142	729	8.1	.75	11.66	17.67
Below 2,000 CDD and Below												
4,000 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	97.33
Above 2,000 CDD and Below												
4,000 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	70.05

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Residential												
Metropolitan Status												
Metropolitan	148	1,900	12.9	0.144	977	76	149	1,485	10.1	0.78	10.28	13.67
Nonmetropolitan	88	542	6.2	.034	391	63	85	371	4.2	.69	10.84	19.91
Number of Establishments in Building												
Vacant	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Single Establishment	172	1,294	7.5	.100	583	77	139	1,071	6.2	.83	10.68	16.75
Multiple Establishment	63	1,148	18.1	.078	1,235	68	121	785	12.4	.68	10.02	15.94
Government Occupancy												
Any Government Occupancy	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	75.87
Federal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	105.70
State	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	105.21
Local	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	126.60
Number of Employees												
Fewer than 10	207	1,545	7.4	.115	556	75	172	1,172	5.6	.76	10.16	14.15
10 to 19	14	364	25.7	.029	2,021	79	155	261	18.4	.72	9.09	28.94
20 to 49	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	40.56
50 to 99	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	66.78
100 or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.61
Hours of Operation During a Typical Week												
39 or Fewer Hours	41	226	5.6	.013	321	58	143	130	3.2	.57	9.94	21.87
40 to 48 Hours	61	615	10.1	.035	575	57	128	350	5.7	.57	9.97	18.67
49 to 60 Hours	36	383	10.6	.018	490	46	69	199	5.5	.52	11.24	25.86
61 to 84 Hours	42	521	12.5	.057	1,355	108	234	490	11.7	.94	8.67	27.62
85 to 167 Hours	32	354	11.0	.023	698	64	62	299	9.3	.84	13.25	26.81
168 Hours	24	342	14.5	.034	1,431	98	229	389	16.5	1.14	11.53	25.64
Percentage of Exterior Glass												
Less than 25 Percent	139	1,021	7.3	.064	458	63	95	696	5.0	.68	10.89	14.16
25 to 49 Percent	77	1,045	13.6	.086	1,120	82	166	816	10.6	.78	9.47	20.52
50 to 74 Percent	16	243	15.4	Q	Q	Q	Q	Q	Q	Q	Q	33.14
75 Percent or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	48.20
Insulation/Special Glass												
Any Present	171	1,880	11.0	.123	723	66	124	1,321	7.7	.70	10.70	12.99
Special Glass	108	1,316	12.2	.080	745	61	124	898	8.3	.68	11.21	17.07
Roof/Ceiling Insulation	111	1,151	10.3	.072	645	62	107	773	6.9	.67	10.76	13.52
Exterior Wall Insulation	89	804	9.1	.054	612	67	106	608	6.9	.76	11.20	16.31
None Present	65	562	8.7	.055	855	98	146	535	8.3	.95	9.69	22.70
Passive Solar												
In Use	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Not in Use	235	2,435	10.4	.179	759	73	130	1,855	7.9	.76	10.39	11.06
Computerized Energy Management System												
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	65.14
Not in Use	233	2,381	10.2	.173	740	73	129	1,806	7.7	.76	10.46	11.36

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Residential												
Professional Energy Audits												
Performed in Past Year	20	291	14.4	0.026	1,272	88	122	275	13.6	0.94	10.68	24.32
Measures Taken	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	54.30
Measures Not Taken	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	32.42
Not Performed	215	2,150	10.0	.153	711	71	132	1,582	7.4	.74	10.34	13.18

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Warehouse												
All Buildings	387	6,700	17.3	0.506	1,309	76	95	5,530	14.3	0.83	10.92	10.17
Fuel Used Alone or in Combination*												
Electricity	387	6,700	17.3	.506	1,309	76	95	5,530	14.3	.83	10.92	10.17
Natural Gas	191	4,354	22.8	.382	1,995	88	113	3,634	19.0	.83	9.52	12.15
Fuel Oil	45	1,116	24.6	.096	2,115	86	114	1,091	24.0	.98	11.36	25.45
Propane	18	596	32.9	.049	Q	Q	208	456	Q	Q	9.27	39.59
Purchased Steam	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	61.35
Other	12	317	Q	.015	Q	Q	121	156	Q	Q	10.37	46.53
Year Constructed												
1900 or Before	18	306	17.0	.013	696	41	79	107	5.9	.35	8.52	29.22
1901 to 1920	41	897	21.9	.051	1,259	57	85	528	12.9	.59	10.26	22.76
1921 to 1945	73	1,088	14.9	.060	821	55	89	723	9.9	.66	12.07	26.52
1946 to 1960	81	1,325	16.4	.079	974	60	83	910	11.3	.69	11.55	20.87
1961 to 1970	74	1,395	18.9	.129	1,754	93	106	1,255	17.0	.90	9.70	20.64
1971 to 1973	22	363	16.5	.029	1,333	81	93	319	14.5	.88	10.89	22.99
1974 to 1979	61	780	12.7	.117	1,917	150	122	1,326	21.7	1.70	11.30	20.45
1980 to 1983	17	547	31.9	.028	1,610	50	61	362	21.1	.66	13.11	15.21
Square Footage Category												
5,000 or Less	183	402	2.2	.059	320	146	78	737	4.0	1.84	12.58	18.24
5,001 to 10,000	64	446	7.0	.024	375	54	45	275	4.3	.62	11.49	18.26
10,001 to 25,000	75	1,199	15.9	.072	959	60	62	957	12.7	.80	13.25	14.15
25,001 to 50,000	35	1,187	33.7	.087	2,459	73	88	975	27.6	.82	11.24	16.47
50,001 to 100,000	18	1,182	66.6	.085	4,803	72	111	785	44.3	.66	9.21	18.12
100,001 to 200,000	7	933	128.7	.056	7,778	60	116	563	77.6	.60	9.98	22.40
Over 200,000	4	1,351	342.3	.123	31,197	91	190	1,238	313.6	.92	10.05	20.26
Number of Floors												
One	263	3,156	12.0	.244	930	77	93	2,730	10.4	.86	11.17	12.96
Two	81	1,796	22.1	.135	1,662	75	79	1,487	18.3	.83	11.01	15.63
Three or More	43	1,749	40.9	.127	2,967	72	129	1,314	30.7	.75	10.36	24.31
Census Region												
Northeast	52	1,200	23.1	.088	Q	73	77	1,198	Q	1.00	13.63	26.94
North Central	118	2,088	17.8	.210	1,789	101	150	1,830	15.6	.88	8.70	15.45
South	154	2,270	14.7	.152	986	67	82	1,788	11.6	.79	11.74	15.40
West	63	1,141	18.2	.056	887	49	60	714	11.4	.63	12.81	19.42
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above												
7,000 HDD	40	751	19.0	.072	Q	96	135	660	Q	.88	9.16	34.97
Below 2,000 CDD and												
5,500-7,000 HDD	96	2,067	21.5	.192	1,995	93	114	1,842	19.1	.89	9.58	17.19
Below 2,000 CDD and												
4,000-5,499 HDD	86	1,507	17.5	.103	1,194	68	107	1,158	13.5	.77	11.27	20.40
Below 2,000 CDD and Below												
4,000 HDD	91	1,495	16.4	.080	880	54	84	1,048	11.5	.70	13.03	31.90
Above 2,000 CDD and Below												
4,000 HDD	Q	879	12.0	.059	801	67	49	822	11.2	.94	13.97	24.31

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Warehouse												
Metropolitan Status												
Metropolitan	218	4,626	21.2	0.309	1,416	67	80	3,705	17.0	0.80	11.99	9.59
Nonmetropolitan	169	2,074	12.3	.197	1,170	95	132	1,825	10.8	.88	9.25	24.11
Number of Establishments in Building												
Vacant	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Single Establishment	330	5,378	16.3	.450	1,361	84	102	4,820	14.6	.90	10.72	11.11
Multiple Establishment	56	1,323	23.4	.056	1,001	43	60	710	12.6	.54	12.57	19.85
Government Occupancy												
Any Government Occupancy	19	371	19.3	.037	1,946	101	91	366	19.0	.99	9.77	31.73
Federal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	41.36
State	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	63.42
Local	12	147	Q	.023	1,834	Q	Q	175	14.3	1.20	7.77	41.99
Number of Employees												
Fewer than 10	256	1,964	7.7	.110	429	56	136	1,202	4.7	.61	10.94	19.28
10 to 19	64	1,133	17.8	.061	951	54	71	697	10.9	.62	11.49	15.40
20 to 49	49	1,712	34.7	.120	2,433	70	81	1,341	27.2	.78	11.17	14.83
50 to 99	11	699	65.9	.050	4,699	71	74	547	51.5	.78	10.97	24.37
100 or More	7	1,192	166.2	.166	23,121	139	109	1,743	243.1	1.46	10.52	19.91
Hours of Operation During a Typical Week												
39 or Fewer Hours	60	307	5.1	Q	Q	Q	Q	242	Q	.79	Q	43.26
40 to 48 Hours	112	2,117	19.0	.092	822	43	72	1,014	9.1	.48	11.05	15.62
49 to 60 Hours	114	2,303	20.2	.143	1,249	62	84	1,683	14.7	.73	11.81	15.00
61 to 84 Hours	41	559	13.7	.046	1,113	81	74	596	14.6	1.07	13.10	23.06
85 to 167 Hours	35	1,026	29.0	.128	3,608	124	107	1,376	38.9	1.34	10.79	21.50
168 Hours	25	388	15.7	.076	3,054	195	186	619	25.0	1.59	8.19	35.25
Percentage of Exterior Glass												
Less than 25 Percent	322	5,301	16.5	.406	1,261	77	94	4,421	13.7	.83	10.88	10.13
25 to 49 Percent	50	1,097	22.1	.081	1,622	73	100	887	17.8	.81	11.00	23.98
50 to 74 Percent	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	38.38
75 Percent or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	154.88
Insulation/Special Glass												
Any Present	213	4,327	20.3	.389	1,827	90	101	4,158	19.5	.96	10.70	11.87
Special Glass	89	2,600	29.2	.265	2,974	102	110	2,720	30.5	1.05	10.26	14.22
Roof/Ceiling Insulation	145	2,585	18.6	.250	1,726	93	106	2,674	18.5	1.00	10.72	14.51
Exterior Wall Insulation	110	1,796	16.4	.185	1,690	103	90	2,004	18.3	1.12	10.82	18.43
None Present	174	2,373	13.6	.118	676	50	79	1,372	7.9	.58	11.66	17.34
Passive Solar												
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	34.95
Not in Use	305	6,120	20.1	.496	1,629	81	98	5,380	17.7	.88	10.84	10.24
Computerized Energy Management System												
In Use	2	254	103.3	Q	6,753	65	87	Q	90.6	.88	13.41	28.16
Not in Use	311	5,942	19.1	.484	1,554	81	97	5,208	16.7	.88	10.77	10.72

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Warehouse												
Professional Energy Audits												
Performed in Past Year	30	1,246	41.1	0.117	Q	94	94	1,276	Q	1.02	10.87	25.55
Measures Taken	14	636	46.1	Q	Q	117	115	Q	Q	1.24	10.64	39.42
Measures Not Taken	16	610	37.0	.043	2,627	71	72	487	29.6	.80	11.26	27.51
Not Performed	357	5,454	15.3	.389	1,090	71	95	4,253	11.9	.78	10.94	10.95

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Other												
All Buildings	167	2,738	16.4	0.276	1,655	101	76	3,377	20.3	1.23	12.24	17.54
Fuel Used Alone or in Combination^a												
Electricity	167	2,738	16.4	.276	1,655	101	76	3,377	20.3	1.23	12.24	17.54
Natural Gas	74	1,267	17.2	.153	2,073	120	72	1,586	21.6	1.25	10.40	13.77
Fuel Oil	20	647	32.2	.037	Q	57	Q	590	Q	.91	15.99	38.20
Propane	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	112.30
Purchased Steam	6	443	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.54
Other	20	Q	Q	Q	Q	Q	80	Q	Q	.66	10.28	55.06
Year Constructed												
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	75.76
1901 to 1920	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	70.08
1921 to 1945	25	382	15.2	.035	Q	91	46	432	Q	1.13	12.44	33.29
1946 to 1960	36	256	7.1	Q	Q	Q	Q	Q	Q	Q	12.31	58.27
1961 to 1970	31	464	14.8	.062	1,986	134	83	725	23.1	1.56	11.65	24.19
1971 to 1973	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	49.94
1974 to 1979	34	226	6.7	Q	Q	Q	Q	437	12.9	1.93	14.53	41.04
1980 to 1983	15	684	44.9	.039	2,562	57	102	404	26.5	.59	10.35	35.58
Square Footage Category												
5,000 or Less	100	166	1.7	.036	358	Q	Q	452	4.5	Q	12.61	29.29
5,001 to 10,000	24	186	7.7	Q	Q	Q	Q	Q	Q	Q	10.60	56.56
10,001 to 25,000	24	393	16.3	.048	1,970	121	45	614	25.4	1.56	12.90	18.83
25,001 to 50,000	10	350	35.4	.035	3,555	100	94	Q	59.3	1.67	16.68	32.28
50,001 to 100,000	3	214	63.3	.026	Q	Q	99	257	Q	Q	9.83	46.27
100,001 to 200,000	3	441	153.7	.032	11,022	72	98	353	123.0	.80	11.16	21.86
Over 200,000	2	988	412.8	.048	19,878	48	68	565	236.0	.57	11.87	15.94
Number of Floors												
One	115	804	7.0	Q	Q	Q	Q	Q	Q	1.73	12.62	36.61
Two	26	433	17.0	.036	1,408	83	Q	351	13.8	.81	9.78	33.46
Three or More	26	1,501	58.1	.130	5,029	87	88	1,638	63.4	1.09	12.61	19.51
Census Region												
Northeast	19	826	42.8	.053	2,727	64	68	857	44.5	1.04	16.30	23.09
North Central	47	871	18.7	.109	2,345	126	88	1,145	24.5	1.31	10.47	19.45
South	81	640	7.9	.060	744	94	48	830	10.2	1.30	13.75	20.39
West	20	401	20.4	Q	Q	Q	Q	Q	Q	Q	10.19	55.17
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above 7,000 HDD	Q	Q	26.7	Q	Q	Q	Q	Q	Q	Q	10.35	76.13
Below 2,000 CDD and 5,500-7,000 HDD	47	1,173	24.7	.100	2,104	85	86	1,081	22.8	.92	10.83	22.11
Below 2,000 CDD and 4,000-5,499 HDD	43	609	14.0	.053	1,213	87	46	819	18.8	1.35	15.52	24.87
Below 2,000 CDD and Below 4,000 HDD	36	323	Q	.028	Q	86	62	357	Q	1.10	12.80	43.29
Above 2,000 CDD and Below 4,000 HDD	Q	359	12.2	.036	1,224	101	71	Q	17.2	1.41	14.04	32.42

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Other												
Metropolitan Status												
Metropolitan	96	2,267	23.6	0.206	2,144	91	82	2,636	27.4	1.16	12.78	13.48
Nonmetropolitan	71	472	6.7	Q	Q	Q	Q	Q	Q	Q	10.64	45.93
Number of Establishments in Building												
Vacant	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Single Establishment	146	1,784	12.2	.230	1,573	129	81	2,844	19.4	1.59	12.35	19.72
Multiple Establishment	20	955	46.9	.046	Q	48	58	533	Q	.56	11.69	26.16
Government Occupancy												
Any Government Occupancy	55	1,280	23.1	.107	1,930	83	61	1,185	21.4	.93	11.09	17.24
Federal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	102.27
State	18	565	Q	.037	2,089	66	82	451	25.2	.80	12.08	32.76
Local	39	742	18.8	.075	1,903	101	55	773	19.6	1.04	10.31	18.23
Number of Employees												
Fewer than 10	103	765	7.4	.046	450	60	141	556	5.4	.73	12.01	21.04
10 to 19	25	677	Q	Q	1,490	Q	115	621	24.7	.92	16.56	38.95
20 to 49	26	459	18.0	Q	Q	Q	Q	Q	Q	Q	11.37	45.23
50 to 99	6	233	38.8	.030	4,923	127	76	376	62.6	1.61	12.72	30.67
100 or More	7	604	85.2	.074	10,484	123	42	822	116.0	1.36	11.07	23.45
Hours of Operation During a Typical Week												
39 or Fewer Hours	26	67	2.6	Q	Q	Q	Q	Q	Q	Q	Q	71.53
40 to 48 Hours	28	314	11.0	.039	1,356	123	81	476	16.7	1.52	12.34	22.06
49 to 60 Hours	25	470	18.9	.026	1,052	56	37	357	14.3	.76	13.64	24.69
61 to 84 Hours	17	336	20.3	Q	Q	Q	Q	Q	Q	Q	11.96	58.92
85 to 167 Hours	11	597	Q	Q	Q	45	96	Q	Q	.57	12.78	36.78
168 Hours	61	954	15.8	.105	1,740	110	67	1,284	21.2	1.35	12.19	21.14
Percentage of Exterior Glass												
Less than 25 Percent	121	1,917	15.8	.168	1,381	88	87	2,035	16.7	1.06	12.12	23.75
25 to 49 Percent	35	473	13.5	.069	1,975	146	Q	898	25.7	1.90	13.02	30.54
50 to 74 Percent	10	264	Q	Q	Q	Q	Q	Q	Q	Q	Q	56.46
75 Percent or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.83
Insulation/Special Glass												
Any Present	107	1,777	16.6	.227	2,116	127	83	2,716	25.4	1.53	11.99	21.79
Special Glass	50	1,277	25.4	.156	3,102	122	81	1,764	35.1	1.38	11.30	27.49
Roof/Ceiling Insulation	70	1,317	18.8	.172	2,456	131	99	2,035	29.0	1.54	11.82	27.32
Exterior Wall Insulation	61	1,044	17.2	Q	2,062	Q	Q	Q	23.2	1.35	11.26	33.52
None Present	60	961	16.1	.049	826	51	55	662	11.1	.69	13.43	20.48
Passive Solar												
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	70.36
Not in Use	137	2,430	17.7	.251	1,825	103	74	3,071	22.4	1.26	12.26	18.75
Computerized Energy Management System												
In Use	4	296	66.9	.048	10,791	161	Q	618	139.9	2.09	12.96	35.34
Not in Use	133	2,179	16.3	.217	1,630	100	72	2,568	19.3	1.18	11.82	20.36

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Other												
Professional Energy Audits												
Performed in Past Year	19	627	33.9	0.064	3,427	101	65	765	41.3	1.22	12.05	29.83
Measures Taken	Q	369	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.20
Measures Not Taken	11	258	22.7	Q	Q	Q	Q	Q	Q	Q	Q	38.98
Not Performed	148	2,111	14.2	.212	1,433	101	80	2,612	17.6	1.24	12.30	20.82

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quad-million Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Vacant												
All Buildings	180	2,522	14.0	0.184	1,022	73	124	2,226	12.4	0.88	12.12	14.34
Fuel Used Alone or in Combination*												
Electricity	177	2,460	13.9	.183	1,032	74	124	2,222	12.5	.90	12.13	14.15
Natural Gas	94	1,275	13.5	.133	1,407	104	141	1,442	15.3	1.13	10.85	20.63
Fuel Oil	Q	353	Q	.024	Q	68	166	301	Q	.85	12.66	34.21
Propane	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	82.38
Purchased Steam	4	287	65.8	.027	Q	94	Q	308	Q	1.07	11.41	35.95
Other	8	136	Q	.009	Q	64	Q	90	Q	.66	10.33	68.16
Year Constructed												
1900 or Before	17	247	14.7	.012	732	50	Q	118	7.1	.48	9.65	26.52
1901 to 1920	15	207	14.0	Q	Q	Q	113	Q	Q	.64	9.99	40.10
1921 to 1945	47	556	11.8	.029	620	53	231	350	7.4	.63	11.97	31.90
1946 to 1960	35	312	8.8	.044	Q	142	187	528	Q	1.69	11.91	35.14
1961 to 1970	29	319	10.9	Q	Q	91	Q	Q	9.1	.84	9.20	40.92
1971 to 1973	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	71.75
1974 to 1979	18	233	Q	Q	Q	Q	Q	Q	Q	Q	Q	41.61
1980 to 1983	10	533	53.5	.031	3,118	58	117	415	41.7	.78	13.38	13.94
Square Footage Category												
5,000 or Less	108	224	2.1	.033	304	146	128	432	4.0	1.93	13.20	25.67
5,001 to 10,000	23	152	6.5	.023	973	149	Q	Q	Q	Q	14.08	36.68
10,001 to 25,000	26	353	13.8	.014	540	39	Q	173	6.7	.49	12.49	23.43
25,001 to 50,000	12	395	32.7	.022	1,809	55	199	264	21.8	.67	12.06	15.37
50,001 to 100,000	6	445	68.9	.026	4,018	58	110	337	52.2	.76	13.00	17.88
100,001 to 200,000	3	442	140.3	.045	14,380	102	Q	447	142.0	1.01	9.88	31.26
Over 200,000	1	511	357.7	.021	15,005	42	155	254	177.8	.50	11.85	25.94
Number of Floors												
One	101	582	5.8	.056	555	96	165	787	7.8	1.35	14.07	25.54
Two	49	776	15.9	.046	946	59	102	513	10.5	.66	11.14	31.03
Three or More	30	1,164	38.4	.082	2,696	70	119	926	30.5	.80	11.33	19.42
Census Region												
Northeast	34	508	15.0	.026	768	51	131	427	12.6	.84	16.37	22.70
North Central	50	687	13.8	.063	1,271	92	175	582	11.7	.85	9.22	22.90
South	72	862	12.0	.062	865	72	98	723	10.0	.84	11.60	27.17
West	24	465	19.2	.032	1,335	69	113	Q	20.4	1.06	15.32	29.36
Climate Zones:												
45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)												
Below 2,000 CDD and Above 7,000 HDD												
Below 2,000 CDD and Above 7,000 HDD	15	189	12.6	Q	Q	Q	Q	Q	Q	Q	Q	44.18
Below 2,000 CDD and 5,500-7,000 HDD												
Below 2,000 CDD and 5,500-7,000 HDD	59	969	16.4	.071	1,206	74	142	787	13.3	.81	11.03	20.15
Below 2,000 CDD and 4,000-5,499 HDD												
Below 2,000 CDD and 4,000-5,499 HDD	46	553	11.9	.031	674	56	99	429	9.3	.77	13.73	32.54
Below 2,000 CDD and Below 4,000 HDD												
Below 2,000 CDD and Below 4,000 HDD	33	399	12.1	Q	954	79	204	Q	Q	1.24	15.69	39.66
Above 2,000 CDD and Below 4,000 HDD												
Above 2,000 CDD and Below 4,000 HDD	Q	411	15.7	Q	1,356	86	88	Q	14.6	.93	10.75	39.36

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	0.449	
Principal Activity Within Building												
Vacant												
Metropolitan Status												
Metropolitan	103	1,925	18.7	0.148	1,432	77	120	1,838	17.8	0.96	12.44	16.81
Nonmetropolitan	77	597	7.8	.036	470	60	147	388	5.1	.65	10.77	28.59
Number of Establishments in Building												
Vacant	59	873	14.7	.047	784	53	Q	605	10.2	.69	13.01	21.87
Single Establishment	99	1,030	10.4	.097	975	94	136	1,157	11.7	1.12	11.95	19.72
Multiple Establishment	21	619	29.2	.040	Q	65	55	464	21.9	.75	11.47	26.14
Government Occupancy												
Any Government Occupancy	21	315	Q	.026	1,212	81	159	287	13.6	.91	11.24	38.50
Federal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	84.35
State	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	48.95
Local	14	Q	Q	Q	Q	Q	Q	Q	Q	Q	12.11	62.59
Number of Employees												
Fewer than 10	161	1,595	9.9	.103	636	64	272	1,357	8.4	.85	13.22	18.01
10 to 19	5	130	27.9	Q	Q	Q	Q	Q	Q	Q	Q	34.61
20 to 49	9	266	28.2	.016	1,691	60	63	175	18.6	.66	11.00	25.19
50 to 99	2	137	86.6	Q	Q	Q	Q	Q	Q	Q	Q	38.95
100 or More	3	393	147.4	.042	15,753	107	62	435	162.8	1.10	10.33	26.29
Hours of Operation During a Typical Week												
39 or Fewer Hours	78	1,072	13.7	.050	641	47	1331	610	7.8	.57	12.18	18.32
40 to 48 Hours	38	424	11.0	.040	1,034	94	131	569	Q	1.34	14.32	32.96
49 to 60 Hours	24	441	18.7	.029	1,230	66	100	337	14.3	.77	11.64	28.93
61 to 84 Hours	17	188	Q	.013	Q	71	57	170	Q	.90	12.71	35.84
85 to 167 Hours	Q	160	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.94
168 Hours	13	238	Q	Q	Q	Q	Q	Q	Q	Q	Q	52.73
Percentage of Exterior Glass												
Less than 25 Percent	133	1,478	11.1	.108	815	73	126	1,327	10.0	.90	12.27	20.76
25 to 49 Percent	35	606	17.4	.038	1,086	63	110	437	12.5	.72	11.53	19.00
50 to 74 Percent	11	328	Q	.030	Q	92	226	332	Q	1.01	10.94	40.22
75 Percent or More	1	110	98.6	.007	6,630	67	Q	130	117.1	1.19	17.66	29.50
Insulation/Special Glass												
Any Present	119	1,927	16.2	.154	1,296	80	123	1,868	15.7	.97	12.13	16.77
Special Glass	55	1,317	24.0	.081	1,483	62	113	1,089	19.9	.83	13.39	18.93
Roof/Ceiling Insulation	94	1,414	15.1	.118	1,259	83	112	1,451	15.5	1.03	12.30	18.82
Exterior Wall Insulation	64	1,075	16.9	.092	1,441	85	102	1,027	16.1	.96	11.18	19.09
None Present	61	595	9.8	.030	489	50	128	358	5.9	.60	12.03	22.61
Passive Solar												
In Use	Q	80	Q	.008	Q	Q	Q	67	Q	.84	8.75	55.40
Not in Use	129	1,951	15.1	.161	1,241	82	116	1,931	14.9	.99	12.02	16.27
Computerized Energy Management System												
In Use	3	267	Q	.016	Q	62	113	207	Q	.78	12.60	33.96
Not in Use	132	1,771	13.4	.153	1,158	86	117	1,798	13.6	1.02	11.79	16.38

See footnotes at end of table.

Table 7. Major Fuels: Consumption and Expenditures by Principal Activity in the Building, 1983 (Continued)

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)										
	RSE Column Factor:	0.939	0.978	0.938	1.188	1.385	0.980	1.129	1.158	1.324	0.927	
Principal Activity Within Building												
Vacant												
Professional Energy Audits												
Performed in Past Year	5	275	50.3	0.020	3,638	72	142	248	45.3	0.90	12.45	23.87
Measures Taken	3	135	47.4	.011	3,888	82	Q	147	51.6	1.09	13.27	32.11
Measures Not Taken	3	140	53.4	Q	Q	Q	Q	Q	Q	Q	Q	35.24
Not Performed	174	2,246	12.9	.164	940	73	122	1,978	11.4	.88	12.07	15.64

^a Consumption and Expenditures in this table are summed over electricity, natural gas, fuel oil, propane and purchased steam. Data may not sum to totals due to use of more than one fuel in a building, for heating or for water heating, etc.

^{nc} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 8. Major Fuels: Total Consumption, 1983

Building Characteristics	All Buildings Using Any Major Fuel		Total Consumption (quadrillion Btu)						RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)	Major Fuel	Electricity ^a	Natural Gas	Fuel Oil	Propane	Purchased Steam	
RSE Column Factor:	0.527	0.605	0.645	0.840	0.841	1.611	2.183	1.957	
All Buildings	3,774	51,280	5,150	2,237	2,227	0.354	0.038	0.294	10.09
Fuel Used Alone or in Combination in a Building^b									
Electricity	3,764	51,146	5,145	2,237	2,223	.354	.038	.294	10.09
Natural Gas	2,239	36,088	4,084	1,502	2,227	.192	.003	.161	12.28
Fuel Oil	538	10,205	1,105	.391	.292	.354	.011	.058	13.40
Propane	250	2,721	.255	.111	.055	.045	.038	Q	26.33
Purchased Steam	59	4,538	.668	.243	.119	Q	Q	.294	24.08
Other	204	3,320	.313	.138	.100	.019	.007	.050	20.02
Year Constructed									
1900 or Before	279	2,884	.194	.051	.097	.028	Q	Q	22.33
1901 to 1920	369	5,228	.354	.112	.170	.048	Q	.021	15.96
1921 to 1945	685	8,269	.846	.295	.384	.094	.003	.069	15.70
1946 to 1960	883	9,434	.938	.362	.424	.079	.009	.064	15.40
1961 to 1970	700	9,873	1,099	.496	.464	Q	.004	.083	17.12
1971 to 1973	207	3,411	.366	.199	.136	.015	Q	.010	18.08
1974 to 1979	517	6,550	.861	.423	.379	.031	.006	.023	17.09
1980 to 1983	135	5,631	.491	.298	.172	.008	Q	.012	30.83
Square Footage Category									
5,000 or Less	2,112	4,680	.871	.332	.474	.046	.017	.001	13.84
5,001 to 10,000	705	5,083	.562	.217	.285	.049	.006	Q	19.95
10,001 to 25,000	560	8,795	.727	.321	.301	Q	.007	Q	17.35
25,001 to 50,000	216	7,470	.695	.305	.317	.042	Q	Q	18.75
50,001 to 100,000	104	6,963	.616	.291	.239	.049	Q	.035	17.03
100,001 to 200,000	49	6,613	.589	.251	.237	.038	.001	.062	15.73
Over 200,000	29	11,675	1,090	.520	.372	.055	.001	.141	18.06
Number of Floors									
One	2,195	17,074	1,798	.847	.852	.062	.020	Q	17.92
Two	860	11,512	1,017	.435	.453	.105	.011	Q	15.73
Three or More	720	22,694	2,334	.955	.921	.188	.007	.263	10.61
Principal Activity Within Building									
Assembly	452	5,475	.377	.121	.197	.025	Q	.026	19.39
Educational	177	6,044	.484	.155	.246	.061	.002	Q	20.73
Food Sales/Service	380	2,050	.437	.222	.193	Q	.008	Q	18.67
Health Care	61	2,277	.465	.147	.219	.029	Q	.070	20.44
Lodging	106	2,241	.365	.151	.171	.018	Q	.022	23.76
Mercantile/Services	1,055	10,347	.838	.434	.337	.045	.007	Q	16.73
Office	575	8,444	1,039	.521	.371	Q	Q	.068	17.59
Residential	235	2,442	.179	.042	.095	.035	Q	Q	23.87
Warehouse	387	6,700	.506	.208	.248	.033	.003	Q	22.09
Other	167	2,738	.276	.151	.078	.014	Q	Q	20.75
Vacant	180	2,522	.184	.086	.073	.009	Q	Q	27.01
Census Region									
Northeast	653	11,413	.954	.345	.314	.206	Q	.086	16.47
North Central	1,157	15,718	1,922	.697	1,044	.030	.008	.144	13.98
South	1,415	16,683	1,563	.849	.550	.107	.023	.034	20.29
West	549	7,467	.710	.346	.319	Q	Q	.031	23.46
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)									
Below 2,000 CDD and Above 7,000 HDD	399	5,520	.673	.274	Q	.036	Q	Q	36.99
Below 2,000 CDD and 5,500-7,000 HDD	1,115	16,729	1,846	.643	.948	.101	Q	.145	16.03
Below 2,000 CDD and 4,000-5,499 HDD	971	13,541	1,093	.499	.358	.165	.011	.060	24.96

See footnotes at end of table.

Table 8. Major Fuels: Total Consumption, 1983 (Continued)

Building Characteristics	All Buildings Using Any Major Fuel		Total Consumption (quadrillion Btu)						RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)	Major Fuel	Electricity ^a	Natural Gas	Fuel Oil	Propane	Purchased Steam	
	RSE Column Factor:	0.527	0.605	0.645	0.840	0.841	1.611	2.183	
Climate Zones:									
45 Year Average									
Annual Heating (HDD) and Cooling Degree-Days (CDD)									
Below 2,000 CDD and Below									
4,000 HDD	638	7,281	0.702	0.328	0.343	Q	0.006	Q	36.31
Above 2,000 CDD and Below									
4,000 HDD	651	8,208	.836	.493	.287	Q	Q	Q	47.73
Metropolitan Status									
Metropolitan	2,176	36,898	3.859	1.686	1.660	0.244	.009	0.260	11.53
Nonmetropolitan	1,598	14,382	1.291	.551	.566	.110	.029	Q	23.46
Number of Establishments in Building									
Vacant	59	873	.047	.023	.018	Q	*	Q	31.12
Single Establishment	3,077	34,858	3.858	1.558	1.793	.255	.031	.221	9.54
Multiple Establishment	638	15,548	1.245	.656	.415	.095	.006	.072	18.24
Government Occupancy									
Any Government Occupancy	336	10,002	1.035	.445	.417	Q	.003	.106	17.83
Federal	60	3,110	.285	.170	.077	.007	Q	.031	31.35
State	100	3,353	.395	.153	.169	.016	Q	.056	21.38
Local	212	4,839	.489	.183	.225	Q	.001	.031	18.50
Number of Employees									
Fewer than 10	2,475	14,221	1.143	.406	.602	.102	.014	Q	13.81
10 to 19	535	6,165	.500	.189	.242	.050	.006	Q	15.97
20 to 49	502	10,082	1.084	.458	.494	.082	.008	.042	16.58
50 to 99	141	5,247	.574	.283	.234	.026	Q	.029	16.51
100 or More	121	15,564	1.848	.901	.655	.095	.006	.190	16.41
Hours of Operation During a Typical Week									
39 or Fewer Hours	616	4,528	.290	.094	.154	.030	.004	Q	25.61
40 to 48 Hours	861	9,429	.682	.271	.307	Q	.010	.025	16.26
49 to 60 Hours	890	11,673	.957	.402	.411	.087	.004	Q	16.67
61 to 84 Hours	653	11,057	1.128	.554	.458	.062	.009	.046	18.76
85 to 167 Hours	461	7,398	.914	.438	.377	.042	.008	.049	15.31
168 Hours	293	7,196	1.178	.478	.520	.064	.004	.112	14.26
Percentage of Exterior Glass									
Less than 25 Percent	2,520	28,000	2.543	1.149	1.124	.141	.025	.105	12.60
25 to 49 Percent	946	15,171	1.672	.668	.732	.152	.009	.110	12.77
50 to 74 Percent	247	5,782	.689	.297	.274	.051	.002	.065	15.41
75 Percent or More	61	2,327	.246	.124	.096	Q	Q	.014	24.90
Insulation/Special Glass									
Any Present	2,659	40,280	4.264	1.928	1.827	.245	.033	.231	11.26
Special Glass	1,465	27,553	2.995	1.368	1.306	.137	.020	.163	13.15
Roof/Ceiling Insulation	1,858	29,007	3.109	1.428	1.300	.172	.021	.187	11.96
Exterior Wall Insulation	1,332	19,259	2.050	1.028	.828	.089	.020	.085	14.10
None Present	1,115	10,999	.885	.309	.400	.109	.005	.063	12.44
Passive Solar									
In Use	34	749	.083	.037	.038	Q	Q	Q	27.49
Not in Use	3,506	48,873	4.990	2.165	2.154	.347	.035	.290	10.19
Computerized Energy Management System									
In Use	105	6,426	.768	.390	.250	.035	Q	.091	15.85
Not in Use	3,451	43,403	4.329	1.820	1.955	.315	.035	.204	11.39

See footnotes at end of table.

Table 8. Major Fuels: Total Consumption, 1983 (Continued)

Building Characteristics	All Buildings Using Any Major Fuel		Total Consumption (quadrillion Btu)						RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)	Major Fuel	Electricity ^a	Natural Gas	Fuel Oil	Propane	Purchased Steam	
RSE Column Factor:	0.527	0.605	0.645	0.840	0.841	1.611	2.183	1.957	
Professional Energy Audits									
Performed in Past Year	433	13,370	1.444	0.664	0.551	0.111	Q	0.109	19.19
Measures Taken	187	6,590	.774	.297	.328	.083	Q	Q	24.62
Measures Not Taken	247	6,779	.669	.368	.223	.029	Q	.044	22.81
Not Performed	3,341	37,910	3.706	1.573	1.675	.243	0.030	.185	9.16

^a For consumption of electricity in buildings with electric heat, air-conditioning, or both, see Tables 20-22.

^b Data may not sum to totals due to use of more than one fuel in a building, for heating or for water heating, etc.

^{nc} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

* Numbers of fewer than 500 billion Btu are rounded to zero.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 9. Major Fuels: Total Expenditures, 1983

Building Characteristics	All Buildings Using Any Major Fuel		Total Expenditures (million dollars)						RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)	Major Fuel	Electricity ^a	Natural Gas	Fuel Oil	Propane	Purchased Steam	
	0.534	0.613	0.661	0.787	0.827	1.583	2.228	2.011	
All Buildings	3,774	51,280	59,242	41,554	12,284	2,369	352	2,683	10.13
Fuel Used Alone or in Combination^b									
Electricity	3,764	51,146	59,217	41,554	12,264	2,365	352	2,682	10.13
Natural Gas	2,239	36,088	43,109	28,142	12,284	1,249	26	1,408	11.97
Fuel Oil	538	10,205	12,657	8,027	1,612	2,369	104	544	13.54
Propane	250	2,721	3,190	2,152	302	293	352	Q	26.16
Purchased Steam	59	4,538	7,612	4,264	596	Q	Q	2,683	24.39
Other	204	3,320	3,604	2,503	488	134	60	419	20.34
Year Constructed									
1900 or Before	279	2,884	2,149	1,209	583	200	Q	Q	21.35
1901 to 1920	369	5,228	3,918	2,409	954	318	Q	217	15.45
1921 to 1945	685	8,269	9,355	5,874	2,183	645	31	621	15.63
1946 to 1960	883	9,434	10,406	6,909	2,309	543	89	556	15.11
1961 to 1970	700	9,873	12,713	9,041	2,491	Q	41	795	16.46
1971 to 1973	207	3,411	4,742	3,736	761	97	Q	93	17.81
1974 to 1979	517	6,550	10,004	7,472	2,114	172	51	194	16.31
1980 to 1983	135	5,631	5,954	4,904	889	48	Q	98	29.28
Square Footage Category									
5,000 or Less	2,112	4,680	10,016	6,821	2,669	347	164	15	13.46
5,001 to 10,000	705	5,083	6,323	4,168	1,692	362	62	Q	18.89
10,001 to 25,000	560	8,795	8,872	6,299	1,731	Q	71	Q	17.31
25,001 to 50,000	216	7,470	8,142	5,840	1,746	287	Q	Q	18.51
50,001 to 100,000	104	6,963	6,956	5,035	1,300	295	Q	315	16.47
100,001 to 200,000	49	6,613	6,468	4,444	1,233	229	7	554	15.17
Over 200,000	29	11,675	12,464	8,946	1,912	316	7	1,282	18.01
Number of Floors									
One	2,195	17,074	21,123	15,539	4,758	440	187	Q	17.54
Two	860	11,512	11,564	8,130	2,487	719	98	Q	15.68
Three or More	720	22,694	26,555	17,885	5,039	1,209	67	2,355	10.58
Principal Activity Within Building									
Assembly	452	5,475	4,147	2,553	1,094	193	Q	222	18.96
Educational	177	6,044	4,843	2,969	1,317	387	12	Q	20.45
Food Sales/Service	380	2,050	5,510	4,176	1,139	Q	Q	Q	18.92
Health Care	61	2,277	4,385	2,487	1,115	167	Q	613	20.57
Lodging	106	2,241	3,932	2,714	875	116	Q	202	22.53
Mercantile/Services	1,055	10,347	10,338	7,836	1,969	335	65	Q	16.65
Office	575	8,444	13,097	9,866	2,031	Q	Q	669	16.69
Residential	235	2,442	1,856	970	595	233	Q	Q	23.64
Warehouse	387	6,700	5,530	3,786	1,358	208	28	Q	20.61
Other	167	2,738	3,377	2,564	405	96	Q	Q	18.96
Vacant	180	2,522	2,226	1,634	384	61	Q	Q	27.08
Census Region									
Northeast	653	11,413	13,580	9,031	2,143	1,371	Q	1,004	15.11
North Central	1,157	15,718	18,991	12,110	5,542	209	67	1,063	14.16
South	1,415	16,683	19,218	15,121	2,833	710	224	329	19.67
West	549	7,467	7,454	5,292	1,767	Q	Q	287	25.27
Climate Zones:									
45 Year Average									
Annual Heating (HDD) and Cooling Degree-Days (CDD)									
Below 2,000 CDD and Above									
7,000 HDD	399	5,520	6,711	4,287	Q	259	Q	Q	38.95
Below 2,000 CDD and									
5,500-7,000 HDD	1,115	16,729	19,187	11,984	5,201	680	Q	1,247	16.00
Below 2,000 CDD and									
4,000-5,499 HDD	971	13,541	14,240	10,259	2,126	1,080	99	676	23.73
Below 2,000 CDD and Below									
4,000 HDD	638	7,281	8,302	6,091	1,941	Q	Q	Q	35.94

See footnotes at end of table.

Table 9. Major Fuels: Total Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Any Major Fuel		Total Expenditures (million dollars)						RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)	Major Fuel	Electricity ^a	Natural Gas	Fuel Oil	Propane	Purchased Steam	
RSE Column Factor:	0.534	0.613	0.661	0.787	0.827	1.583	2.228	2.011	
Climate Zones:									
45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)									
Above 2,000 CDD and Below 4,000 HDD									
	651	8,208	10,802	8,933	1,445	Q	Q	Q	47.76
Metropolitan Status									
Metropolitan	2,176	36,898	45,440	32,113	9,333	1,599	82	2,312	11.48
Nonmetropolitan	1,598	14,382	13,802	9,441	2,951	770	269	Q	22.37
Number of Establishments in Building									
Vacant	59	873	605	463	96	Q	*	Q	32.60
Single Establishment	3,077	34,858	42,508	28,748	9,786	1,717	296	1,960	9.55
Multiple Establishment	638	15,548	16,129	12,343	2,401	625	55	703	18.27
Government Occupancy									
Any Government Occupancy	336	10,002	11,239	7,647	2,194	Q	24	955	17.92
Federal	60	3,110	3,598	2,829	422	42	Q	299	29.94
State	100	3,353	4,156	2,688	858	105	Q	497	21.78
Local	212	4,839	5,125	3,300	1,189	Q	11	306	18.70
Number of Employees									
Fewer than 10	2,475	14,221	12,669	8,249	3,345	744	142	Q	13.41
10 to 19	535	6,165	5,910	4,025	1,362	335	55	Q	15.37
20 to 49	502	10,082	12,472	8,617	2,824	569	77	386	15.15
50 to 99	141	5,247	6,652	4,889	1,301	172	Q	266	15.85
100 or More	121	15,564	21,538	15,774	3,452	549	52	1,710	15.28
Hours of Operation During a Typical Week									
39 or Fewer Hours	616	4,528	3,032	1,887	833	213	36	Q	23.82
40 to 48 Hours	861	9,429	7,812	5,202	1,789	Q	86	251	16.72
49 to 60 Hours	890	11,673	11,344	7,929	2,276	583	35	Q	15.78
61 to 84 Hours	653	11,057	13,420	9,883	2,620	421	80	416	13.11
85 to 167 Hours	461	7,398	10,972	8,095	2,089	277	79	433	14.53
168 Hours	293	7,196	12,662	8,557	2,677	392	37	999	14.47
Percentage of Exterior Glass									
Less than 25 Percent	2,520	28,000	29,453	21,026	6,220	956	238	Q	12.20
25 to 49 Percent	946	15,171	18,658	12,623	4,012	1,003	83	938	12.89
50 to 74 Percent	247	5,782	7,954	5,558	1,465	338	18	575	15.77
75 Percent or More	61	2,327	3,177	2,348	587	Q	Q	157	24.85
Insulation/Special Glass									
Any Present	2,659	40,280	48,829	34,810	9,990	1,622	305	2,102	11.35
Special Glass	1,465	27,553	33,881	24,196	7,127	895	177	1,487	13.11
Roof/Ceiling Insulation	1,858	29,007	35,376	25,389	6,981	1,133	201	1,671	12.15
Exterior Wall Insulation	1,332	19,259	23,985	17,964	4,492	585	183	760	13.59
None Present	1,115	10,999	10,413	6,744	2,294	747	47	581	11.96
Passive Solar									
In Use	34	749	925	668	199	Q	Q	Q	27.13
Not in Use	3,506	48,873	57,330	40,161	11,868	2,317	337	2,647	10.20
Computerized Energy Management System									
In Use	105	6,426	8,951	6,667	1,288	200	Q	777	15.75
Not in Use	3,451	43,403	49,587	34,343	10,866	2,139	333	1,906	11.23

See footnotes at end of table.

Table 9. Major Fuels: Total Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Any Major Fuel		Total Expenditures (million dollars)						RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)	Major Fuel	Electricity ^a	Natural Gas	Fuel Oil	Propane	Purchased Steam	
RSE Column Factor:	0.534	0.613	0.661	0.787	0.827	1.583	2.228	2.011	
Professional Energy Audits									
Performed in Past Year	433	13,370	16,912	12,098	3,006	708	Q	1,031	19.41
Measures Taken	187	6,590	8,581	5,637	1,763	523	Q	Q	25.07
Measures Not Taken	247	6,779	8,331	6,461	1,243	185	Q	390	21.93
Not Performed	3,341	37,910	42,330	29,456	9,278	1,661	282	1,652	8.95

^a For expenditures of electricity in buildings with electric heat, air-conditioning, or both, see Tables 20-22.

^b Data may not sum to totals due to use of more than one fuel in a building, for heating or for water heating, etc.

^{nc} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

* Numbers of fewer than 500,000 dollars are rounded to zero.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 10. Electricity: Consumption and Expenditures, 1983

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.922	1.010	0.837	1.411	1.411	1.362	0.995	1.067	1.304	1.221	0.993	0.398	
All Buildings	3,764	51,146	13.6	2,237	656	594	44	29	41,554	11.0	0.81	18.58	5.90
Electricity Used for:^a													
Heating	1,103	15,896	14.4	.831	243	753	52	32	14,619	13.3	.92	17.60	9.77
And Air-Conditioning	914	14,200	15.5	.770	226	843	54	32	13,598	14.9	.96	17.65	10.10
And Not Air-Conditioning	189	1,696	9.0	.061	18	319	36	29	1,020	5.4	.60	16.86	19.02
Air-Conditioning	2,502	39,446	15.8	1.856	544	742	47	29	34,429	13.8	.87	18.55	5.85
And Space Heating	914	14,200	15.5	.770	226	843	54	32	13,598	14.9	.96	17.65	10.10
And Not Space Heating	1,588	25,246	15.9	1.086	318	684	43	27	20,830	13.1	.83	19.18	6.10
Water Heating	1,373	19,105	13.9	.937	275	682	49	30	16,604	12.1	.87	17.72	10.16
Cooking	883	16,968	19.2	.794	233	899	47	27	14,078	15.9	.83	17.74	8.73
Manufacturing	315	4,903	15.6	.192	56	610	39	31	3,489	11.1	.71	18.17	9.05
Fuels Used for Heating^a													
Electricity Only	758	9,254	12.2	.563	165	742	61	34	9,676	12.8	1.05	17.20	19.03
Electricity and Natural Gas													
Only	219	4,208	19.2	.175	51	799	42	30	3,008	13.7	.71	17.20	10.63
Electricity and Fuel Oil Only	50	709	14.1	.029	9	582	41	26	601	12.0	.85	20.56	22.21
Electricity and Propane Only	27	209	Q	.008	2	302	39	25	156	Q	.75	19.00	31.85
Electricity, Natural Gas													
and Fuel Oil Only	9	752	Q	Q	Q	Q	Q	Q	Q	Q	.86	23.85	52.60
Other Combinations or Fuels	2,327	33,093	14.2	1.312	385	564	40	26	25,243	10.8	.76	19.24	5.87
No Fuels Used	373	2,893	7.8	Q	Q	328	Q	60	2,217	5.9	.77	16.10	24.97
Fuels Used for Air-Conditioning^a													
Electricity Only	2,464	38,263	15.5	1.771	519	719	46	29	32,768	13.3	.86	18.50	5.05
Electricity and Natural Gas													
Only	34	784	23.2	.051	15	1,520	66	31	909	26.8	1.16	17.66	22.83
Other Combinations or Fuels	122	3,225	26.5	.183	54	1,508	57	26	3,674	30.2	1.14	20.05	12.04
No Fuels Used	1,133	8,685	7.7	.224	66	198	26	31	4,087	3.6	.47	18.25	17.68
Fuels Used for Water Heating^a													
Electricity Only	1,286	16,100	12.5	.796	233	619	49	31	13,856	10.8	.86	17.41	11.43
Electricity and Natural Gas													
Only	60	1,924	32.3	.101	30	1,694	52	28	1,795	30.1	.93	17.79	20.09
Electricity and Fuel Oil Only	15	304	20.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	34.32
Other Combinations or Fuels	1,491	27,162	18.2	1.144	335	767	42	27	21,913	14.7	.81	19.15	3.69
Don't Know/Not Ascertained	21	170	8.2	.007	2	Q	43	27	154	7.4	.91	21.34	31.43
No Fuel Used	882	5,408	6.1	.161	47	182	30	31	3,163	3.6	.58	19.70	12.93
Fuels Used for Cooking^a													
Electricity Only	722	10,594	14.7	.469	138	650	44	27	8,426	11.7	.80	17.96	7.21
Electricity and Natural Gas													
Only	136	5,490	40.3	.276	81	2,027	50	30	4,843	35.5	.88	17.53	13.14
Electricity and Propane	21	230	11.0	.007	2	352	32	29	167	8.0	.73	22.78	22.73
Other Combinations or Fuels	562	11,450	20.4	.488	143	868	43	27	9,618	17.1	.84	19.70	8.62
Don't Know/Not Ascertained	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	88.41
No Fuel Used	2,319	23,354	10.1	.995	292	429	43	31	18,482	8.0	.79	18.57	6.49
Fuels Used for Manufacturing^a													
Electricity Only	282	4,002	14.2	.149	44	529	37	29	2,731	9.7	.68	18.28	9.56
Electricity and Natural Gas													
Only	27	740	27.2	.035	10	1,269	47	35	635	23.4	.86	18.40	20.19
Other Combinations or Fuels	71	1,265	17.7	.063	19	885	50	36	1,281	17.9	1.01	20.27	14.31
No Fuels Used	3,379	45,108	13.4	1.989	583	589	44	29	36,879	10.9	.82	18.54	6.33
Fuels Used to Fire Boilers^a													
Electricity Only	14	675	47.4	.049	14	3,418	72	37	703	49.3	1.04	14.43	23.23
Other Combinations or Fuels	718	19,513	27.2	.700	205	975	36	25	13,840	19.3	.71	19.76	7.03

See footnotes at end of table.

Table 10. Electricity: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.922	1.010	0.837	1.411	1.411	1.362	0.995	1.067	1.304	1.221	0.993	0.398	
Year Constructed													
1900 or Before	279	2,884	10.3	0.051	15	185	18	14	1,209	4.3	0.42	23.47	11.77
1901 to 1920	368	5,207	14.2	.112	33	305	22	20	2,409	6.6	.46	21.46	9.96
1921 to 1945	680	8,197	12.1	.295	87	435	36	27	5,874	8.6	.72	19.89	11.42
1946 to 1960	881	9,419	10.7	.362	106	411	38	26	6,909	7.8	.73	19.09	12.76
1961 to 1970	700	9,863	14.1	.496	146	710	50	31	9,041	12.9	.92	18.21	5.85
1971 to 1973	207	3,404	16.5	.199	58	961	58	32	3,736	18.1	1.10	18.81	10.33
1974 to 1979	516	6,547	12.7	.423	124	819	65	33	7,472	14.5	1.14	17.66	7.96
1980 to 1983	135	5,624	41.7	.298	87	2,209	53	36	4,904	36.4	.87	16.46	18.10
Square Footage Category													
5,000 or Less	2,108	4,666	2.2	.332	97	158	71	24	6,821	3.2	1.46	20.54	6.95
5,001 to 10,000	702	5,060	7.2	.217	63	309	43	25	4,168	5.9	.82	19.24	12.36
10,001 to 25,000	558	8,769	15.7	.321	94	575	37	27	6,299	11.3	.72	19.64	7.90
25,001 to 50,000	216	7,470	34.6	.305	89	1,414	41	33	5,840	27.1	.78	19.15	7.50
50,001 to 100,000	103	6,956	67.2	.291	85	2,817	42	39	5,035	48.7	.72	17.27	8.95
100,001 to 200,000	49	6,611	134.1	.251	73	5,085	38	31	4,444	90.1	.67	17.72	6.91
Over 200,000	28	11,613	408.2	.520	152	18,289	45	29	8,946	314.5	.77	17.19	10.65
Number of Floors													
One	2,191	17,054	7.8	.847	248	387	50	33	15,539	7.1	.91	18.35	9.83
Two	856	11,488	13.4	.435	128	508	38	27	8,130	9.5	.71	18.68	9.12
Three or More	718	22,605	31.5	.955	280	1,330	42	27	17,885	24.9	.79	18.73	6.83
Principal Activity Within Building													
Assembly	449	5,449	12.1	.121	35	269	22	20	2,553	5.7	.47	21.14	12.60
Educational	177	6,038	34.1	.155	45	874	26	25	2,969	16.8	.49	19.21	15.65
Food Sales/Service	379	2,048	5.4	.222	65	586	108	39	4,176	11.0	2.04	18.81	7.67
Health Care	61	2,277	37.6	.147	43	2,432	65	27	2,487	41.1	1.09	16.90	13.82
Lodging	106	2,241	21.1	.151	44	1,419	67	64	2,714	25.5	1.21	17.97	14.57
Mercantile/Services	1,053	10,342	9.8	.434	127	412	42	31	7,836	7.4	.76	18.07	12.54
Office	573	8,414	14.7	.521	153	909	62	20	9,866	17.2	1.17	18.94	5.88
Residential	235	2,439	10.4	.042	12	180	17	31	970	4.1	.40	22.95	13.53
Warehouse	387	6,700	17.3	.208	61	539	31	39	3,786	9.8	.57	18.17	8.56
Other	167	2,738	16.4	.151	44	904	55	42	2,564	15.4	.94	17.01	23.54
Vacant	177	2,460	13.9	.086	25	483	35	58	1,634	9.2	.66	19.08	14.42
Census Region													
Northeast	651	11,341	17.4	.345	101	530	30	21	9,031	13.9	.80	26.15	8.21
North Central	1,153	15,685	13.6	.697	204	605	44	31	12,110	10.5	.77	17.37	7.42
South	1,412	16,654	11.8	.849	249	601	51	32	15,121	10.7	.91	17.81	10.23
West	549	7,467	13.6	.346	101	630	46	29	5,292	9.6	.71	15.30	21.21
Climate Zones:													
45 Year Average													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above													
7,000 HDD	398	5,503	13.8	.274	80	690	50	36	4,287	10.8	.78	15.62	25.85
Below 2,000 CDD and													
5,500-7,000 HDD	1,114	16,667	15.0	.643	189	577	39	26	11,984	10.8	.72	18.63	7.71
Below 2,000 CDD and													
4,000-5,499 HDD	963	13,500	14.0	.499	146	518	37	26	10,259	10.6	.76	20.56	16.04
Below 2,000 CDD and Below													
4,000 HDD	638	7,268	11.4	.328	96	513	45	28	6,091	9.5	.84	18.60	15.75
Above 2,000 CDD and Below													
4,000 HDD	651	8,208	12.6	.493	144	757	60	34	8,933	13.7	1.09	18.13	18.19

See footnotes at end of table.

Table 10. Electricity: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.922	1.010	0.837	1.411	1.411	1.362	0.995	1.067	1.304	1.221	0.993	0.398	
Metropolitan Status													
Metropolitan	2,175	36,818	16.9	1,686	494	775	46	29	32,113	14.8	0.87	19.05	5.71
Nonmetropolitan	1,589	14,328	9.0	.551	162	347	38	29	9,441	5.9	.66	17.13	14.25
Number of Establishments in Building													
Vacant	57	857	15.0	.023	7	394	26	0	463	8.1	.54	20.55	26.17
Single Establishment	3,071	34,768	11.3	1,558	457	507	45	31	28,748	9.4	.83	18.45	5.50
Multiple Establishment	636	15,521	24.4	.656	192	1,032	42	24	12,343	19.4	.80	18.80	10.39
Government Occupancy													
Any Government Occupancy	336	9,998	29.7	.445	131	1,324	45	26	7,647	22.7	.76	17.17	11.65
Federal	60	3,110	52.2	.170	50	2,858	55	26	2,829	47.5	.91	16.62	27.14
State	100	3,353	33.7	.153	45	1,535	46	24	2,688	27.0	.80	17.57	14.91
Local	212	4,835	22.8	.183	54	863	38	25	3,300	15.6	.68	18.05	9.80
Number of Employees													
Fewer than 10	2,466	14,107	5.7	.406	119	165	29	44	8,249	3.3	.58	20.32	6.61
10 to 19	535	6,162	11.5	.189	55	354	31	28	4,025	7.5	.65	21.26	9.76
20 to 49	502	10,077	20.1	.458	134	913	45	31	8,617	17.2	.86	18.82	9.86
50 to 99	141	5,247	37.2	.283	83	2,003	54	32	4,889	34.6	.93	17.30	11.58
100 or More	121	15,554	128.7	.901	264	7,460	58	24	15,774	130.6	1.01	17.50	3.06
Hours of Operation During a Typical Week													
39 or Fewer Hours	614	4,460	7.3	.094	28	153	21	24	1,887	3.1	.42	20.05	13.74
40 to 48 Hours	857	9,390	11.0	.271	79	316	29	24	5,202	6.1	.55	19.21	3.09
49 to 60 Hours	887	11,665	13.2	.402	118	454	34	24	7,929	8.9	.68	19.70	3.19
61 to 84 Hours	653	11,053	16.9	.554	162	848	50	31	9,883	15.1	.89	17.85	14.21
85 to 167 Hours	461	7,391	16.0	.438	128	950	59	34	8,095	17.6	1.10	18.49	3.08
168 Hours	293	7,186	24.5	.478	140	1,633	67	33	8,557	29.2	1.19	17.90	12.76
Percentage of Exterior Glass													
Less than 25 Percent	2,517	27,964	11.1	1.149	337	456	41	32	21,026	8.4	.75	18.31	7.38
25 to 49 Percent	944	15,153	16.0	.668	196	707	44	25	12,623	13.4	.83	18.90	3.89
50 to 74 Percent	244	5,717	23.4	.297	87	1,215	52	29	5,558	22.8	.97	18.74	10.90
75 Percent or More	59	2,312	38.9	.124	36	2,086	54	26	2,348	39.5	1.02	18.93	3.64
Insulation/Special Glass													
Any Present	2,656	40,192	15.1	1,928	565	726	48	30	34,810	13.1	.87	18.05	6.24
Special Glass	1,463	27,468	18.8	1,368	401	935	50	29	24,196	16.5	.88	17.69	7.67
Roof/Ceiling Insulation	1,856	28,967	15.6	1,428	419	770	49	31	25,389	13.7	.88	17.77	6.09
Exterior Wall Insulation	1,329	19,232	14.5	1,028	301	774	53	30	17,964	13.5	.93	17.47	3.43
None Present	1,108	10,954	9.9	.309	90	279	28	24	6,744	6.1	.62	21.86	6.56

See footnotes at end of table.

Table 10. Electricity: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.922	1.010	0.837	1.411	1.411	1.362	0.995	1.067	1.304	1.221	0.993	0.398	
Computerized Energy Management System													
In Use	105	6,426	61.4	0.390	114	3,730	61	30	6,667	63.8	1.04	17.09	9.86
Not in Use	3,442	43,276	12.6	1.820	534	529	42	28	34,343	10.0	.79	18.86	6.52
Professional Energy Audits													
Performed in Past Year	433	13,366	30.8	.664	195	1,533	50	27	12,098	27.9	.91	18.21	9.82
Measures Taken	187	6,587	35.3	.297	87	1,588	45	24	5,637	30.2	.86	19.00	10.45
Measures Not Taken	247	6,779	27.5	.368	108	1,491	54	31	6,461	26.2	.95	17.58	15.09
Not Performed	3,331	37,780	11.3	1.573	461	472	42	30	29,456	8.8	.78	18.73	5.64

^a Fuel consumption and expenditures data were not collected separately by end use. For example, although it may be known that electricity was used for heating in certain buildings, the electricity consumption shown for the category **Electricity Used for Heating** includes the electricity used in those buildings for all purposes, such as lighting, water heating, etc. For consumption of and expenditures for electricity in buildings with electric heat, air-conditioning, or both, see Tables 20-22.

^{nc} No cases in sample.

^o Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 11. Natural Gas: Consumption and Expenditures, 1983

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Flow Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.009	1.091	1.015	1.305	1.305	1.294	1.105	1.202	1.272	1.277	1.097	0.224	
All Buildings	2,239	36,088	16.1	2,227	2,160	994	62	42	12,284	5.5	0.34	5.52	6.39
Natural Gas Used for:^a													
Heating	1,951	28,463	14.6	1,992	1,932	1,021	70	48	11,003	5.6	.39	5.52	6.54
And Air-Conditioning	137	2,633	19.2	.218	.211	1,589	83	47	1,221	8.9	.46	5.61	14.04
And Not Air-Conditioning	1,814	25,830	14.2	1,774	1,721	978	69	48	9,782	5.4	.38	5.51	6.76
Air-Conditioning	139	2,710	19.6	.233	.226	1,684	86	48	1,288	9.3	.48	5.52	13.05
Water Heating	1,359	23,135	17.0	1,658	1,608	1,220	72	47	9,201	6.8	.40	5.55	6.64
Cooking	632	15,688	24.8	.952	.924	1,506	61	39	5,310	8.4	.34	5.58	8.31
Manufacturing	80	1,517	18.9	.211	.205	2,639	139	90	1,134	14.2	.75	5.37	12.86
Electricity Generation	32	1,194	37.1	.077	.074	2,384	64	33	386	12.0	.32	5.02	18.81
Fuels Used for Heating^a													
Natural Gas Only	1,626	21,384	13.2	1,614	1,566	993	75	51	8,916	5.5	.42	5.52	6.21
Natural Gas and Electricity Only	219	4,208	19.2	.220	.213	1,003	52	38	1,210	5.5	.29	5.51	11.56
Natural Gas and Fuel Oil Only	54	1,357	25.0	.106	.103	1,963	78	50	599	11.0	.44	5.63	25.13
Other Combinations or Fuels	277	8,499	30.7	.249	.241	897	29	19	1,322	4.8	.16	5.32	14.27
No Fuels Used	62	631	10.1	Q	Q	595	59	65	Q	Q	Q	6.30	29.12
Fuels Used for Air-Conditioning^a													
Natural Gas Only	104	1,779	17.0	.115	.112	1,107	65	41	639	6.1	.36	5.53	12.61
Natural Gas and Electricity Only	34	784	23.2	.093	.090	2,751	119	56	527	15.6	.67	5.66	27.64
Other Combinations or Fuels	1,508	28,235	18.7	1,602	1,554	1,062	57	36	8,872	5.9	.31	5.54	6.64
No Fuels Used	579	5,116	8.8	.369	.358	637	72	86	2,016	3.5	.39	5.46	9.78
Fuels Used for Water Heating^a													
Natural Gas Only	1,285	20,057	15.6	1,437	1,394	1,118	72	49	7,997	6.2	.40	5.57	7.05
Natural Gas and Electricity Only	60	1,924	32.3	.118	.114	1,977	61	32	636	10.7	.33	5.41	14.16
Natural Gas and Fuel Oil Only	12	752	61.7	.078	.076	Q	104	64	439	36.1	.58	5.61	31.49
Other Combinations or Fuels	556	11,289	20.3	.499	.484	897	44	30	2,707	4.9	.24	5.43	14.37
Don't Know/Not Ascertained	13	143	10.7	.008	.008	Q	56	38	45	Q	.32	5.59	32.38
No Fuels Used	313	1,923	6.1	.087	.084	277	45	41	459	1.5	.24	5.29	11.57
Fuels Used for Cooking^a													
Natural Gas Only	491	9,445	19.2	.581	.564	1,184	62	43	3,297	6.7	.35	5.67	8.91
Natural Gas and Electricity Only	136	5,490	40.3	.325	.315	2,384	59	35	1,786	13.1	.33	5.49	13.49
Other Combinations or Fuels	370	7,160	19.4	.363	.352	982	51	35	1,957	5.3	.27	5.39	8.74
No Fuels Used	1,241	13,986	11.3	.957	.928	771	68	48	5,243	4.2	.37	5.48	8.69
Fuels Used for Manufacturing^a													
Natural Gas Only	52	688	13.3	.112	.108	2,149	162	92	633	12.2	.92	5.67	17.34
Natural Gas and Electricity Only	27	740	27.2	.090	.088	3,325	122	91	454	16.7	.61	5.02	19.35
Other Combinations or Fuels	179	3,005	16.8	.136	.132	759	45	40	756	4.2	.25	5.56	15.61
No Fuels Used	1,980	31,641	16.0	1,888	1,831	953	60	40	10,436	5.3	.33	5.53	6.65
Fuels Used to Fire Boilers^a													
Natural Gas Only	451	11,427	25.3	.840	.815	1,864	74	52	4,689	10.4	.41	5.58	7.12
Natural Gas and Fuel Oil Only	31	2,344	76.2	.187	.182	6,086	80	46	983	31.9	.42	5.25	14.61
Natural Gas and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	59.93
Other Combinations or Fuels	92	3,110	34.0	.069	.067	755	22	15	417	4.6	.13	6.03	15.78

See footnotes at end of table.

Table 11. Natural Gas: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.009	1.091	1.015	1.305	1.305	1.294	1.105	1.202	1.272	1.277	1.097	0.224	
Year Constructed													
1900 or Before	193	2,204	11.4	0.097	0.094	504	44	41	583	3.0	0.26	5.99	13.06
1901 to 1920	254	3,814	15.0	.170	.165	668	45	39	954	3.8	.25	5.62	12.01
1921 to 1945	462	5,857	12.7	.384	.373	831	66	47	2,183	4.7	.37	5.68	9.24
1946 to 1960	525	7,148	13.6	.424	.411	808	59	40	2,309	4.4	.32	5.45	9.59
1961 to 1970	398	7,257	18.3	.464	.450	1,168	64	40	2,491	6.3	.34	5.37	8.22
1971 to 1973	103	2,245	21.7	.136	.132	1,315	61	36	761	7.4	.34	5.59	11.03
1974 to 1979	229	3,882	16.9	.379	.368	1,853	98	49	2,114	9.2	.54	5.58	13.10
1980 to 1983	74	3,681	49.5	.172	.167	2,316	47	36	889	12.0	.24	5.16	20.54
Square Footage Category													
5,000 or Less	1,112	2,644	2.4	.474	.460	427	179	60	2,669	2.4	1.01	5.63	10.07
5,001 to 10,000	473	3,447	7.3	.285	.277	604	83	48	1,692	3.6	.49	5.93	9.88
10,001 to 25,000	372	5,847	15.7	.301	.292	809	52	35	1,731	4.6	.30	5.75	7.11
25,001 to 50,000	152	5,281	34.8	.317	.308	2,090	60	46	1,746	11.5	.33	5.51	8.37
50,001 to 100,000	71	4,823	67.8	.239	.232	3,361	50	46	1,300	18.3	.27	5.44	9.31
100,001 to 200,000	38	5,091	134.1	.237	.230	6,252	47	40	1,233	32.5	.24	5.20	6.30
Over 200,000	21	8,956	419.0	.372	.361	17,407	42	29	1,912	89.5	.21	5.14	11.30
Number of Floors													
One	1,133	11,054	9.8	.852	.826	752	77	53	4,758	4.2	.43	5.59	10.19
Two	564	8,087	14.3	.453	.440	803	56	40	2,487	4.4	.31	5.49	7.33
Three or More	542	16,948	31.3	.921	.894	1,700	54	35	5,039	9.3	.30	5.47	6.91
Principal Activity Within Building													
Assembly	267	4,022	15.1	.197	.191	736	49	51	1,094	4.1	.27	5.56	14.29
Educational	115	4,448	38.6	.246	.238	2,134	55	55	1,317	11.4	.30	5.36	10.86
Food Sales/Service	227	1,443	6.4	.193	.187	850	134	48	1,139	5.0	.79	5.91	10.31
Health Care	37	2,049	54.9	.219	.212	5,856	107	45	1,115	29.9	.54	5.10	16.63
Lodging	65	1,722	26.5	.171	.165	2,620	99	87	875	13.4	.51	5.13	16.24
Mercantile/Services	649	7,951	12.3	.337	.327	520	42	32	1,969	3.0	.25	5.84	9.73
Office	342	5,581	16.3	.371	.360	1,084	66	23	2,031	5.9	.36	5.48	12.01
Residential	177	1,977	11.2	.095	.092	536	48	91	595	3.4	.30	6.26	13.96
Warehouse	191	4,354	22.8	.248	.241	1,297	57	73	1,358	7.1	.31	5.47	12.73
Other	74	1,267	17.2	.078	.076	1,062	62	37	405	5.5	.32	5.19	17.16
Vacant	94	1,275	13.5	.073	.070	769	57	77	384	4.1	.30	5.28	19.66
Census Region													
Northeast	427	8,071	18.9	.314	.304	735	39	26	2,143	5.0	.27	6.83	8.46
North Central	906	13,503	14.9	1.044	1.013	1,152	77	55	5,542	6.1	.41	5.31	7.77
South	581	9,366	16.1	.550	.533	945	59	41	2,833	4.9	.30	5.15	16.07
West	324	5,148	15.9	.319	.309	984	62	36	1,767	5.5	.34	5.54	17.53
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD	245	3,901	15.9	Q	Q	1,187	75	52	Q	6.4	.40	5.40	24.92
Below 2,000 CDD and 5,500-7,000 HDD	821	13,343	16.3	.948	.919	1,155	71	48	5,201	6.3	.39	5.49	6.77
Below 2,000 CDD and 4,000-5,499 HDD	583	9,135	15.7	.358	.347	613	39	30	2,126	3.6	.23	5.94	16.71
Below 2,000 CDD and Below 4,000 HDD	370	5,030	13.6	.343	.333	927	68	37	1,941	5.2	.39	5.66	17.30
Above 2,000 CDD and Below 4,000 HDD	219	4,680	21.3	.287	.278	1,307	61	41	1,445	6.6	.31	5.04	24.27

See footnotes at end of table.

Table 11. Natural Gas: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.009	1.091	1.015	1.305	1.305	1.294	1.105	1.202	1.272	1.277	1.097	0.224	
Metropolitan Status													
Metropolitan	1,487	27,716	18.6	1.660	1.610	1,117	60	38	9,333	6.3	0.34	5.62	8.70
Nonmetropolitan	752	8,373	11.1	.566	.549	753	68	57	2,951	3.9	.35	5.21	16.59
Number of Establishments in Building													
Vacant	22	400	18.4	.018	.018	Q	45	Q	96	4.4	.24	5.30	38.17
Single Establishment	1,791	23,998	13.4	1.793	1.740	1,001	75	52	9,786	5.5	.41	5.46	6.46
Multiple Establishment	426	11,691	27.4	.415	.402	973	35	22	2,401	5.6	.21	5.79	8.79
Government Occupancy													
Any Government Occupancy	183	6,845	37.4	.417	.404	2,280	61	35	2,194	12.0	.32	5.26	12.17
Federal	26	Q	Q	.077	.075	2,952	32	17	422	16.2	.17	5.48	24.49
State	61	2,029	33.0	.169	.164	2,746	83	38	858	14.0	.42	5.09	18.57
Local	118	3,274	27.7	.225	.218	1,898	69	45	1,189	10.0	.36	5.29	10.40
Number of Employees													
Fewer than 10	1,372	8,669	6.3	.602	.584	439	69	111	3,345	2.4	.39	5.56	11.43
10 to 19	322	3,811	11.8	.242	.234	750	63	58	1,362	4.2	.36	5.64	9.79
20 to 49	353	7,493	21.2	.494	.479	1,399	66	47	2,824	8.0	.38	5.71	8.96
50 to 99	102	3,817	37.3	.234	.227	2,285	61	37	1,301	12.7	.34	5.56	8.76
100 or More	89	12,299	137.4	.655	.635	7,317	53	24	3,452	38.6	.28	5.27	10.20
Hours of Operation During a Typical Week													
39 or Fewer Hours	291	2,532	8.7	.154	.150	530	61	70	833	2.9	.33	5.40	12.57
40 to 48 Hours	531	6,425	12.1	.307	.298	578	48	43	1,789	3.4	.28	5.83	9.29
49 to 60 Hours	552	7,990	14.5	.411	.398	744	51	37	2,276	4.1	.28	5.54	10.52
61 to 84 Hours	424	8,409	19.8	.458	.444	1,080	54	34	2,620	6.2	.31	5.73	9.13
85 to 167 Hours	281	5,088	18.1	.377	.366	1,340	74	48	2,089	7.4	.41	5.54	12.34
168 Hours	161	5,645	35.2	.520	.505	3,240	92	44	2,677	16.7	.47	5.15	12.32
Percentage of Exterior Glass													
Less than 25 Percent	1,442	18,864	13.1	1.124	1.090	780	60	47	6,220	4.3	.33	5.53	7.37
25 to 49 Percent	598	11,500	19.2	.732	.710	1,224	64	37	4,012	6.7	.35	5.48	8.14
50 to 74 Percent	161	4,052	25.2	.274	.266	1,703	68	41	1,465	9.1	.36	5.35	10.32
75 Percent or More	38	1,673	43.8	.096	.093	2,523	58	30	587	15.4	.35	6.09	22.36
Insulation/Special Glass													
Any Present	1,621	28,709	17.7	1.827	1.772	1,127	64	41	9,990	6.2	.35	5.47	6.37
Special Glass	942	20,230	21.5	1.306	1.267	1,387	65	39	7,127	7.6	.35	5.46	7.32
Roof/Ceiling Insulation	1,097	20,373	18.6	1.300	1.261	1,186	64	40	6,981	6.4	.34	5.37	7.26
Exterior Wall Insulation	783	13,277	17.0	.828	.803	1,058	62	36	4,492	5.7	.34	5.43	9.26
None Present	618	7,380	11.9	.400	.388	647	54	45	2,294	3.7	.31	5.74	8.16

See footnotes at end of table.

Table 11. Natural Gas: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.009	1.091	1.015	1.305	1.305	1.294	1.105	1.202	1.272	1.277	1.097	0.224	
Computerized Energy Management System													
In Use	70	4,692	67.3	0.250	0.242	3,587	53	26	1,288	18.5	0.27	5.15	10.12
Not in Use	2,134	31,152	14.6	1.955	1.896	916	63	45	10,866	5.1	.35	5.56	6.75
Professional Energy Audits													
Performed in Past Year	284	10,145	35.7	.551	.535	1,942	54	33	3,006	10.6	.30	5.45	9.36
Measures Taken	131	5,048	38.7	.328	.318	2,513	65	36	1,763	13.5	.35	5.37	13.00
Measures Not Taken	153	5,097	33.2	.223	.217	1,456	44	30	1,243	8.1	.24	5.57	11.52
Not Performed	1,955	25,944	13.3	1.675	1.625	857	65	45	9,278	4.7	.36	5.54	6.52

^a Fuel consumption and expenditures were not collected separately by end use. For example, although it is known that natural gas was used for heating in certain buildings, the natural gas consumption shown for the category **Natural Gas Used for Heating** includes the natural gas used in those buildings for all purposes, such as water heating, etc.

^{nc} No cases in sample.

^o Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 12. Fuel Oil: Consumption and Expenditures, 1983

Building Characteristics	All Buildings Using Fuel Oil		Square Feet per Building (thousand square feet)	Total Amount Consumed (quad-ril-lion Btu)	Total Amount Consumed (mil-lion gal-lons)	Energy Consumed per Building (mil-lion Btu)	Energy Consumed per Square Foot (thou-sand Btu)	Energy Consumed per Em-ploy-ee (mil-lion Btu)	Total Expen-ditures (mil-lion dol-lars)	Expen-di-tures per Build-ing (thou-sand dol-lars)	Expen-di-tures per Square Foot (dol-lars)	Expen-di-tures per Mil-lion Btu (dol-lars)	RSE Row Factor
	Number of Build-ings (thou-sands)	Square Feet (mil-lions)											
RSE Column Factor:	0.831	0.783	0.855	1.274	1.271	1.485	1.235	1.709	1.234	1.408	1.182	0.173	
All Buildings	538	10,205	19.0	0.354	2,526	659	35	22	2,369	4.4	0.23	6.69	10.80
Fuel Oil Used for:^a													
Heating	491	7,565	15.4	.311	2,219	634	41	28	2,080	4.2	.27	6.69	10.29
And Air-Conditioning	4	329	81.4	.020	136	Q	59	23	111	Q	.34	5.67	27.22
And Not Air-Conditioning	487	7,235	14.9	.292	2,083	599	40	28	1,969	4.0	.27	6.76	11.01
Air-Conditioning	4	360	87.6	.021	149	Q	60	23	120	Q	.33	5.59	27.24
Water Heating	132	3,412	25.8	.174	1,235	1,314	51	33	1,124	8.5	.33	6.46	11.22
Cooking	Q	260	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	48.25
Manufacturing	13	Q	23.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	67.78
Electricity Generation	17	2,384	137.3	Q	Q	2,777	Q	Q	Q	17.6	Q	6.36	38.34
Fuels Used for Heating^a													
Fuel Oil Only	342	4,265	12.5	.222	1,578	647	52	37	1,471	4.3	.34	6.64	10.79
Fuel Oil and Electricity Only	50	709	14.1	.036	261	721	51	Q	255	5.1	.36	7.02	31.80
Fuel Oil and Natural Gas Only	54	1,357	25.0	.036	256	662	26	17	237	4.4	.17	6.60	24.99
Other Combinations or Fuels	85	3,808	44.8	Q	Q	664	Q	Q	Q	Q	Q	6.67	32.85
Don't Know/Not Ascertained	Q	Q	Q	*	*	777	1	6	*	5.4	*	6.94	92.64
No Fuels Used	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	99.24
Fuels Used for Air-Conditioning^a													
Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	39.33
Other Combinations or Fuels	329	8,414	25.6	.270	1,920	820	32	18	1,778	5.4	.21	6.60	12.43
No Fuels Used	205	1,638	8.0	.074	532	360	45	50	529	2.6	.32	7.16	13.43
Fuels Used for Water Heating^a													
Fuel Oil Only	101	2,006	19.8	.120	850	1,182	60	44	779	7.7	.39	6.51	13.64
Fuel Oil and Electricity Only	15	304	20.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	39.00
Fuel Oil and Natural Gas Only	12	752	61.7	.033	233	Q	44	27	201	Q	.27	6.11	31.45
Other Combinations or Fuels	308	6,407	20.8	.160	1,146	518	25	14	1,107	3.6	.17	6.93	17.78
No Fuels Used	97	681	7.0	Q	Q	Q	Q	Q	150	1.5	.22	6.48	35.55
Fuels Used to Fire Boilers^a													
Fuel Oil Only	160	3,831	24.0	.197	1,397	1,231	51	36	1,287	8.1	.34	6.54	11.95
Fuel Oil and Natural Gas Only	19	1,314	70.1	.028	201	1,504	21	Q	180	9.6	.14	6.39	33.47
Other Combinations or Fuels	24	1,420	58.8	.018	133	765	13	9	123	5.1	.09	6.66	28.33
Year Constructed													
1900 or Before	70	685	9.8	.028	199	397	41	Q	200	2.9	.29	7.22	22.28
1901 to 1920	69	1,174	17.0	.048	342	697	41	52	318	4.6	.27	6.60	15.57
1921 to 1945	111	1,843	15.6	.094	675	849	51	36	645	5.8	.35	6.83	21.32
1946 to 1960	147	2,668	18.2	.079	571	542	30	20	543	3.7	.20	6.83	17.00
1961 to 1970	74	1,475	19.9	Q	Q	Q	Q	Q	Q	Q	Q	6.75	36.07
1971 to 1973	25	525	21.0	.015	105	Q	28	11	97	Q	.18	6.64	30.21
1974 to 1979	36	940	26.2	.031	213	Q	33	Q	172	4.8	.18	5.61	33.20
1980 to 1983	6	896	158.0	.008	55	Q	Q	Q	48	Q	Q	6.10	45.64
Square Footage Category													
5,000 or Less	263	628	2.4	.046	332	175	73	24	347	1.3	.55	7.53	16.01
5,001 to 10,000	105	730	7.0	.049	355	470	67	43	362	3.5	.50	7.35	23.03
10,001 to 25,000	101	1,489	14.7	Q	Q	Q	Q	Q	Q	Q	Q	7.18	27.69
25,001 to 50,000	32	1,135	35.3	.042	303	1,318	37	33	287	8.9	.25	6.76	15.52
50,001 to 100,000	17	1,180	67.7	.049	346	2,833	42	42	295	16.9	.25	5.98	18.50
100,001 to 200,000	10	1,374	137.8	.038	268	3,774	27	22	229	23.0	.17	6.09	14.95
Over 200,000	9	3,669	392.4	.055	387	5,933	15	8	316	33.8	.09	5.71	22.75

See footnotes at end of table.

Table 12. Fuel Oil: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.831	0.783	0.855	1.274	1.271	1.485	1.235	1.709	1.234	1.408	1.182	0.173	
Number of Floors													
One	219	1,909	8.7	0.062	444	281	32	24	440	2.0	0.23	7.14	16.41
Two	146	2,324	15.9	.105	752	717	Q	Q	719	4.9	.31	6.86	29.04
Three or More	172	5,973	34.7	.188	1,330	1,089	31	18	1,209	7.0	.20	6.44	9.94
Principal Activity Within Building													
Assembly	86	759	8.8	.025	179	287	33	Q	193	2.2	.25	7.76	18.40
Educational	31	1,431	46.1	.061	439	1,976	43	56	387	12.5	.27	6.31	17.60
Food Sales/Service	36	283	7.8	Q	Q	241	31	Q	Q	1.8	.24	7.62	25.75
Health Care	11	1,221	109.2	.029	205	Q	24	11	167	15.0	.14	5.75	27.17
Lodging	13	522	40.1	.018	129	Q	35	Q	116	Q	.22	6.28	40.63
Mercantile/Services	163	1,515	9.3	.045	324	277	30	Q	335	2.1	.22	7.42	18.26
Office	68	1,610	23.5	Q	Q	1,110	47	Q	Q	Q	.31	6.66	32.44
Residential	48	749	15.5	.035	249	733	47	129	233	4.8	.31	6.60	26.24
Warehouse	45	1,116	24.6	.033	231	Q	29	39	208	4.6	.19	6.38	33.37
Other	20	647	32.2	.014	99	Q	21	Q	96	Q	.15	7.02	25.27
Vacant	Q	353	Q	.009	64	Q	26	63	61	Q	.17	6.82	35.18
Census Region													
Northeast	227	4,789	21.1	.206	1,470	908	43	29	1,371	6.0	.29	6.64	9.98
North Central	102	1,862	18.3	.030	214	292	16	14	209	2.1	.11	7.01	22.58
South	172	2,934	17.1	.107	764	624	37	17	710	4.1	.24	6.62	19.90
West	37	621	Q	Q	Q	293	17	Q	Q	2.2	.13	7.39	38.73
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above													
7,000 HDD	89	1,033	11.6	.036	259	404	35	26	259	2.9	.25	7.16	17.25
Below 2,000 CDD and													
5,500-7,000 HDD	167	3,470	20.8	.101	724	605	29	20	680	4.1	.20	6.74	14.54
Below 2,000 CDD and													
4,000-5,499 HDD	197	3,763	19.1	.165	1,169	837	44	28	1,080	5.5	.29	6.55	15.37
Below 2,000 CDD and Below													
4,000 HDD	Q	938	Q	Q	Q	346	12	Q	Q	2.3	.08	6.75	40.98
Above 2,000 CDD and Below													
4,000 HDD	Q	1,001	Q	Q	Q	Q	Q	Q	Q	Q	Q	6.67	61.69
Metropolitan Status													
Metropolitan	275	7,326	26.7	.244	1,733	888	33	20	1,599	5.8	.22	6.56	14.65
Nonmetropolitan	263	2,880	10.9	.110	793	419	38	27	770	2.9	.27	6.98	15.39
Number of Establishments in Building													
Vacant	Q	153	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	127.97
Single Establishment	446	7,018	15.7	.255	1,820	571	36	23	1,717	3.8	.24	6.74	10.23
Multiple Establishment	87	3,035	34.9	.095	677	1,097	31	Q	625	7.2	.21	6.56	28.80
Government Occupancy													
Any Government Occupancy	55	2,175	39.9	Q	Q	1,172	Q	Q	Q	Q	Q	6.55	37.17
Federal	7	613	Q	.007	47	Q	Q	Q	42	Q	Q	6.39	50.06
State	12	938	75.2	.016	115	1,281	17	Q	105	8.4	.11	6.57	30.95
Local	40	995	24.6	Q	Q	Q	Q	Q	Q	Q	Q	6.55	42.39
Number of Employees													
Fewer than 10	362	2,499	6.9	.102	730	281	41	74	744	2.1	.30	7.32	11.77
10 to 19	75	1,214	16.1	.050	353	661	41	51	335	4.5	.28	6.74	22.11
20 to 49	56	1,687	30.0	.082	592	1,461	Q	49	569	10.1	Q	6.92	25.49
50 to 99	19	1,011	53.1	.026	184	1,349	25	20	172	9.0	.17	6.70	18.12
100 or More	25	3,795	151.0	.095	666	3,781	25	9	549	21.8	.14	5.78	19.24

See footnotes at end of table.

Table 12. Fuel Oil: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil		Square Feet per Building (thousand square feet)	Total Amount Consumed (quad-ril-lion Btu)	Total Amount Consumed (mil-lion gal-lons)	Energy Consumed per Build-ing (mil-lion Btu)	Energy Consumed per Square Foot (thou-sand Btu)	Energy Consumed per Em-ploy-ee (mil-lion Btu)	Total Expen-di-tures (mil-lion dol-lars)	Expen-di-tures per Build-ing (thou-sand dol-lars)	Expen-di-tures per Square Foot (dol-lars)	Expen-di-tures per Mil-lion Btu (dol-lars)	RSE Row Factor
	Number of Build-ings (thou-sands)	Square Feet (mil-lions)											
RSE Column Factor:	0.831	0.783	0.855	1.274	1.271	1.485	1.235	1.709	1.234	1.408	1.182	0.173	
Hours of Operation During a Typical Week													
39 or Fewer Hours	95	824	8.7	0.030	217	319	37	46	213	2.2	0.26	7.00	22.88
40 to 48 Hours	125	1,833	14.7	Q	Q	556	Q	Q	Q	3.9	Q	6.98	28.00
49 to 60 Hours	124	1,855	15.0	.087	620	703	47	35	583	4.7	.31	6.71	20.22
61 to 84 Hours	91	1,693	18.7	.062	442	683	37	28	421	4.6	.25	6.80	21.46
85 to 167 Hours	60	1,713	28.6	.042	298	698	Q	Q	277	4.6	.16	6.61	32.13
168 Hours	44	2,287	52.4	.064	450	1,462	28	10	392	9.0	.17	6.14	19.06
Percentage of Exterior Glass													
Less than 25 Percent	312	4,189	13.4	.141	1,007	452	34	27	956	3.1	.23	6.78	14.29
25 to 49 Percent	173	3,840	22.2	.152	1,083	882	40	22	1,003	5.8	.26	6.58	18.91
50 to 74 Percent	42	1,598	37.9	.051	365	1,206	32	Q	338	8.0	.21	6.64	23.79
75 Percent or More	11	578	Q	Q	Q	939	Q	15	Q	6.9	Q	7.36	41.34
Insulation/Special Glass													
Any Present	370	7,982	21.6	.245	1,746	662	31	18	1,622	4.4	.20	6.62	13.72
Special Glass	191	5,437	28.5	.137	974	720	25	13	895	4.7	.16	6.51	13.70
Roof/Ceiling Insulation	261	6,036	23.1	.172	1,229	659	29	17	1,133	4.3	.19	6.58	17.02
Exterior Wall Insulation	163	3,854	23.6	.089	634	546	23	11	585	3.6	.15	6.56	14.88
None Present	168	2,223	13.2	.109	780	651	49	38	747	4.5	.34	6.84	17.45
Computerized Energy Management System													
In Use	13	1,389	108.9	.035	247	2,777	25	Q	200	15.7	.14	5.64	26.08
Not in Use	519	8,788	16.9	.315	2,250	606	36	24	2,139	4.1	.24	6.80	11.26
Professional Energy Audits													
Performed in Past Year	60	2,522	41.9	.111	790	1,851	44	17	708	11.8	.28	6.35	24.73
Measures Taken	32	1,256	39.5	.083	588	2,605	66	27	523	16.4	.42	6.31	28.66
Measures Not Taken	28	1,266	44.6	.029	202	Q	23	Q	185	Q	.15	6.48	36.08
Not Performed	477	7,683	16.1	.243	1,736	509	32	25	1,661	3.5	.22	6.84	9.68

* Fuel consumption and expenditures data were not collected separately by end use. For example, although it may be known that fuel oil was used for heating in certain buildings, the fuel oil consumption shown for the category **Fuel Oil Used for Heating** includes the fuel oil used in those buildings for all purposes, such as water heating, etc.

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 13. Propane: Consumption and Expenditures, 1983

Building Characteristics	All Buildings Using Propane		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.034	1.072	1.170	1.314	1.314	1.127	1.250	1.133	1.317	1.082	1.206	0.214	
All Buildings	250	2,721	10.9	0.038	411	150	14	9	352	1.4	0.13	9.38	13.60
Propane Used for:													
Heating	151	961	6.4	.020	223	135	21	13	192	1.3	.20	9.44	18.88
Water Heating	48	321	6.7	.016	175	331	50	15	146	3.0	.45	9.11	22.44
Cooking	73	879	12.0	.018	196	244	20	10	165	2.3	.19	9.23	20.90
Manufacturing	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	56.29
Fuels Used for Heating:													
Propane Only	95	359	3.8	.010	113	109	29	12	98	1.0	.27	9.49	20.03
Propane and Electricity Only	27	209	Q	.006	81	204	27	17	54	2.0	.26	9.62	25.33
Other Combinations or Fuels	120	2,106	17.6	.020	222	170	10	7	187	1.6	.09	9.21	16.62
No Fuels Used	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.14
Fuels Used for Water Heating:													
Propane Only	37	227	6.1	.013	144	352	58	16	122	3.3	.53	9.27	24.87
Propane and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	70.71
Other Combinations or Fuels	122	2,106	17.3	.016	175	132	8	6	152	1.3	.07	9.49	14.51
No Fuels Used	80	304	3.8	.005	60	69	18	13	53	.7	.18	9.73	24.89
Fuels Used for Cooking:													
Propane Only	50	602	11.9	Q	Q	281	24	10	Q	2.6	.21	9.13	26.11
Propane and Electricity Only	21	230	11.0	.004	39	170	15	14	34	1.6	.15	9.60	25.11
Other Combinations or Fuels	50	883	17.6	.007	81	147	8	7	69	1.4	.08	9.32	27.96
No Fuels Used	129	1,007	7.8	.012	136	97	12	9	120	.9	.12	9.62	16.64
Year Constructed													
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	33.94
1901 to 1920	24	183	7.7	Q	Q	Q	Q	Q	Q	Q	Q	Q	34.93
1921 to 1945	33	326	10.0	.003	36	101	10	8	31	1.0	.10	9.51	22.36
1946 to 1960	70	619	8.9	.009	100	131	Q	14	89	1.3	Q	9.80	29.94
1961 to 1970	33	Q	Q	.004	46	129	7	7	41	1.2	.07	9.67	28.84
1971 to 1973	23	275	12.1	Q	Q	Q	Q	Q	Q	Q	Q	Q	27.09
1974 to 1979	39	435	11.1	.006	61	142	13	Q	51	1.3	.12	9.13	30.71
1980 to 1983	6	154	25.9	Q	Q	319	Q	8	Q	2.6	Q	8.12	37.50
Square Footage Category													
5,000 or Less	162	361	2.2	.017	190	107	48	13	164	1.0	.45	9.48	17.34
5,001 to 10,000	44	296	6.8	.006	70	146	21	15	62	1.4	.21	9.76	17.22
10,001 to 25,000	29	479	16.4	.007	82	256	16	Q	71	2.4	.15	9.46	19.95
25,001 to 50,000	8	296	36.5	Q	Q	408	11	Q	Q	3.7	.10	8.96	29.31
50,001 to 100,000	3	186	68.5	Q	Q	Q	Q	Q	Q	Q	Q	Q	31.92
100,001 to 200,000	3	438	137.1	.001	10	282	2	2	7	2.3	.02	8.31	24.17
Over 200,000	1	665	459.0	.001	9	567	1	Q	7	5.0	.01	8.88	33.93
Number of Floors													
One	160	1,158	7.2	.020	216	123	17	12	187	1.2	.16	9.51	16.67
Two	50	640	12.9	.011	119	220	17	7	98	2.0	.15	8.97	25.89
Three or More	40	924	22.9	.007	76	171	7	6	67	1.6	.07	9.64	25.40
Principal Activity Within Building													
Assembly	52	330	6.3	Q	Q	Q	29	10	Q	Q	.26	9.09	36.83
Educational	6	346	55.7	.002	17	Q	5	6	12	Q	.04	7.99	40.04
Food Sales/Service	42	260	6.2	.008	90	195	31	12	Q	1.8	.29	9.35	31.70
Health Care	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	71.31
Lodging	14	125	9.2	Q	Q	183	20	14	Q	1.8	.20	9.96	30.78
Mercantile/Services	76	Q	Q	.007	73	89	Q	11	65	.9	Q	9.67	26.01
Office	16	89	5.7	Q	Q	Q	Q	Q	Q	Q	Q	Q	41.48
Residential	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	43.75
Warehouse	18	596	32.9	.003	31	156	Q	12	28	1.5	Q	9.77	31.96
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	78.42
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	100.16

See footnotes at end of table.

Table 13. Propane: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Propane		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.034	1.072	1.170	1.314	1.314	1.127	1.250	1.133	1.317	1.082	1.206	0.214	
Census Region													
Northeast	Q	530	19.6	Q	Q	106	5	Q	Q	1.1	0.06	10.95	34.66
North Central	61	462	Q	0.008	83	124	16	14	67	1.1	.15	8.87	27.64
South	144	1,657	11.5	.023	254	161	14	8	224	1.6	.14	9.88	13.08
West	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	31.05
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above													
7,000 HDD	Q	Q	9.2	Q	Q	81	9	Q	Q	.9	.10	11.38	24.53
Below 2,000 CDD and													
5,500-7,000 HDD	Q	562	Q	Q	Q	150	16	11	Q	1.3	.13	8.46	39.16
Below 2,000 CDD and													
4,000-5,499 HDD	47	607	12.8	.011	122	235	18	7	99	2.1	.16	8.93	19.44
Below 2,000 CDD and Below													
4,000 HDD	Q	451	Q	.006	64	Q	Q	15	Q	Q	Q	9.60	59.29
Above 2,000 CDD and Below													
4,000 HDD	Q	Q	10.9	Q	Q	Q	11	8	Q	1.2	.11	10.12	40.18
Metropolitan Status													
Metropolitan	66	922	14.1	.009	97	136	10	7	82	1.3	.09	9.28	25.06
Nonmetropolitan	185	1,799	9.7	.029	313	155	16	10	269	1.5	.15	9.41	17.90
Number of Establishments in Building													
Vacant	Q	Q	Q	*	*	82	*	NC	*	.9	*	10.64	69.86
Single Establishment	222	2,251	10.1	.031	344	141	14	9	296	1.3	.13	9.42	19.27
Multiple Establishment	28	Q	Q	.006	66	217	Q	10	55	2.0	Q	9.14	35.16
Government Occupancy													
Any Government Occupancy	18	275	15.2	.003	33	166	11	10	24	1.3	.09	8.03	28.14
Federal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	7.12
State	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	56.39
Local	5	207	Q	.001	14	Q	Q	8	11	Q	.05	8.04	39.72
Number of Employees													
Fewer than 10	181	776	4.3	.014	155	79	18	23	142	.8	.18	10.01	15.95
10 to 19	26	268	10.3	.006	64	223	22	18	55	2.1	.21	9.46	21.30
20 to 49	30	638	21.0	.008	89	267	Q	8	77	2.5	Q	9.45	24.22
50 to 99	6	381	66.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	27.01
100 or More	8	Q	Q	.006	68	Q	10	3	52	Q	.08	8.36	42.55
Hours of Operation During a Typical Week													
39 or Fewer Hours	52	182	3.5	.004	41	74	21	18	36	.7	.20	9.54	31.23
40 to 48 Hours	44	468	10.5	.010	107	220	Q	12	86	1.9	Q	8.80	27.87
49 to 60 Hours	42	556	13.4	.004	41	90	7	Q	35	.8	.06	9.27	32.30
61 to 84 Hours	44	517	11.8	.009	93	194	16	12	80	1.8	.15	9.35	25.13
85 to 167 Hours	50	680	13.5	.008	87	158	12	10	79	1.6	.12	9.89	22.57
168 Hours	19	319	16.9	.004	41	199	12	Q	37	1.9	.12	9.78	23.63
Percentage of Exterior Glass													
Less than 25 Percent	189	1,426	7.6	.025	276	134	18	11	238	1.3	.17	9.44	14.64
25 to 49 Percent	44	890	20.3	.009	100	207	Q	Q	83	1.9	Q	9.13	31.71
50 to 74 Percent	13	285	21.6	.002	21	Q	Q	7	18	Q	Q	9.48	39.45
75 Percent or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	83.47

See footnotes at end of table.

Table 13. Propane: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Propane		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.034	1.072	1.170	1.314	1.314	1.127	1.250	1.133	1.317	1.082	1.206	0.214	
Insulation/Special Glass													
Any Present	185	2,142	11.6	0.033	359	178	15	9	305	1.7	0.14	9.30	13.60
Special Glass	85	1,393	16.4	.020	217	233	14	7	177	2.1	.13	8.95	17.53
Roof/Ceiling Insulation	135	1,575	11.7	.021	232	157	13	9	201	1.5	.13	9.49	16.66
Exterior Wall Insulation	93	1,000	10.7	.020	221	216	20	9	183	2.0	.18	9.08	15.88
None Present	66	580	8.8	.005	51	71	Q	12	47	.7	Q	9.94	31.41
Computerized Energy Management System													
In Use	Q	278	56.5	Q	Q	454	Q	Q	Q	Q	Q	8.29	50.27
Not in Use	244	2,440	10.0	.035	386	145	14	9	333	1.4	.14	9.44	14.67
Professional Energy Audits													
Performed in Past Year	19	464	24.1	Q	Q	Q	17	7	Q	Q	.15	9.00	36.23
Measures Taken	Q	301	44.0	Q	Q	Q	Q	Q	Q	Q	Q	9.02	63.37
Measures Not Taken	12	163	13.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	38.73
Not Performed	231	2,257	9.8	.030	326	129	13	10	282	1.2	.13	9.47	13.93

^a Fuel consumption and expenditures were not collected separately by end use. For example, although it may be known that propane was used for heating in certain buildings, the propane consumption shown for the category **Propane Used for Heating** includes the propane used in those buildings for all purposes, such as water heating, etc.

^{nc} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 14. Purchased Steam: Consumption and Expenditures, 1983

Building Characteristics	All Buildings Using Steam		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion pounds)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Flow Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.950	0.833	0.916	1.109	1.109	1.885	0.897	1.057	1.126	1.971	0.954	0.329	
All Buildings	59	4,538	77.5	0.294	294	5,028	65	36	2,683	45.8	0.59	9.12	15.67
Purchased Steam Used for: ^a													
Heating	53	4,244	79.6	.267	267	5,004	63	34	2,422	45.4	.57	9.08	15.89
And Air-Conditioning	2	391	248.4	.040	40	25,386	102	29	395	251.1	1.01	9.89	21.73
And Not Air-Conditioning	52	3,853	74.5	.227	227	4,384	59	36	2,027	39.2	.53	8.94	18.70
Air-Conditioning	2	397	Q	.040	40	Q	102	28	401	Q	1.01	9.91	23.39
Water Heating	31	3,080	99.4	.219	219	7,064	71	35	1,980	63.9	.64	9.04	17.00
Cooking	6	1,004	160.4	.073	73	11,644	73	33	641	102.4	.64	8.80	18.34
Fuels Used for Heating ^a													
Purchased Steam Only	48	3,856	80.6	.247	247	5,169	64	35	2,240	46.8	.58	9.05	16.69
Other Combinations or Fuels	11	670	63.1	.046	46	Q	69	39	439	Q	.66	9.46	29.76
Fuels Used for Air-Conditioning ^a													
Purchased Steam Only	1	232	Q	.022	22	Q	96	30	245	Q	1.05	11.01	30.06
Other Combinations or Fuels	40	3,555	89.8	.229	229	5,778	64	32	2,045	51.7	.58	8.94	17.26
No Fuels Used	17	665	39.2	.034	34	Q	Q	Q	327	Q	Q	9.56	42.91
Fuels Used for Water Heating ^a													
Purchased Steam Only	29	2,856	98.3	.202	202	6,950	71	35	1,826	62.8	.64	9.04	18.20
Other Combinations or Fuels	25	1,475	58.6	.080	80	Q	55	34	751	Q	.51	9.34	26.83
No Fuels Used	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	85.34
Fuels Used for Cooking ^a													
Purchased Steam and Electricity Only	3	320	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	48.51
Other Combinations or Fuels	24	2,193	92.2	.152	152	6,374	69	35	1,387	58.3	.63	9.15	17.02
No Fuels Used	32	2,025	63.6	.116	116	3,651	57	39	1,058	Q	.52	9.10	25.99
Year Constructed													
1900 or Before	Q	Q	130.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	58.11
1901 to 1920	7	494	72.7	.021	21	3,149	43	29	217	31.9	.44	10.12	15.71
1921 to 1945	17	1,001	60.2	.069	69	4,151	69	40	621	37.3	.62	9.00	27.44
1946 to 1960	19	892	47.2	.064	64	Q	72	41	556	Q	.62	8.68	24.71
1961 to 1970	9	1,000	117.2	.083	83	Q	83	46	795	Q	.80	9.63	33.48
1971 to 1973	Q	230	Q	.010	10	Q	45	26	93	Q	.40	8.37	38.55
1974 to 1979	1	320	Q	.023	23	Q	72	28	194	Q	.61	8.48	36.34
1980 to 1983	2	Q	177.6	.012	12	Q	36	18	98	Q	.31	8.53	46.47
Square Footage Category													
5,000 or Less	Q	Q	Q	.001	1	289	72	44	15	3.3	.83	11.51	65.06
5,001 to 10,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	65.50
10,001 to 25,000	13	235	17.8	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.44
25,001 to 50,000	13	427	33.4	Q	Q	2,117	63	72	Q	18.8	.56	8.87	24.56
50,001 to 100,000	9	627	70.1	.035	35	3,923	56	41	315	35.2	.50	8.97	15.64
100,001 to 200,000	5	690	139.2	.062	62	12,566	90	57	554	111.8	.80	8.90	26.53
Over 200,000	6	2,476	411.6	.141	141	23,449	57	26	1,282	213.1	.52	9.08	17.33
Number of Floors													
One or Two	17	470	28.0	Q	Q	Q	Q	Q	Q	Q	Q	Q	57.33
Three or More	42	4,068	97.4	.263	263	6,302	65	34	2,355	56.4	.58	8.95	14.85
Principal Activity Within Building													
Assembly	8	501	59.6	.026	26	Q	51	Q	222	Q	.44	8.66	38.86
Educational	8	408	50.3	Q	Q	Q	51	Q	Q	Q	.38	7.50	44.86
Food Sales/Service	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	76.70
Health Care	Q	392	Q	.070	70	Q	178	70	613	Q	1.56	8.79	32.13
Lodging	10	512	Q	.022	22	Q	44	81	202	Q	.39	9.00	45.34
Mercantile/Services	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.34

See footnotes at end of table.

Table 14. Purchased Steam: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Steam		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion pounds)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.950	0.833	0.916	1.109	1.109	1.885	0.897	1.057	1.126	1.971	0.954	0.329	
Principal Activity Within Building													
Office	9	1,228	142.5	0.068	68	7,906	55	16	669	77.6	0.54	9.82	17.41
Residential	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	65.02
Warehouse	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	82.59
Other	6	443	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	44.64
Vacant	4	287	65.8	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.73
Census Region													
Northeast	16	1,336	83.3	.086	86	Q	64	36	1,004	Q	.75	11.71	34.97
North Central	22	1,907	88.5	.144	144	6,676	75	40	1,063	49.3	.56	7.39	17.44
South	Q	769	Q	.034	34	Q	44	23	329	Q	.43	9.74	52.00
West	11	526	49.7	.031	31	Q	59	39	287	Q	.55	9.30	30.96
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above													
7,000 HDD	13	1,048	82.9	Q	Q	Q	65	48	Q	Q	Q	8.27	47.71
Below 2,000 CDD and													
5,500-7,000 HDD													
Below 2,000 CDD and	28	1,822	64.0	.145	145	5,080	79	45	1,247	43.8	.68	8.62	23.66
4,000-5,499 HDD	9	1,333	141.6	.060	60	Q	45	20	676	Q	.51	11.29	23.89
Below 2,000 CDD and Below													
4,000 HDD													
Above 2,000 CDD and Below	Q	203	Q	Q	Q	Q	Q	Q	Q	Q	Q	9.38	88.47
4,000 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	161.49
Metropolitan Status													
Metropolitan	49	4,165	84.3	.260	260	5,262	62	33	2,312	46.8	.56	8.89	13.88
Nonmetropolitan	Q	373	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	127.20
Number of Establishments in Building													
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	78.67
Single Establishment	49	3,229	65.7	.221	221	4,492	68	47	1,960	Q	.61	8.88	20.37
Multiple Establishment	9	1,284	142.3	.072	72	7,961	56	21	703	78.0	.55	9.79	18.92
Government Occupancy													
Any Government Occupancy	17	1,562	89.7	.106	106	6,065	68	28	955	54.9	.61	9.04	19.49
Federal	2	507	273.2	.031	31	Q	60	16	299	Q	.59	9.75	27.27
State	11	701	61.1	.056	56	Q	80	37	497	Q	.71	8.85	31.72
Local	5	487	93.7	.031	31	Q	64	30	306	Q	.63	9.88	39.19
Number of Employees													
Fewer than 10	20	426	21.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	57.18
10 to 19	6	167	26.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	37.98
20 to 49	14	626	46.1	.042	42	3,088	67	105	386	28.4	.62	9.20	28.99
50 to 99	7	437	62.5	.029	29	4,082	65	65	266	Q	.61	9.31	32.30
100 or More	12	2,882	242.9	.190	190	16,043	66	26	1,710	144.1	.59	8.98	16.32
Hours of Operation During a Typical Week													
39 or Fewer Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	107.38
40 to 48 Hours	9	540	56.9	.025	25	2,669	47	23	251	Q	.46	9.90	29.72
49 to 60 Hours	14	1,041	76.9	Q	Q	Q	52	Q	Q	Q	.50	9.71	39.11
61 to 84 Hours	8	880	108.6	.046	46	Q	53	24	416	Q	.47	8.97	31.64
85 to 167 Hours	11	721	63.1	.049	49	4,277	68	45	433	37.9	.60	8.85	26.92
168 Hours	12	1,191	96.8	.112	112	9,115	94	56	999	81.1	.84	8.90	21.89

See footnotes at end of table.

Table 14. Purchased Steam: Consumption and Expenditures, 1983 (Continued)

Building Characteristics	All Buildings Using Steam		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion pounds)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.950	0.833	0.916	1.109	1.109	1.885	0.897	1.057	1.126	1.971	0.954	0.329	
Percentage of Exterior Glass													
Less than 50 Percent	43	3,313	76.3	0.215	215	4,941	65	39	1,951	44.9	0.59	9.09	19.15
50 percent or More	15	1,226	81.1	.080	80	Q	65	29	732	Q	.60	9.18	21.15
Insulation/Special Glass													
Any Present	43	3,520	81.8	.231	231	5,371	66	33	2,102	48.9	.60	9.10	17.01
Special Glass	19	2,317	118.9	.163	163	8,380	70	34	1,487	76.3	.64	9.11	20.70
Roof/Ceiling Insulation	37	2,860	78.2	.187	187	5,104	65	33	1,671	45.6	.58	8.94	18.89
Exterior Wall Insulation	12	1,287	106.4	.085	85	6,990	66	28	760	62.8	.59	8.99	19.89
None Present	16	1,018	65.7	.063	63	4,075	62	52	581	37.5	.57	9.19	27.71
Computerized Energy Management System													
In Use	9	1,505	168.2	.091	91	10,134	60	27	777	86.8	.52	8.57	15.69
Not in Use	50	3,031	61.1	.204	204	4,106	67	41	1,906	38.4	.63	9.36	21.29
Professional Energy Audits													
Performed in Past Year	13	1,626	121.4	.109	109	8,126	67	34	1,031	77.0	.63	9.47	27.19
Measures Taken	6	896	142.6	Q	Q	Q	72	Q	Q	Q	.72	9.88	35.81
Measures Not Taken	7	730	102.6	.044	44	Q	60	33	390	Q	.53	8.86	27.54
Not Performed	45	2,913	64.5	.185	185	4,108	64	37	1,652	36.6	.57	8.91	15.01

^a Fuel consumption and expenditures data were not collected separately by end use. For example, although it may be known that purchased steam was used in a building for heating, the purchased steam consumption shown for the category **Purchased Steam Used for Heating** includes the purchased steam used in those buildings for all purposes, such as water heating, etc.

^{NC} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	0.391	
Census Region: Northeast													
All Buildings	651	11,341	17.4	0.345	101	530	30	21	9,031	13.9	0.80	26.15	8.21
Electricity Used for:^a													
Heating	116	2,581	22.3	.114	33	982	44	27	2,500	21.6	.97	22.01	16.35
And Air-Conditioning	79	2,161	27.3	.101	30	1,276	47	27	2,240	28.3	1.04	22.20	15.35
And Not Air-Conditioning	Q	420	11.5	Q	Q	Q	30	Q	260	7.1	.62	20.48	39.99
Air-Conditioning	416	8,387	20.2	.277	81	666	33	21	7,186	17.3	.86	25.91	8.60
And Space Heating	79	2,161	27.3	.101	30	1,276	47	27	2,240	28.3	1.04	22.20	15.35
And Not Space Heating	337	6,226	18.5	.176	52	523	28	18	4,947	14.7	.79	28.03	9.29
Water Heating	196	3,486	17.8	.132	39	673	38	24	3,250	16.6	.93	24.63	14.48
Cooking	145	3,227	22.3	.113	33	781	35	20	2,797	19.3	.87	24.73	11.66
Manufacturing	49	1,017	21.0	.023	7	467	22	26	588	12.1	.58	25.91	15.16
Fuels Used for Heating:^a													
Electricity Only	54	1,234	22.8	.064	19	1,175	Q	36	1,240	22.9	1.00	19.49	23.67
Electricity and Natural Gas													
Only	27	490	18.1	.024	7	891	49	36	503	18.5	1.03	20.79	20.61
Electricity and Fuel Oil Only	Q	Q	15.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	32.15
Electricity and Propane Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.64
Electricity, Natural Gas													
and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	101.65
Other Combinations or Fuels	498	8,370	16.8	.223	65	448	27	18	6,259	12.6	.75	28.07	8.64
No Fuels Used	47	568	12.2	.014	4	291	24	35	428	9.2	.75	31.46	25.46
Fuels Used for Air-Conditioning:^a													
Electricity Only	410	8,158	19.9	.257	75	627	32	21	6,646	16.2	.81	25.83	8.38
Electricity and Natural Gas													
Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	219.31
Other Combinations or Fuels	27	915	34.1	.046	13	1,701	50	19	1,326	49.5	1.45	29.08	18.99
No Fuels Used	208	2,179	10.5	.037	11	175	17	22	960	4.6	.44	26.29	19.26
Fuels Used for Water Heating:^a													
Electricity Only	171	2,292	13.4	.097	28	569	42	30	2,279	13.4	.99	23.48	12.75
Electricity and Natural Gas													
Only	14	411	29.1	Q	Q	Q	Q	Q	Q	Q	Q	Q	39.76
Electricity and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.25
Electricity and Propane Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.64
Other Combinations or Fuels	368	7,498	20.4	.201	59	546	27	18	5,431	14.8	.72	27.07	9.21
No Fuel Used	84	907	10.8	.019	6	228	21	27	536	6.4	.59	27.85	22.75
Fuels Used for Cooking:^a													
Electricity Only	111	2,028	18.3	.064	19	578	32	22	1,525	13.7	.75	23.79	16.57
Electricity and Natural Gas													
Only	29	1,013	34.4	.039	11	1,321	38	18	1,027	34.9	1.01	26.42	21.10
Electricity and Propane	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	26.19
Other Combinations or Fuels	178	3,822	21.5	.106	31	598	28	21	2,902	16.3	.76	27.31	11.27
No Fuel Used	329	4,424	13.4	.135	40	411	31	21	3,560	10.8	.80	26.28	11.82
Fuels Used for Manufacturing:^a													
Electricity Only	44	907	20.5	.018	5	406	20	23	483	10.9	.53	26.90	17.24
Electricity and Natural Gas													
Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	63.50
Other Combinations or Fuels	24	474	19.4	.013	4	545	28	23	439	18.0	.93	33.02	26.23
No Fuels Used	578	9,855	17.0	.309	91	535	31	20	8,002	13.8	.81	25.87	8.66

See footnotes at end of table.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	FSE Flow Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	0.391	

Census Region: Northeast

Fuels Used to Fire Boilers*

Electricity Only	4	206	51.5	Q	Q	Q	Q	Q	Q	Q	Q	Q	37.20
Other Combinations or Fuels	259	5,730	22.1	0.142	42	548	25	16	4,063	15.7	0.71	28.66	3.87

Year Constructed

1900 or Before	101	1,266	12.5	.019	5	185	15	15	592	5.9	.47	31.58	22.54
1901 to 1920	91	1,788	19.6	.027	8	294	15	18	922	10.1	.52	34.34	17.97
1921 to 1945	157	2,272	14.5	.051	15	323	22	16	1,548	9.9	.68	30.56	12.05
1946 to 1960	127	2,071	16.3	.052	15	406	25	13	1,454	11.4	.70	28.11	13.87
1961 to 1970	88	1,770	20.1	.088	26	998	50	29	1,981	22.5	1.12	22.57	15.50
1971 to 1973	26	643	25.0	.034	10	1,303	52	26	733	28.5	1.14	21.87	16.66
1974 to 1979	47	708	15.2	.051	15	1,092	72	30	1,209	25.9	1.71	23.71	13.78
1980 to 1983	14	824	59.3	.025	7	1,809	31	30	593	42.7	Q	23.59	21.67

Square Footage Category

5,000 or Less	293	751	2.6	.036	11	123	48	19	1,080	3.7	1.44	30.12	12.08
5,001 to 10,000	131	938	7.2	.026	8	201	28	16	764	5.8	.81	29.08	13.06
10,001 to 25,000	127	1,898	15.0	.040	12	312	21	16	1,127	8.9	.59	28.52	11.31
25,001 to 50,000	57	1,900	33.2	.052	15	918	28	21	1,417	24.8	.75	27.01	16.18
50,001 to 100,000	26	1,715	65.7	.062	18	2,365	36	36	1,403	53.8	.82	22.74	16.99
100,001 to 200,000	12	1,592	136.0	.047	14	4,002	29	28	1,126	96.2	.71	24.04	10.26
Over 200,000	6	2,546	422.4	.083	24	13,712	32	18	2,113	350.5	.83	25.57	14.56

Number of Floors

One	216	2,217	10.3	.080	23	369	36	24	2,060	9.5	.93	25.81	13.14
Two	154	1,921	12.5	.060	17	387	31	24	1,557	10.1	.81	26.14	14.47
Three or More	281	7,202	25.6	.206	60	732	29	19	5,414	19.3	.75	26.28	9.65

Principal Activity Within Building

Assembly	61	1,053	17.4	.018	5	295	17	27	547	9.0	.52	30.52	23.30
Educational	28	1,368	49.7	.033	10	1,186	24	Q	749	27.2	.55	22.93	25.87
Food Sales/Service	58	392	6.8	.028	8	491	73	33	713	12.3	1.82	25.08	16.98
Health Care	11	502	44.9	.027	8	2,394	53	22	575	51.5	1.15	21.50	19.79
Lodging	13	422	31.4	.020	6	1,492	48	70	489	36.4	1.16	24.38	27.57
Mercantile/Services	183	2,025	11.1	.055	16	300	27	18	1,423	7.8	.70	25.95	15.63
Office	96	1,757	18.3	.089	26	929	51	15	2,432	25.3	1.38	27.27	10.11
Residential	97	1,333	13.8	.014	4	140	10	23	413	4.3	.31	30.61	17.83
Warehouse	52	1,200	23.1	.025	7	485	21	22	726	14.0	.61	28.81	19.76
Other	19	826	42.8	.024	7	1,225	Q	Q	630	32.7	Q	26.65	33.49
Vacant	34	462	13.7	.013	4	389	28	66	332	9.8	.72	25.30	28.83

Climate Zones:

45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)

Below 2,000 CDD and Above 7,000 HDD	Q	1,105	11.6	.029	9	311	27	23	Q	6.3	.54	20.15	17.73
Below 2,000 CDD and 5,500-7,000 HDD	337	5,938	17.6	.193	57	573	33	21	4,233	12.5	.71	21.90	11.10
Below 2,000 CDD and 4,000-5,499 HDD	219	4,298	19.6	.123	36	560	29	20	4,204	19.2	.98	34.29	12.78
Below 2,000 CDD and Below 4,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Above 2,000 CDD and Below 4,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

See footnotes at end of table.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	0.391	
Census Region: Northeast													
Metropolitan Status													
Metropolitan	519	9,788	18.9	0.296	87	571	30	20	7,948	15.3	0.81	26.86	8.80
Nonmetropolitan	133	1,552	11.7	.049	14	373	32	25	1,083	8.2	.70	21.91	10.50
Number of Establishments in Building													
Vacant	7	170	22.9	Q	Q	Q	Q	Q	Q	Q	Q	Q	47.38
Single Establishment	502	7,048	14.1	.219	64	437	31	22	5,645	11.3	.80	25.76	9.40
Multiple Establishment	142	4,122	29.0	.121	35	849	29	18	3,238	22.8	.79	26.84	11.80
Government Occupancy													
Any Government Occupancy	61	2,238	36.9	.069	20	1,138	31	13	1,683	27.8	.75	24.41	14.53
Federal	15	609	39.9	.020	6	Q	32	Q	565	Q	.93	28.62	36.86
State	15	882	58.2	.030	9	1,965	34	15	668	44.1	.76	22.45	32.57
Local	38	1,003	26.2	.030	9	789	30	14	734	19.2	.73	24.28	14.51
Number of Employees													
Fewer than 10	416	3,427	8.2	.051	15	123	15	32	1,455	3.5	.42	28.49	12.95
10 to 19	100	1,562	15.6	.036	11	364	23	28	1,104	11.0	.71	30.28	19.40
20 to 49	83	1,796	21.6	.060	17	717	33	24	1,636	19.7	.91	27.47	13.07
50 to 99	23	1,067	46.9	.043	13	1,885	40	28	939	41.3	.88	21.91	22.48
100 or More	29	3,487	118.7	.155	46	5,287	45	16	3,897	132.6	1.12	25.08	13.24
Hours of Operation During a Typical Week													
39 or Fewer Hours	83	923	11.2	.013	4	152	14	24	342	4.1	.37	27.32	26.58
40 to 48 Hours	151	2,035	13.5	.035	10	233	17	17	996	6.6	.49	28.29	12.30
49 to 60 Hours	161	2,657	16.5	.066	19	412	25	19	1,946	12.1	.73	29.34	10.67
61 to 84 Hours	131	2,249	17.1	.080	24	612	36	22	1,973	15.0	.88	24.54	19.83
85 to 167 Hours	82	1,844	22.5	.062	18	757	34	24	1,586	19.4	.86	25.59	11.90
168 Hours	43	1,633	37.7	.089	26	2,050	54	21	2,188	50.4	1.34	24.61	21.83
Percentage of Exterior Glass													
Less than 25 Percent	404	5,462	13.5	.138	40	340	25	23	3,605	8.9	.66	26.20	7.75
25 to 49 Percent	178	3,937	22.1	.134	39	750	34	18	3,488	19.6	.89	26.09	11.62
50 to 74 Percent	61	1,452	24.0	.053	16	878	37	24	1,349	22.3	.93	25.36	20.92
75 Percent or More	8	489	60.8	.021	6	2,599	43	20	589	73.3	1.20	28.20	16.83
Insulation/Special Glass													
Any Present	458	8,992	19.6	.286	84	625	32	22	7,106	15.5	.79	24.81	9.64
Special Glass	253	6,120	24.2	.206	60	816	34	20	4,795	19.0	.78	23.24	11.31
Roof/Ceiling Insulation	309	6,274	20.3	.215	63	698	34	23	5,221	16.9	.83	24.24	12.01
Exterior Wall Insulation	229	4,243	18.5	.155	45	676	36	22	3,651	16.0	.86	23.60	14.42
None Present	193	2,349	12.2	.059	17	306	25	18	1,925	10.0	.82	32.67	7.51
Computerized Energy Management System													
In Use	24	1,556	64.2	.079	23	3,252	51	24	1,833	75.6	1.18	23.26	17.98
Not in Use	603	9,612	15.9	.261	77	434	27	20	7,060	11.7	.73	27.00	7.94
Professional Energy Audits													
Performed in Past Year	81	2,807	34.5	.116	34	1,422	41	20	2,938	36.1	1.05	25.41	13.69
Measures Taken	45	1,652	36.8	.065	19	1,447	39	18	1,661	37.0	1.01	25.55	15.63
Measures Not Taken	36	1,154	31.7	.051	15	1,391	44	23	1,278	35.1	1.11	25.23	18.84
Not Performed	570	8,534	15.0	.230	67	403	27	21	6,093	10.7	.71	26.52	9.55

See footnotes at end of table.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
	RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	
Census Region: North Central													
All Buildings	1,153	15,685	13.6	0.697	204	605	44	31	12,110	10.5	0.77	17.37	7.42
Electricity Used for:^a													
Heating	203	2,790	13.8	.156	46	768	56	30	2,635	13.0	.94	16.93	11.45
And Air-Conditioning	163	2,479	15.2	.142	42	869	57	30	2,395	14.7	.97	16.89	12.73
And Not Air-Conditioning	40	311	7.9	.014	4	352	45	32	240	6.1	.77	17.31	26.91
Air-Conditioning	750	11,928	15.9	.575	168	766	48	31	9,861	13.1	.83	17.16	7.44
And Space Heating	163	2,479	15.2	.142	42	869	57	30	2,395	14.7	.97	16.89	12.73
And Not Space Heating	587	9,449	16.1	.433	127	737	46	31	7,467	12.7	.79	17.25	9.11
Water Heating	352	4,326	12.3	.194	57	551	45	28	3,238	9.2	.75	16.70	13.90
Cooking	275	4,962	18.1	.208	61	757	42	25	3,488	12.7	.70	16.76	11.41
Manufacturing	116	1,667	14.4	.069	20	597	42	32	1,224	10.5	.73	17.66	13.82
Fuels Used for Heating^a													
Electricity Only	91	935	10.3	.067	20	732	71	31	Q	11.8	1.15	16.17	13.54
Electricity and Natural Gas													
Only	85	1,355	15.9	.058	17	685	43	27	1,017	11.9	.75	17.39	17.02
Electricity and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	56.29
Electricity and Propane Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	103.12
Electricity, Natural Gas													
and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	66.75
Other Combinations or Fuels	891	12,661	14.2	.542	159	608	43	31	9,442	10.6	.75	17.43	7.71
No Fuels Used	67	442	6.6	.012	4	182	28	Q	232	3.5	.53	19.10	27.49
Fuels Used for Air-Conditioning^a													
Electricity Only	742	11,553	15.6	.543	159	732	47	30	9,325	12.6	.81	17.17	7.58
Electricity and Natural Gas													
Only	8	237	Q	.018	5	Q	75	43	324	Q	1.37	18.21	46.40
Other Combinations or Fuels	47	1,251	26.9	.072	21	1,550	58	32	1,207	25.9	.97	16.74	17.11
No Fuels Used	353	2,563	7.3	.061	18	Q	Q	Q	1,214	Q	Q	19.83	29.97
Fuels Used for Water Heating^a													
Electricity Only	332	3,550	10.7	.169	50	509	48	30	2,804	8.5	.79	16.60	14.42
Electricity and Natural Gas													
Only	19	735	38.8	.024	7	1,242	32	22	400	21.1	.54	17.01	23.79
Electricity and Fuel Oil Only	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Electricity and Propane Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	80.21
Other Combinations or Fuels	576	10,214	17.7	.475	139	825	46	32	8,287	14.4	.81	17.45	7.93
No Fuel Used	218	1,126	5.2	.026	8	118	23	26	523	2.4	.46	20.37	16.14
Fuels Used for Cooking^a													
Electricity Only	214	3,134	14.6	.115	34	538	37	24	1,948	9.1	.62	16.89	12.25
Electricity and Natural Gas													
Only	54	1,559	28.7	.081	24	1,493	52	27	1,354	24.9	.87	16.68	17.15
Electricity and Propane	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	82.61
Other Combinations or Fuels	183	3,601	19.7	.156	46	853	43	31	2,723	14.9	.76	17.48	14.03
No Fuel Used	696	7,358	10.6	.344	101	494	47	36	6,058	8.7	.82	17.61	6.00
Fuels Used for Manufacturing^a													
Electricity Only	102	1,299	12.8	.053	15	519	41	33	913	9.0	.70	17.33	15.90
Electricity and Natural Gas													
Only	13	351	Q	.016	5	Q	44	30	297	Q	.85	19.13	35.63
Other Combinations or Fuels	15	297	20.0	.016	5	1,079	54	37	264	17.7	.89	16.45	27.90
No Fuels Used	1,022	13,726	13.4	.613	180	599	45	31	10,634	10.4	.77	17.35	8.25

See footnotes at end of table.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	0.391	
Census Region: North Central													
Fuels Used to Fire Boilers^a													
Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	66.90
Other Combinations or Fuels	247	6,543	26.5	0.258	76	1,044	39	31	4,562	18.4	0.70	17.67	11.04
Year Constructed													
1900 or Before	110	1,117	10.2	.022	7	204	20	16	408	3.7	.37	18.18	22.18
1901 to 1920	150	1,815	12.1	.043	13	287	24	18	801	5.3	.44	18.56	14.16
1921 to 1945	202	2,566	12.7	.126	37	622	49	38	2,199	10.9	.86	17.48	20.07
1946 to 1960	259	3,105	12.0	.121	35	468	39	32	2,306	8.9	.74	19.04	16.49
1961 to 1970	184	3,026	16.5	.122	36	663	40	28	2,163	11.8	.71	17.79	8.89
1971 to 1973	59	953	16.3	.052	15	892	55	30	877	15.0	.92	16.79	16.27
1974 to 1979	159	2,146	13.5	.140	41	881	65	35	2,262	14.2	1.05	16.16	14.21
1980 to 1983	30	957	31.5	Q	Q	Q	74	43	1,092	35.9	1.14	15.46	26.23
Square Footage Category													
5,000 or Less	646	1,461	2.3	.076	22	117	52	18	1,642	2.5	1.12	21.69	10.93
5,001 to 10,000	226	1,624	7.2	.056	16	247	34	21	1,093	4.8	.67	19.59	10.13
10,001 to 25,000	160	2,573	16.1	.108	32	673	42	31	1,967	12.3	.76	18.27	12.13
25,001 to 50,000	64	2,202	34.4	.109	32	1,704	50	42	1,867	29.1	.85	17.10	12.57
50,001 to 100,000	30	2,095	68.7	.091	27	2,970	43	38	1,434	47.0	.68	15.84	21.20
100,001 to 200,000	16	2,115	134.8	.089	26	5,691	42	33	1,443	92.0	.68	16.17	10.26
Over 200,000	11	3,614	340.7	.169	49	15,920	47	37	2,663	251.1	.74	15.77	13.55
Number of Floors													
One	585	4,231	7.2	.211	62	361	50	31	3,900	6.7	.92	18.49	11.92
Two	308	3,857	12.5	.145	43	471	38	28	2,572	8.3	.67	17.71	13.39
Three or More	259	7,597	29.3	.341	100	1,314	45	32	5,638	21.7	.74	16.54	14.27
Principal Activity Within Building													
Assembly	146	1,730	11.8	.034	10	234	20	16	670	4.6	.39	19.53	13.96
Educational	39	1,834	46.5	Q	Q	Q	Q	Q	Q	Q	Q	17.69	30.52
Food Sales/Service	119	721	6.1	.085	25	720	119	38	1,548	13.0	2.15	18.12	13.85
Health Care	21	1,015	48.7	.064	19	3,056	63	32	1,009	Q	.99	15.85	26.06
Lodging	12	669	54.4	.030	9	2,435	45	43	483	39.3	.72	16.14	16.95
Mercantile/Services	347	3,185	9.2	.153	45	441	48	36	2,649	7.6	.83	17.31	12.27
Office	175	2,169	12.4	.142	41	807	65	23	2,424	13.8	1.12	17.13	11.61
Residential	78	717	9.1	.016	5	203	22	34	319	4.1	.45	20.05	15.92
Warehouse	118	2,088	17.8	.059	17	505	28	42	1,027	8.7	.49	17.31	16.09
Other	47	871	18.7	.046	13	986	53	37	763	16.4	.88	16.58	16.44
Vacant	50	687	13.8	.016	5	319	23	44	297	6.0	.43	18.75	22.35
Climate Zones:													
45 Year Average													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above													
7,000 HDD	236	3,811	16.2	.197	58	835	52	36	3,193	13.5	.84	16.22	24.32
Below 2,000 CDD and													
5,500-7,000 HDD	621	8,969	14.4	.381	112	614	42	30	6,823	11.0	.76	17.90	11.61
Below 2,000 CDD and													
4,000-5,499 HDD	Q	Q	9.8	Q	Q	402	41	26	Q	7.1	.72	17.59	28.16
Below 2,000 CDD and Below													
4,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Above 2,000 CDD and Below													
4,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

See footnotes at end of table.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Rev. Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	0.391	
Census Region: North Central													
Metropolitan Status													
Metropolitan	650	11,372	17.5	0.552	162	849	49	33	9,612	14.8	0.85	17.41	8.50
Nonmetropolitan	503	4,313	8.6	.145	43	289	34	25	2,498	5.0	.58	17.21	11.94
Number of Establishments in Building													
Vacant	10	238	Q	.004	1	Q	15	Q	64	Q	.27	17.84	40.00
Single Establishment	961	12,004	12.5	.531	156	552	44	32	9,117	9.5	.76	17.17	8.18
Multiple Establishment	181	3,443	19.0	.163	48	897	47	26	2,928	16.2	.85	18.01	10.11
Government Occupancy													
Any Government Occupancy	97	2,838	29.2	.149	44	1,536	53	33	2,430	25.0	.86	16.26	14.08
Federal	9	442	49.1	.050	15	5,532	113	57	800	88.9	1.81	16.06	27.53
State	27	951	35.3	.048	14	1,797	51	25	778	28.9	.82	16.08	24.16
Local	68	1,655	24.4	.065	19	955	39	29	1,086	16.0	.66	16.80	17.69
Number of Employees													
Fewer than 10	765	4,300	5.6	.100	29	130	23	35	2,095	2.7	.49	21.03	9.67
10 to 19	157	1,702	10.8	.063	18	399	37	32	1,185	7.5	.70	18.88	12.58
20 to 49	146	3,357	23.0	.151	44	1,036	45	35	2,728	18.7	.81	18.04	12.22
50 to 99	48	1,771	36.7	.116	34	2,397	65	39	1,859	38.5	1.05	16.06	21.57
100 or More	36	4,553	125.8	.268	78	7,395	59	26	4,242	117.2	.93	15.85	9.69
Hours of Operation During a Typical Week													
39 or Fewer Hours	190	1,269	6.7	.018	5	96	14	12	387	2.0	.31	21.21	17.28
40 to 48 Hours	214	2,268	10.6	.079	23	367	35	30	1,413	6.6	.62	17.97	19.33
49 to 60 Hours	295	3,643	12.3	.127	37	429	35	25	2,237	7.6	.61	17.68	16.59
61 to 84 Hours	221	3,265	14.8	.165	48	744	50	34	2,916	13.2	.89	17.73	13.77
85 to 167 Hours	156	2,750	17.7	.180	53	1,156	65	41	3,098	19.9	1.13	17.22	13.65
168 Hours	77	2,490	32.4	.129	38	1,681	52	31	2,058	26.8	.83	15.92	10.02
Percentage of Exterior Glass													
Less than 25 Percent	801	8,293	10.4	.375	110	468	45	34	6,426	8.0	.77	17.16	7.75
25 to 49 Percent	281	5,066	18.1	.206	60	735	41	26	3,742	13.3	.74	18.14	11.02
50 to 74 Percent	60	1,768	29.5	.087	26	1,454	49	33	1,537	25.6	.87	17.62	24.92
75 Percent or More	11	558	49.6	.029	8	2,578	52	30	404	36.0	.72	13.95	25.54
Insulation/Special Glass													
Any Present	842	12,552	14.9	.609	179	723	49	32	10,358	12.3	.83	17.00	7.22
Special Glass	502	8,768	17.5	.470	138	938	54	32	7,816	15.6	.89	16.62	7.07
Roof/Ceiling Insulation	582	9,198	15.8	.446	131	766	48	32	7,415	12.7	.81	16.64	8.75
Exterior Wall Insulation	443	6,093	13.8	.306	90	691	50	31	5,089	11.5	.84	16.63	10.27
None Present	311	3,133	10.1	.088	26	283	28	26	1,752	5.6	.56	19.93	12.54
Computerized Energy Management System													
In Use	36	2,363	65.6	.160	47	4,449	68	34	2,499	69.3	1.06	15.59	16.31
Not in Use	1,072	13,035	12.2	.531	156	495	41	30	9,502	8.9	.73	17.91	8.67
Professional Energy Audits													
Performed in Past Year	120	3,646	30.4	.187	55	1,563	51	32	3,178	26.5	.87	16.96	12.71
Measures Taken	54	1,849	34.0	.083	24	1,527	45	28	1,388	25.5	.75	16.73	15.22
Measures Not Taken	66	1,797	27.4	.104	31	1,592	58	36	1,791	27.3	1.00	17.14	16.73
Not Performed	1,033	12,038	11.7	.510	149	494	42	30	8,931	8.6	.74	17.53	8.09

See footnotes at end of table.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	0.391	
Census Region: South													
All Buildings	1,412	16,654	11.8	0.849	249	601	51	32	15,121	10.7	0.91	17.81	10.23
Electricity Used for:^a													
Heating	602	7,669	12.7	.448	131	744	58	35	7,889	13.1	1.03	17.63	14.61
And Air-Conditioning	551	7,331	13.3	.430	126	780	59	35	7,613	13.8	1.04	17.71	15.33
And Not Air-Conditioning	50	338	6.7	.018	5	351	52	50	276	5.5	Q	15.60	31.11
Air-Conditioning	1,073	14,411	13.4	.760	223	709	53	32	13,504	12.6	.94	17.76	10.57
And Space Heating	551	7,331	13.3	.430	126	780	59	35	7,613	13.8	1.04	17.71	15.33
And Not Space Heating	522	7,081	13.6	.330	97	633	47	30	5,891	11.3	.83	17.83	12.79
Water Heating	608	8,611	14.2	.469	138	772	54	33	8,294	13.6	.96	17.68	14.18
Cooking	321	6,232	19.4	.365	107	1,139	59	33	6,274	19.6	1.01	17.19	16.17
Manufacturing	94	1,460	15.5	.073	21	773	50	34	1,260	13.3	.86	17.25	16.84
Fuels Used for Heating^a													
Electricity Only	479	5,353	11.2	.348	102	728	65	36	6,195	12.9	1.16	17.78	19.51
Electricity and Natural Gas													
Only	77	1,417	18.5	.067	20	868	47	34	1,115	14.5	.79	16.72	16.01
Electricity and Fuel Oil Only	20	336	16.9	Q	Q	931	55	40	338	17.0	1.01	18.27	28.43
Electricity and Propane Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	32.31
Electricity, Natural Gas													
and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	88.62
Other Combinations or Fuels	636	7,978	12.5	.362	106	569	45	28	6,459	10.1	.81	17.83	12.96
No Fuels Used	185	1,268	6.9	.047	14	254	37	49	897	4.9	.71	19.08	25.43
Fuels Used for Air-Conditioning^a													
Electricity Only	1,063	14,000	13.2	.736	216	692	53	32	13,096	12.3	.94	17.79	10.77
Electricity and Natural Gas													
Only	10	360	Q	Q	Q	Q	58	28	Q	Q	.98	16.82	43.77
Other Combinations or Fuels	28	696	25.3	Q	Q	Q	Q	28	Q	Q	1.18	18.30	37.55
No Fuels Used	305	1,575	5.2	.045	13	147	28	39	816	2.7	.52	18.20	15.00
Fuels Used for Water Heating^a													
Electricity Only	582	7,854	13.5	.400	117	687	51	32	7,153	12.3	.91	17.89	16.53
Electricity and Natural Gas													
Only	16	538	34.6	Q	Q	3,250	94	47	794	51.1	1.48	15.73	38.81
Electricity and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	59.54
Electricity and Propane Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	96.60
Other Combinations or Fuels	341	5,565	16.3	.299	88	876	54	31	5,306	15.5	.95	17.75	11.20
No Fuel Used	456	2,476	5.4	.082	24	179	33	30	1,525	3.3	.62	18.66	20.47
Fuels Used for Cooking^a													
Electricity Only	272	3,844	14.1	.224	66	822	58	30	4,034	14.8	1.05	18.04	11.92
Electricity and Natural Gas													
Only	35	Q	Q	Q	Q	3,450	59	44	1,883	53.8	.92	15.58	35.46
Electricity and Propane	12	134	11.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	33.68
Other Combinations or Fuels	143	2,747	19.2	.166	49	1,165	61	29	3,057	21.4	1.11	18.37	17.33
No Fuel Used	947	7,875	8.3	.332	97	350	42	33	6,013	6.3	.76	18.14	9.40
Fuels Used for Manufacturing^a													
Electricity Only	87	1,146	13.2	.058	17	674	51	31	1,016	11.7	.89	17.40	18.00
Electricity and Natural Gas													
Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	35.28
Other Combinations or Fuels	21	339	16.2	.024	7	1,147	71	56	390	18.6	1.15	16.21	22.06
No Fuels Used	1,296	14,975	11.6	.758	222	585	51	32	13,557	10.5	.91	17.89	11.05

See footnotes at end of table.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	0.397	

Census Region: South

Fuels Used to Fire Boilers^a

Electricity Only	Q	176	Q	0.017	5	Q	98	44	285	Q	1.61	16.44	40.76
Other Combinations or Fuels	134	4,789	35.8	.205	60	1,533	43	28	3,758	28.1	.78	18.32	12.13

Year Constructed

1900 or Before	45	335	7.4	.009	3	195	26	10	181	4.0	.54	20.46	22.43
1901 to 1920	92	1,074	11.7	.031	9	334	29	25	527	5.7	.49	17.14	20.69
1921 to 1945	207	2,144	10.3	.075	22	361	35	25	1,396	6.7	.65	18.64	23.19
1946 to 1960	364	3,186	8.7	.122	36	335	38	26	2,273	6.2	.71	18.61	15.07
1961 to 1970	334	3,555	10.6	.220	64	657	62	39	3,867	11.6	1.09	17.60	10.53
1971 to 1973	87	1,266	14.5	.074	22	844	58	37	1,402	16.1	1.11	19.04	14.23
1974 to 1979	219	2,450	11.2	.166	49	759	68	35	2,943	13.4	1.20	17.73	14.17
1980 to 1983	62	2,644	42.5	Q	Q	2,460	58	36	2,535	40.8	.96	16.57	29.55

Square Footage Category

5,000 or Less	887	1,852	2.1	.177	52	200	96	32	3,318	3.7	1.79	18.70	11.10
5,001 to 10,000	229	1,634	7.1	.056	19	289	40	23	1,320	5.8	.81	19.98	10.59
10,001 to 25,000	182	2,889	15.9	.129	38	707	45	32	2,406	13.2	.83	18.68	14.77
25,001 to 50,000	58	2,108	36.5	.095	28	1,637	45	37	1,724	29.9	.82	18.24	14.54
50,001 to 100,000	31	2,101	68.3	.093	27	3,016	44	42	1,604	52.2	.76	17.30	11.30
100,001 to 200,000	15	2,062	133.6	.083	24	5,390	40	35	1,410	91.4	.68	16.95	13.66
Over 200,000	9	4,008	435.4	.206	60	22,383	51	31	3,339	362.7	.83	16.20	19.06

Number of Floors

One	1,033	7,592	7.4	.400	117	387	53	37	7,066	6.8	.93	17.69	13.67
Two	268	3,885	14.5	.165	48	615	42	28	2,980	11.1	.77	18.10	19.42
Three or More	111	5,178	46.6	.285	83	2,565	55	29	5,076	45.7	.98	17.83	12.72

Principal Activity Within Building

Assembly	197	1,827	9.3	.052	15	262	28	22	1,070	5.4	.50	20.77	19.69
Educational	79	2,082	26.5	.054	16	682	26	28	1,060	13.5	.51	19.76	15.19
Food Sales/Service	145	616	4.2	.077	23	529	125	47	1,402	9.7	2.28	18.23	15.27
Health Care	20	567	28.6	.045	13	2,290	80	26	738	37.2	1.30	16.23	27.49
Lodging	57	303	14.1	.084	25	1,466	104	86	1,451	25.4	1.81	17.34	20.24
Mercantile/Services	374	3,808	10.2	.180	53	480	47	39	2,980	8.0	.78	16.59	26.32
Office	191	2,896	15.2	.189	56	995	65	21	3,549	18.6	1.23	18.73	10.65
Residential	44	299	6.7	.009	3	Q	Q	43	Q	Q	Q	20.40	36.39
Warehouse	154	2,270	14.7	.086	25	557	38	46	1,416	9.2	.62	16.48	12.21
Other	81	640	7.9	.040	12	497	63	Q	699	8.6	1.09	17.32	27.10
Vacant	70	846	12.1	.033	10	470	39	52	564	8.1	.67	17.16	23.07

Climate Zones:

45 Year Average

Annual Heating (HDD) and Cooling Degree-Days (CDD)

Below 2,000 CDD and Above 7,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Below 2,000 CDD and 5,500-7,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Below 2,000 CDD and 4,000-5,499 HDD	380	5,142	13.5	Q	Q	551	41	29	3,544	9.3	.69	16.93	30.36
Below 2,000 CDD and Below 4,000 HDD	420	4,391	Q	.192	56	Q	44	32	3,346	Q	.76	17.43	31.90
Above 2,000 CDD and Below 4,000 HDD	611	7,121	11.6	.447	131	732	63	34	8,231	13.5	1.16	18.39	17.75

See footnotes at end of table.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	0.391	
Census Region: South													
Metropolitan Status													
Metropolitan	621	9,518	15.3	0.567	166	913	60	34	10,197	16.4	1.07	17.98	10.44
Nonmetropolitan	791	7,136	9.0	.282	83	356	39	30	4,924	6.2	.69	17.47	19.06
Number of Establishments in Building													
Vacant	34	286	8.5	.008	2	245	29	Q	147	4.4	.52	17.82	29.70
Single Establishment	1,186	11,109	9.4	.581	170	490	52	34	10,487	8.8	.94	18.04	8.41
Multiple Establishment	191	5,260	27.5	.259	76	1,354	49	28	4,487	23.4	.85	17.31	24.16
Government Occupancy													
Any Government Occupancy	122	3,541	29.1	.161	47	1,320	45	32	2,713	22.3	.77	16.88	24.17
Federal	26	Q	Q	Q	Q	Q	45	28	Q	Q	.69	15.39	43.34
State	38	1,036	27.5	.048	14	1,276	46	30	883	23.4	.85	18.35	21.59
Local	72	1,389	19.3	.056	16	775	40	31	1,061	14.7	.76	18.99	17.60
Number of Employees													
Fewer than 10	968	4,551	4.7	.196	57	203	43	56	3,626	3.7	.80	18.49	9.83
10 to 19	193	2,115	11.0	.072	21	372	34	29	1,444	7.5	.68	20.14	20.66
20 to 49	170	3,083	18.1	.148	43	869	48	29	2,776	16.3	.90	18.79	12.86
50 to 99	44	1,519	34.9	.087	26	2,006	57	32	1,473	33.8	.97	16.87	12.93
100 or More	38	5,386	142.6	.346	101	9,165	64	28	5,803	153.7	1.08	16.77	18.12
Hours of Operation During a Typical Week													
39 or Fewer Hours	281	1,774	6.3	.052	15	185	29	34	969	3.4	.55	18.63	28.72
40 to 48 Hours	336	3,293	9.8	.093	27	277	28	21	1,779	5.3	.54	19.14	11.04
49 to 60 Hours	308	3,739	12.1	.158	46	511	42	31	2,928	9.5	.78	18.59	13.04
61 to 84 Hours	213	4,088	19.2	.201	59	943	49	32	3,455	16.3	.85	17.23	23.02
85 to 167 Hours	145	1,843	12.7	.150	44	1,036	81	35	2,668	18.4	1.45	17.80	16.42
168 Hours	129	1,917	14.8	.196	57	1,516	102	42	3,322	25.7	1.73	16.96	16.17
Percentage of Exterior Glass													
Less than 25 Percent	965	9,953	10.3	.446	131	462	45	33	7,994	8.3	.80	17.94	13.17
25 to 49 Percent	331	4,057	12.3	.235	69	709	58	33	4,039	12.2	1.00	17.22	12.80
50 to 74 Percent	89	1,719	19.2	.114	33	1,274	66	29	2,033	22.7	1.18	17.84	13.57
75 Percent or More	26	926	35.3	.055	16	2,087	59	30	1,055	40.3	1.14	19.31	24.58
Insulation/Special Glass													
Any Present	972	13,020	13.4	.736	216	757	57	33	12,897	13.3	.99	17.52	10.56
Special Glass	474	8,573	18.1	.464	136	977	54	31	8,134	17.1	.95	17.55	14.09
Roof/Ceiling Insulation	694	9,557	13.8	.541	159	780	57	33	9,525	13.7	1.00	17.60	8.76
Exterior Wall Insulation	465	6,191	13.3	.400	117	861	65	33	6,815	14.7	1.10	17.03	15.10
None Present	439	3,634	8.3	.113	33	257	31	27	2,224	5.1	.61	19.72	11.74
Computerized Energy Management System													
In Use	27	1,539	58.0	.092	27	3,480	60	31	1,543	58.1	1.00	16.71	15.25
Not in Use	1,285	14,508	11.3	.747	219	582	52	32	13,391	10.4	.92	17.92	10.92
Professional Energy Audits													
Performed in Past Year	154	4,349	28.2	.256	75	1,662	59	30	4,362	28.3	1.00	17.02	19.42
Measures Taken	58	1,675	29.1	.097	28	1,680	58	26	1,718	29.9	1.03	17.77	16.66
Measures Not Taken	97	2,674	Q	Q	Q	Q	60	33	2,644	27.4	.99	16.57	26.32
Not Performed	1,257	12,305	9.8	.593	174	471	48	33	10,759	8.6	.87	18.16	9.24

See footnotes at end of table.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	0.391	
Census Region: West													
All Buildings	549	7,467	13.6	0.346	101	630	46	29	5,292	9.6	0.71	15.30	21.21
Electricity Used for:^a													
Heating	183	2,856	15.6	.114	33	623	40	27	1,595	8.7	.56	13.99	15.30
And Air-Conditioning	120	2,228	18.6	.098	29	814	44	29	1,351	11.2	.61	13.82	17.90
And Not Air-Conditioning	63	627	10.0	.016	5	258	26	20	244	3.9	.39	15.02	27.74
Air-Conditioning	262	4,720	18.0	.244	71	930	52	28	3,877	14.8	.82	15.90	17.24
And Space Heating	120	2,228	18.6	.098	29	814	44	29	1,351	11.2	.61	13.82	17.90
And Not Space Heating	142	2,491	17.5	.146	43	1,027	59	27	2,526	17.8	1.01	17.29	20.95
Water Heating	218	2,681	12.3	.142	42	Q	Q	31	1,822	Q	Q	12.85	23.96
Cooking	143	2,547	17.8	.107	32	751	42	27	1,519	10.6	.60	14.13	17.36
Manufacturing	56	759	13.6	Q	Q	485	36	25	Q	7.5	.55	15.49	21.88
Fuels Used for Heating^a													
Electricity Only	134	1,732	12.9	.084	25	627	48	30	1,164	8.7	.67	13.86	15.16
Electricity and Natural Gas													
Only	30	Q	31.9	.026	8	864	27	27	374	12.6	.40	14.60	25.03
Electricity and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	35.41
Electricity and Propane Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.64
Electricity, Natural Gas													
and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.64
Other Combinations or Fuels	302	4,084	13.5	.185	54	612	45	24	3,083	Q	.75	16.65	23.12
No Fuels Used	75	616	8.2	Q	Q	Q	Q	Q	Q	Q	Q	13.28	43.27
Fuels Used for Air-Conditioning^a													
Electricity Only	249	4,552	18.3	.235	69	942	52	28	3,700	14.8	.81	15.77	17.54
Electricity and Natural Gas													
Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	39.35
Other Combinations or Fuels	21	364	17.7	Q	Q	Q	56	Q	Q	Q	.87	15.48	39.43
No Fuels Used	266	2,368	8.9	Q	Q	Q	Q	Q	1,097	Q	Q	13.48	51.86
Fuels Used for Water Heating^a													
Electricity Only	202	2,405	11.9	.130	38	Q	Q	32	1,621	Q	Q	12.45	23.45
Electricity and Natural Gas													
Only	11	240	Q	.010	3	Q	43	Q	179	Q	.74	17.18	42.72
Electricity and Fuel Oil Only	Q	Q	Q	Q	Q	79	18	39	4	1.4	.32	18.38	79.64
Electricity and Propane Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.64
Other Combinations or Fuels	207	3,885	18.8	.170	50	822	44	26	2,890	14.0	.74	17.00	22.44
No Fuel Used	123	899	7.3	.034	10	276	Q	43	580	4.7	Q	17.07	27.93
Fuels Used for Cooking^a													
Electricity Only	125	1,588	12.7	.066	19	530	42	26	918	7.4	.58	13.89	13.23
Electricity and Natural Gas													
Only	17	Q	50.3	Q	Q	2,023	40	28	Q	33.1	.66	16.34	25.43
Electricity and Propane	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.64
Other Combinations or Fuels	59	1,280	21.8	.060	17	1,015	47	26	936	Q	.73	15.68	13.95
No Fuel Used	347	3,697	10.7	.184	54	Q	50	31	2,851	8.2	.77	15.49	23.73
Fuels Used for Manufacturing^a													
Electricity Only	50	650	13.1	Q	Q	409	31	23	Q	6.4	.49	15.65	22.62
Electricity and Natural Gas													
Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	52.36
Other Combinations or Fuels	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	40.28
No Fuels Used	482	6,554	13.6	.309	91	641	47	29	4,686	9.7	.72	15.16	23.56

See footnotes at end of table.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	0.391	
Census Region: West													
Fuels Used to Fire Boilers*													
Electricity Only	Q	Q	Q	Q	Q	Q	75	Q	Q	Q	0.46	Q	60.42
Other Combinations or Fuels	78	2,451	Q	0.095	28	Q	39	25	1,457	Q	.59	15.30	29.80
Year Constructed													
1900 or Before	23	Q	7.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	30.67
1901 to 1920	34	531	15.5	.012	3	Q	Q	Q	160	Q	Q	13.83	47.11
1921 to 1945	113	1,215	10.8	.044	13	390	36	30	730	6.5	.60	16.61	27.34
1946 to 1960	130	1,058	8.1	Q	Q	Q	Q	Q	Q	Q	Q	13.10	43.30
1961 to 1970	94	1,512	16.1	.067	20	720	45	24	1,031	11.0	.68	15.30	14.46
1971 to 1973	35	542	15.4	Q	Q	1,113	72	34	Q	20.5	1.34	18.46	32.48
1974 to 1979	92	1,243	13.5	.066	19	720	53	26	1,059	11.5	.85	16.02	21.85
1980 to 1983	28	Q	42.2	.049	14	1,732	41	34	Q	24.1	.57	13.90	27.42
Square Footage Category													
5,000 or Less	282	601	2.1	.043	13	153	72	19	782	2.8	1.30	18.12	10.79
5,001 to 10,000	116	864	7.5	Q	Q	Q	Q	Q	Q	Q	Q	14.47	35.94
10,001 to 25,000	89	1,409	15.8	.045	13	502	32	23	799	9.0	.57	17.85	20.89
25,001 to 50,000	37	1,260	34.4	.049	14	1,330	39	30	831	22.7	.66	17.06	22.80
50,001 to 100,000	16	1,045	64.7	.047	14	2,880	45	40	594	36.8	.57	12.76	20.39
100,001 to 200,000	6	843	130.0	.031	9	4,850	37	27	464	71.6	.55	14.77	16.48
Over 200,000	3	Q	554.0	.063	18	24,057	43	30	831	318.8	.58	13.25	25.93
Number of Floors													
One	357	3,014	8.4	.157	46	439	52	33	2,513	7.0	.83	16.03	27.84
Two	126	1,825	14.5	.066	19	522	36	27	1,021	8.1	.56	15.52	22.63
Three or More	66	2,628	39.9	.123	36	1,869	47	26	1,758	Q	.67	14.27	24.84
Principal Activity Within Building													
Assembly	45	Q	Q	Q	Q	Q	20	22	Q	Q	.32	15.64	50.99
Educational	31	754	24.1	.016	5	519	22	21	239	7.7	.32	14.74	19.93
Food Sales/Service	57	320	5.6	.031	9	548	97	33	512	9.0	1.60	16.44	20.75
Health Care	Q	193	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	41.18
Lodging	24	346	Q	Q	Q	Q	50	42	Q	Q	.84	16.73	42.48
Mercantile/Services	149	1,324	8.9	.046	14	309	35	23	785	5.3	.59	17.01	17.10
Office	112	1,593	14.3	.101	30	903	63	21	1,460	13.1	.92	14.49	14.52
Residential	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	44.57
Warehouse	63	1,141	18.2	.038	11	602	33	41	616	9.8	.54	16.27	21.50
Other	20	401	20.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	11.61
Vacant	24	465	19.2	Q	Q	984	51	Q	Q	18.2	.95	18.51	32.93
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD													
Below 2,000 CDD and 5,500-7,000 HDD	156	1,761	11.3	.069	20	Q	39	26	Q	Q	.53	13.45	33.22
Below 2,000 CDD and 4,000-5,499 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	62.32
Below 2,000 CDD and Below 4,000 HDD	218	2,877	13.2	.136	40	622	47	24	2,745	12.6	.95	20.26	14.27
Above 2,000 CDD and Below 4,000 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	94.75

See footnotes at end of table.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	0.391	
Census Region: West													
Metropolitan Status													
Metropolitan	386	6,139	15.9	0.271	79	702	44	27	4,356	11.3	0.71	16.08	15.42
Nonmetropolitan	Q	Q	8.1	.075	22	Q	Q	Q	936	Q	Q	12.50	97.83
Number of Establishments in Building													
Vacant	6	164	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	52.43
Single Establishment	422	4,606	10.9	.227	66	537	49	30	3,498	8.3	.76	15.44	22.61
Multiple Establishment	121	2,697	22.2	.114	33	939	42	25	1,691	13.9	.63	14.82	22.43
Government Occupancy													
Any Government Occupancy	57	1,381	24.3	.066	19	Q	48	29	820	Q	Q	12.37	31.35
Federal	10	288	Q	.021	6	Q	73	27	239	Q	.83	11.34	39.52
State	20	485	24.4	Q	Q	Q	Q	Q	Q	Q	Q	13.44	48.47
Local	34	789	23.3	.032	9	952	41	28	420	12.4	.53	13.06	25.79
Number of Employees													
Fewer than 10	318	1,827	5.8	.059	17	186	32	47	1,072	3.4	.59	18.13	22.13
10 to 19	85	783	9.2	.018	5	217	23	17	292	3.4	.37	15.87	17.28
20 to 49	103	1,840	17.9	Q	Q	Q	Q	Q	1,477	14.4	Q	14.87	33.28
50 to 99	27	889	33.4	.037	11	1,381	41	22	618	23.3	.70	15.84	23.28
100 or More	17	2,128	121.8	.132	39	7,567	62	26	1,833	104.9	.86	13.86	18.78
Hours of Operation During a Typical Week													
39 or Fewer Hours	60	495	8.2	.011	3	187	23	25	188	3.1	.38	16.61	16.42
40 to 48 Hours	156	1,794	11.5	.064	19	410	36	28	1,014	Q	.57	15.84	26.57
49 to 60 Hours	123	1,627	13.2	.052	15	423	32	19	819	6.7	.50	15.72	13.72
61 to 84 Hours	88	1,451	16.5	Q	Q	Q	Q	Q	1,539	17.5	Q	14.22	35.97
85 to 167 Hours	79	954	12.1	.046	14	587	48	28	743	9.5	.78	16.11	16.37
168 Hours	43	Q	Q	Q	Q	1,479	56	41	Q	22.8	.86	15.45	29.35
Percentage of Exterior Glass													
Less than 25 Percent	347	4,257	12.3	.191	56	551	45	36	3,000	8.7	.70	15.73	25.08
25 to 49 Percent	155	2,093	13.5	.093	27	603	45	24	1,354	8.8	.65	14.52	23.57
50 to 74 Percent	34	778	22.8	.042	12	1,240	54	25	639	Q	.82	15.12	27.83
75 Percent or More	14	339	Q	.019	6	Q	58	19	298	Q	.88	15.30	33.90
Insulation/Special Glass													
Any Present	384	5,628	14.7	.297	87	773	53	29	4,449	11.6	.79	14.99	25.71
Special Glass	234	4,008	17.1	.228	67	974	57	29	3,451	14.8	.86	15.15	28.92
Roof/Ceiling Insulation	272	3,939	14.5	.226	66	Q	57	34	3,228	Q	.82	14.27	31.80
Exterior Wall Insulation	193	2,705	14.0	.167	49	Q	Q	34	2,410	Q	.89	14.41	39.40
None Present	165	1,839	11.1	.049	14	296	27	26	843	5.1	.46	17.23	18.40

See footnotes at end of table.

Table 15. Electricity: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factors:	0.991	1.016	0.869	1.297	1.297	1.362	1.007	0.981	1.268	1.322	1.000	0.391	
Census Region: West													
Computerized Energy Management System													
In Use	18	967	54.4	0.059	17	Q	61	28	793	Q	0.82	13.52	27.30
Not in Use	482	6,120	12.7	.281	82	583	46	29	4,390	9.1	.72	15.62	22.98
Professional Energy Audits													
Performed in Past Year	78	2,563	32.9	.105	31	1,346	41	25	1,619	20.8	.63	15.43	21.40
Measures Taken	30	1,410	Q	.052	15	1,736	37	24	870	29.1	.62	16.74	30.13
Measures Not Taken	48	1,153	24.0	.053	16	Q	46	26	749	Q	.65	14.15	30.41
Not Performed	471	4,904	10.4	.241	71	511	49	31	3,673	7.8	.75	15.25	21.95

^a Fuel consumption and expenditures data were not collected separately by end use. For example, although it may be known that electricity was used for heating in certain buildings, the electricity consumption shown for the category **Electricity Used for Heating** includes the electricity used in those buildings for all purposes, such as lighting, water heating, etc. For consumption of and expenditures for electricity in buildings with electric heat, air-conditioning, or both, see Tables 20-22.

^{nc} No cases in sample.

^q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	
Census Region: Northeast													
All Buildings	427	8,071	18.9	0.314	0.304	735	39	26	2,143	5.0	0.27	6.83	8.46
Natural Gas Used for:^a													
Heating	335	5,260	15.7	.283	.274	845	54	35	1,922	5.7	.37	6.80	8.86
And Air-Conditioning	26	437	17.0	.024	.023	934	55	37	171	6.7	.39	7.13	19.81
And Not Air-Conditioning	309	4,824	15.6	.259	.251	837	54	35	1,750	5.7	.36	6.77	9.57
Air-Conditioning	26	475	18.3	.029	.028	1,112	61	37	193	7.5	.41	6.70	19.89
Water Heating	292	5,054	17.3	.255	.247	873	50	32	1,733	5.9	.34	6.79	10.32
Cooking	197	4,493	22.9	.177	.171	899	39	27	1,206	6.1	.27	6.82	10.62
Manufacturing	26	330	12.7	.032	.031	1,212	96	Q	205	7.9	.62	6.49	21.57
Electricity Generation	Q	282	Q	Q	Q	Q	42	30	76	Q	.27	6.36	32.56
Fuels Used for Heating^a													
Natural Gas Only	271	3,599	13.3	.209	.202	769	58	41	1,433	5.3	.40	6.87	8.87
Natural Gas and Electricity													
Only	27	490	18.1	.028	.027	1,043	58	42	185	6.8	.38	6.55	25.60
Natural Gas and Fuel Oil													
Only	28	671	24.1	.038	.036	1,349	56	34	244	8.8	.36	6.50	23.28
Other Combinations or Fuels	87	3,068	35.2	.037	.036	430	12	8	263	3.0	.09	7.04	15.32
No Fuels Used	14	242	Q	Q	Q	Q	Q	Q	Q	1.2	Q	7.78	49.31
Fuels Used for Air-Conditioning^a													
Natural Gas Only	21	364	17.3	.018	.017	840	49	39	121	5.8	.33	6.84	21.91
Natural Gas and Electricity													
Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	94.72
Other Combinations or Fuels	298	6,326	21.2	.245	.238	821	39	23	1,662	5.6	.26	6.79	8.41
No Fuels Used	102	1,297	12.7	.047	.046	465	36	55	329	3.2	.25	6.96	18.06
Fuels Used for Water Heating^a													
Natural Gas Only	269	3,992	14.8	.205	.198	760	51	38	1,405	5.2	.35	6.87	10.30
Natural Gas and Electricity													
Only	14	411	29.1	.020	.020	1,424	49	Q	130	9.2	.32	6.45	25.30
Natural Gas and Fuel Oil Only	8	422	Q	.029	.028	Q	69	40	189	Q	.45	6.46	33.57
Other Combinations or Fuels	104	2,797	27.0	.052	.050	500	19	12	358	3.5	.13	6.90	16.23
No Fuels Used	29	395	13.6	.007	.007	230	17	20	50	1.7	.13	7.44	24.94
Fuels Used for Cooking^a													
Natural Gas Only	165	3,250	19.7	.117	.113	705	36	31	824	5.0	.25	7.07	11.79
Natural Gas and Electricity													
Only	29	1,013	34.4	.047	.046	1,601	46	22	314	10.7	.31	6.66	22.25
Other Combinations or Fuels	57	1,519	26.7	.046	.044	802	30	20	291	5.1	.19	6.38	12.51
No Fuels Used	176	2,288	13.0	.105	.101	595	46	28	714	4.1	.31	6.83	11.81
Fuels Used for Manufacturing^a													
Natural Gas Only	21	215	10.1	.020	.019	921	91	Q	135	6.4	.63	6.90	24.40
Natural Gas and Electricity													
Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	69.85
Other Combinations or Fuels	32	847	26.1	.018	.017	554	21	26	126	3.9	.15	7.02	22.37
No Fuels Used	370	6,905	18.7	.268	.260	725	39	25	1,832	5.0	.27	6.84	9.33
Fuels Used to Fire Boilers^a													
Natural Gas Only	113	1,778	15.7	.132	.128	1,168	74	51	903	8.0	.51	6.82	9.55
Natural Gas and Fuel Oil Only	15	848	Q	.032	.031	2,115	38	Q	197	13.1	.23	6.20	27.42
Natural Gas and Electricity													
Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	70.90
Other Combinations or Fuels	62	2,091	33.8	.022	.021	355	10	8	176	2.8	.08	8.00	16.50

See footnotes at end of table.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	
Census Region: Northeast													
Year Constructed													
1900 or Before	64	974	15.3	0.032	0.031	504	33	39	229	3.6	0.24	7.13	21.49
1901 to 1920	70	1,388	19.8	.024	.023	336	17	21	172	2.5	.12	7.30	16.12
1921 to 1945	117	1,648	14.1	.058	.057	501	35	21	414	3.6	.25	7.09	13.76
1946 to 1960	75	1,650	21.9	.059	.058	788	36	20	408	5.4	.25	6.86	22.25
1961 to 1970	56	1,177	20.9	.066	.064	1,167	56	31	430	7.6	.37	6.55	19.17
1971 to 1973	12	471	37.7	.029	.028	2,312	61	46	194	15.6	.41	6.74	23.52
1974 to 1979	26	450	17.4	.030	.029	1,145	66	28	197	7.6	.44	6.67	11.64
1980 to 1983	7	314	44.6	.016	.016	2,334	52	30	99	14.1	.32	6.03	23.91
Square Footage Category													
5,000 or Less	179	471	2.6	.050	.048	278	106	42	374	2.1	.79	7.52	11.85
5,001 to 10,000	87	617	7.1	.041	.040	476	67	41	302	3.5	.49	7.33	13.07
10,001 to 25,000	89	1,333	15.1	.056	.055	637	42	30	389	4.4	.29	6.89	12.58
25,001 to 50,000	40	1,340	33.2	.048	.047	1,192	36	27	319	7.9	.24	6.63	17.39
50,001 to 100,000	20	1,266	64.8	.039	.038	2,002	31	31	265	13.6	.21	6.77	17.15
100,001 to 200,000	10	1,305	136.5	.032	.031	3,298	24	25	203	21.2	.16	6.43	12.61
Over 200,000	4	1,739	433.1	.048	.046	11,881	27	13	291	72.5	.17	6.10	19.13
Number of Floors													
One	117	1,274	10.9	.082	.080	702	65	45	566	4.8	.44	6.87	12.45
Two	103	1,352	13.2	.068	.066	664	50	38	465	4.5	.34	6.83	18.05
Three or More	207	5,445	26.2	.164	.159	788	30	20	1,112	5.4	.20	6.80	9.51
Principal Activity Within Building													
Assembly	44	884	20.0	.024	.024	550	27	49	169	3.8	.19	6.97	22.95
Educational	19	1,009	52.7	.033	.032	1,727	33	23	222	11.6	.22	6.70	27.26
Food Sales/Service	40	283	7.0	.031	.030	762	109	49	205	5.1	.72	6.64	13.27
Health Care	7	426	Q	.032	.031	Q	75	31	194	Q	.46	6.06	33.59
Lodging	8	329	41.8	.013	.013	1,644	Q	Q	93	11.7	Q	7.14	38.79
Mercantile/Services	106	1,481	13.9	.058	.056	544	39	27	406	3.8	.27	7.01	16.32
Office	59	1,169	20.0	.043	.042	731	37	11	290	4.9	.25	6.76	16.34
Residential	80	1,111	13.8	.033	.032	411	30	69	249	3.1	.22	7.51	18.63
Warehouse	35	849	24.5	.034	.033	974	Q	42	228	6.6	Q	6.78	29.13
Other	11	292	27.0	Q	Q	Q	Q	Q	Q	Q	Q	Q	31.27
Vacant	18	238	13.4	.006	.006	326	24	40	42	2.3	.17	7.15	21.12
Climate Zones:													
45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD													
Below 2,000 CDD and 5,500-7,000 HDD	241	4,259	17.6	.218	.211	903	51	30	1,406	5.8	.33	6.45	11.25
Below 2,000 CDD and 4,000-5,499 HDD	154	3,409	22.1	.081	.079	526	24	19	623	4.0	.18	7.70	14.05
Below 2,000 CDD and Below 4,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Above 2,000 CDD and Below 4,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Metropolitan Status													
Metropolitan	373	7,304	19.6	.283	.274	758	39	25	1,917	5.1	.26	6.78	9.35
Nonmetropolitan	54	768	14.2	.031	.030	576	40	38	225	4.2	.29	7.26	5.53

See footnotes at end of table.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	
Census Region: Northeast													
Number of Establishments in Building													
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	90.87
Single Establishment	317	4,895	15.5	0.217	0.211	685	44	33	1,471	4.6	0.30	6.78	10.36
Multiple Establishment	109	3,117	28.5	.095	.092	870	31	18	660	6.0	.21	6.93	13.77
Government Occupancy													
Any Government Occupancy	27	1,400	51.6	.049	.048	1,824	35	12	320	11.8	.23	6.48	13.03
Federal	6	Q	79.2	.009	.009	1,574	Q	Q	63	10.7	Q	6.81	95.12
State	8	339	41.8	.020	.020	2,478	59	Q	128	15.7	.38	6.35	23.89
Local	19	753	38.8	.028	.027	1,461	38	21	184	9.5	.24	6.48	21.67
Number of Employees													
Fewer than 10	269	2,427	9.0	.079	.076	292	32	76	575	2.1	.24	7.32	1.70
10 to 19	61	833	13.6	.039	.038	640	47	50	277	4.5	.33	7.05	22.01
20 to 49	59	1,274	21.6	.078	.076	1,321	61	45	519	8.8	.41	6.66	13.37
50 to 99	14	687	50.7	.027	.026	2,012	40	32	183	13.5	.27	6.73	7.24
100 or More	25	2,851	115.7	.091	.088	3,686	32	12	588	23.9	.21	6.47	7.50
Hours of Operation During a Typical Week													
39 or Fewer Hours	48	557	11.7	.015	.015	319	27	60	110	2.3	.20	7.21	20.71
40 to 48 Hours	110	1,668	15.1	.065	.063	591	39	37	445	4.0	.27	6.84	13.28
49 to 60 Hours	100	1,752	17.5	.052	.050	515	29	25	358	3.6	.20	6.94	13.62
61 to 84 Hours	94	1,683	18.0	.068	.066	726	40	24	469	5.0	.28	6.90	15.93
85 to 167 Hours	51	1,144	22.4	.056	.054	1,096	49	34	395	7.7	.35	7.05	16.29
168 Hours	Q	1,268	Q	.058	.056	Q	46	Q	365	Q	.29	6.31	31.65
Percentage of Exterior Glass													
Less than 25 Percent	259	3,553	13.7	.134	.129	515	38	34	944	3.6	.27	7.07	11.14
25 to 49 Percent	124	3,130	25.3	.129	.125	1,042	41	22	847	6.9	.27	6.58	12.24
50 to 74 Percent	38	1,011	26.6	.043	.041	1,127	42	30	278	7.3	.27	6.49	13.15
75 Percent or More	7	377	57.3	.009	.009	Q	24	12	Q	Q	.19	8.27	33.15
Insulation/Special Glass													
Any Present	310	6,316	20.4	.253	.245	816	40	27	1,700	5.5	.27	6.72	8.99
Special Glass	184	4,386	23.8	.176	.170	954	40	25	1,161	6.3	.26	6.61	11.32
Roof/Ceiling Insulation	198	4,362	22.0	.180	.174	909	41	25	1,208	6.1	.28	6.71	10.79
Exterior Wall Insulation	145	2,734	18.9	.114	.110	787	42	22	768	5.3	.28	6.75	12.40
None Present	118	1,756	14.9	.061	.059	520	35	24	443	3.8	.25	7.25	13.28
Computerized Energy Management System													
In Use	14	1,095	75.8	.037	.036	2,541	34	15	247	17.1	.23	6.73	21.68
Not in Use	409	6,940	17.0	.277	.268	677	40	29	1,891	4.6	.27	6.84	8.82
Professional Energy Audits													
Performed in Past Year	56	2,055	37.0	.089	.086	1,594	43	21	577	10.4	.28	6.51	14.78
Measures Taken	30	1,181	39.4	.050	.048	1,670	42	21	330	11.0	.28	6.61	20.73
Measures Not Taken	26	874	34.1	.039	.038	1,507	44	Q	247	9.6	.28	6.38	22.32
Not Performed	372	6,016	16.2	.225	.218	606	37	29	1,566	4.2	.26	6.95	8.43

See footnotes at end of table.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	
Census Region: North Central													
All Buildings	906	13,503	14.9	1,044	1,013	1,152	77	55	5,542	6.1	0.41	5.31	7.77
Natural Gas Used for:^a													
Heating	847	11,742	13.9	.964	.935	1,139	82	60	5,124	6.1	.44	5.31	7.44
And Air-Conditioning	51	1,063	21.0	.106	.103	2,084	99	64	545	10.8	.51	5.16	15.81
And Not Air-Conditioning	796	10,679	13.4	.859	.833	1,079	80	60	4,578	5.8	.43	5.33	7.51
Air-Conditioning	51	1,083	21.0	.106	.103	2,069	98	64	550	10.7	.51	5.16	15.78
Water Heating	569	9,625	16.9	.816	.792	1,434	85	61	4,338	7.6	.45	5.31	8.65
Cooking	227	5,025	22.1	.447	.434	1,967	89	57	2,385	10.5	.47	5.33	11.22
Manufacturing	27	628	23.6	.118	.114	4,422	187	125	593	22.3	.94	5.04	19.76
Electricity Generation	11	621	56.7	.034	.033	3,111	55	27	173	15.8	.28	5.08	24.95
Fuels Used for Heating^a													
Natural Gas Only	728	9,463	13.0	.814	.790	1,118	86	65	4,336	6.0	.46	5.33	8.11
Natural Gas and Electricity Only	85	1,355	15.9	.095	.093	1,118	70	43	515	6.0	.38	5.39	14.11
Natural Gas and Fuel Oil Only	15	450	Q	.025	.024	Q	55	43	125	Q	.28	5.05	36.06
Other Combinations or Fuels	69	2,151	31.4	.106	.103	1,543	49	28	545	8.0	.25	5.15	23.67
No Fuels Used	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	77.95
Fuels Used for Air-Conditioning^a													
Natural Gas Only	43	782	18.2	.072	.070	1,671	92	63	379	8.8	.48	5.27	18.31
Natural Gas and Electricity Only	8	237	Q	.027	.026	Q	113	66	134	Q	.56	4.97	44.09
Other Combinations or Fuels	622	10,451	16.8	.790	.766	1,270	76	49	4,205	6.8	.40	5.32	8.42
No Fuels Used	226	1,928	8.5	.153	.148	675	79	102	811	3.6	.42	5.31	14.33
Fuels Used for Water Heating^a													
Natural Gas Only	548	8,580	15.7	.734	.712	1,340	86	63	3,924	7.2	.46	5.35	9.34
Natural Gas and Electricity Only	19	735	38.8	.048	.047	2,539	65	44	242	12.8	.33	5.02	20.26
Natural Gas and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	40.36
Other Combinations or Fuels	215	3,386	15.7	.209	.203	969	62	39	1,091	5.1	.32	5.23	22.15
No Fuels Used	116	556	4.8	.034	.033	296	62	70	188	1.6	.34	5.46	18.16
Fuels Used for Cooking^a													
Natural Gas Only	172	3,113	18.1	.288	.279	1,677	93	67	1,535	8.9	.49	5.33	14.00
Natural Gas and Electricity Only	54	1,559	28.7	.137	.133	2,528	88	45	741	13.6	.48	5.39	17.93
Other Combinations or Fuels	162	2,905	17.9	.155	.150	954	53	38	826	5.1	.28	5.34	9.86
No Fuels Used	518	5,925	11.4	.464	.450	895	78	60	2,440	4.7	.41	5.26	12.43
Fuels Used for Manufacturing^a													
Natural Gas Only	13	265	20.0	.062	.060	4,680	234	158	330	24.9	1.25	5.32	21.88
Natural Gas and Electricity Only	13	351	Q	.055	.053	Q	156	105	259	Q	.74	4.73	30.50
Other Combinations or Fuels	81	1,121	13.8	.079	.077	970	70	61	419	5.1	.37	5.31	25.38
No Fuels Used	798	11,753	14.7	.848	.822	1,062	72	50	4,531	5.7	.39	5.34	7.81
Fuels Used to Fire Boilers^a													
Natural Gas Only	212	4,777	22.5	.436	.423	2,055	91	73	2,349	11.1	.49	5.39	9.02
Natural Gas and Fuel Oil Only	7	1,105	164.0	.096	.093	14,223	87	63	472	70.1	.43	4.93	11.21
Natural Gas and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	74.12
Other Combinations or Fuels	13	444	Q	.027	.026	Q	61	43	140	Q	.32	5.21	32.06

See footnotes at end of table.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	
Census Region: North Central													
Year Constructed													
1900 or Before	90	922	10.2	0.051	0.050	566	55	44	278	3.1	0.30	5.44	20.61
1901 to 1920	117	1,579	13.5	.086	.083	735	54	45	463	4.0	.29	5.39	11.72
1921 to 1945	180	2,284	12.7	.194	.188	1,076	85	68	1,022	5.7	.45	5.28	13.33
1946 to 1960	198	2,728	13.8	.207	.201	1,046	76	62	1,073	5.4	.39	5.19	13.58
1961 to 1970	154	2,709	17.6	.227	.221	1,479	84	59	1,176	7.7	.43	5.17	11.71
1971 to 1973	44	805	18.3	.066	.064	1,495	82	42	352	8.0	.44	5.36	17.16
1974 to 1979	100	1,647	16.5	.159	.154	1,590	96	54	903	9.0	.55	5.69	14.75
1980 to 1983	24	829	34.2	.055	.053	2,264	66	38	275	11.3	.33	5.00	23.75
Square Footage Category													
5,000 or Less	470	1,085	2.3	.168	.163	358	155	53	934	2.0	.86	5.55	12.65
5,001 to 10,000	194	1,393	7.2	.140	.136	723	101	61	816	4.2	.59	5.82	15.82
10,001 to 25,000	138	2,273	16.5	.150	.146	1,088	66	47	828	6.0	.36	5.52	11.65
25,001 to 50,000	57	1,946	34.4	.151	.146	2,664	77	69	803	14.2	.41	5.33	12.66
50,001 to 100,000	26	1,771	69.4	.138	.134	5,418	78	65	710	27.8	.40	5.14	12.26
100,001 to 200,000	14	1,865	136.2	.126	.122	9,209	68	57	624	45.6	.33	4.95	10.19
Over 200,000	9	3,170	342.0	.171	.166	18,405	54	43	827	89.2	.26	4.84	13.21
Number of Floors													
One	431	3,569	8.3	.343	.333	796	96	61	1,880	4.4	.53	5.48	13.16
Two	252	3,454	13.7	.239	.232	951	69	55	1,266	5.0	.37	5.29	3.95
Three or More	224	6,479	28.9	.462	.448	2,062	71	51	2,397	10.7	.37	5.19	11.97
Principal Activity Within Building													
Assembly	120	1,508	12.6	.116	.112	964	77	61	626	5.2	.42	5.41	3.42
Educational	34	1,717	51.1	.136	.132	4,046	79	102	694	20.7	.40	5.11	3.55
Food Sales/Service	96	653	6.8	.108	.105	1,121	165	54	630	6.5	.96	5.84	3.85
Health Care	17	967	58.1	.080	.077	4,796	83	42	394	23.7	.41	4.94	22.45
Lodging	11	616	57.7	.047	.046	4,399	76	75	237	22.2	.38	5.04	7.04
Mercantile/Services	268	2,792	10.4	.134	.130	498	48	35	749	2.8	.27	5.60	3.13
Office	141	1,782	12.6	.150	.145	1,057	84	31	771	5.4	.43	5.15	16.46
Residential	68	651	9.6	.052	.050	765	80	122	287	4.2	.44	5.54	21.82
Warehouse	83	1,752	21.1	.145	.140	1,745	83	129	755	9.1	.43	5.22	14.21
Other	30	562	18.6	.045	.044	1,493	Q	51	228	7.5	Q	5.06	29.92
Vacant	39	503	Q	.033	.032	Q	66	118	170	Q	.34	5.12	32.85
Climate Zones:													
45 Year Average													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above													
7,000 HDD	194	3,213	16.5	Q	Q	1,336	81	55	Q	7.0	.43	5.27	26.61
Below 2,000 CDD and													
5,500-7,000 HDD	477	7,846	16.5	.620	.602	1,302	79	58	3,300	6.9	.42	5.32	10.43
Below 2,000 CDD and													
4,000-5,499 HDD	Q	Q	10.4	Q	Q	697	67	44	Q	3.7	.36	5.32	26.42
Below 2,000 CDD and Below													
4,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Above 2,000 CDD and Below													
4,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Metropolitan Status													
Metropolitan	564	9,954	17.6	.789	.765	1,397	79	54	4,222	7.5	.42	5.35	3.79
Nonmetropolitan	342	3,549	10.4	.256	.248	747	72	56	1,320	3.9	.37	5.17	17.12

See footnotes at end of table.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	
Census Region: North Central													
Number of Establishments in Building													
Vacant	7	161	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	54.91
Single Establishment	748	10,377	13.9	0.870	0.844	1,162	84	64	4,604	6.2	0.44	5.29	8.69
Multiple Establishment	151	2,965	19.7	.164	.159	1,089	55	30	886	5.9	.30	5.40	9.65
Government Occupancy													
Any Government Occupancy	70	2,411	34.3	.181	.176	2,584	75	51	922	13.1	.38	5.08	13.06
Federal	8	420	56.1	.029	.028	3,857	69	35	144	19.2	.34	4.99	18.31
State	21	712	33.8	.057	.055	Q	80	Q	284	Q	.40	4.97	34.53
Local	47	1,451	31.2	.110	.107	2,368	76	60	572	12.3	.39	5.19	10.49
Number of Employees													
Fewer than 10	570	3,302	5.8	.249	.242	437	75	112	1,362	2.4	.41	5.47	13.06
10 to 19	129	1,480	11.5	.110	.106	849	74	67	588	4.6	.40	5.36	10.97
20 to 49	136	3,129	23.1	.248	.241	1,828	79	61	1,355	10.0	.43	5.46	13.82
50 to 99	42	1,564	37.5	.138	.134	3,302	88	54	764	18.3	.49	5.55	14.44
100 or More	30	4,029	134.6	.300	.291	10,009	74	35	1,473	49.2	.37	4.92	9.68
Hours of Operation During a Typical Week													
39 or Fewer Hours	130	1,045	8.0	.069	.067	533	66	69	378	2.9	.36	5.44	14.03
40 to 48 Hours	174	1,930	11.1	.115	.112	662	60	50	618	3.6	.32	5.37	11.33
49 to 60 Hours	238	3,090	13.0	.211	.205	888	68	49	1,146	4.8	.37	5.42	15.55
61 to 84 Hours	180	2,869	16.0	.243	.235	1,350	85	58	1,309	7.3	.46	5.40	11.32
85 to 167 Hours	126	2,374	18.9	.196	.190	1,561	83	57	1,046	8.3	.44	5.33	16.12
168 Hours	59	2,195	37.2	.209	.203	3,552	95	54	1,046	17.7	.48	4.99	12.06
Percentage of Exterior Glass													
Less than 25 Percent	605	6,978	11.5	.549	.532	908	79	60	2,977	4.9	.43	5.42	9.22
25 to 49 Percent	235	4,458	18.9	.340	.330	1,445	76	50	1,771	7.5	.40	5.20	11.66
50 to 74 Percent	55	1,572	28.4	.135	.131	2,436	86	58	692	12.5	.44	5.13	12.62
75 Percent or More	11	494	45.4	.020	.019	1,846	41	27	102	9.4	.21	5.09	25.13
Insulation/Special Glass													
Any Present	681	10,975	16.1	.880	.854	1,293	80	53	4,642	6.8	.42	5.27	7.39
Special Glass	416	7,723	18.6	.666	.646	1,602	86	52	3,506	8.4	.45	5.27	7.85
Roof/Ceiling Insulation	456	8,018	17.6	.611	.593	1,340	76	51	3,175	7.0	.40	5.19	8.35
Exterior Wall Insulation	345	5,254	15.2	.375	.364	1,086	71	44	1,982	5.7	.38	5.29	10.26
None Present	225	2,528	11.2	.164	.159	727	65	66	900	4.0	.36	5.49	11.90
Computerized Energy Management System													
In Use	27	1,956	71.5	.125	.121	4,566	64	33	614	22.4	.31	4.91	12.86
Not in Use	874	11,525	13.2	.917	.889	1,049	80	60	4,914	5.6	.43	5.36	8.07
Professional Energy Audits													
Performed in Past Year	101	3,203	31.6	.237	.230	2,340	74	51	1,212	12.0	.38	5.12	11.59
Measures Taken	49	1,613	33.2	.143	.139	2,938	89	57	717	14.7	.44	5.02	15.18
Measures Not Taken	53	1,590	30.2	.094	.091	1,787	59	43	496	9.4	.31	5.27	13.94
Not Performed	805	10,300	12.8	.807	.783	1,003	78	56	4,330	5.4	.42	5.36	8.64

See footnotes at end of table.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	
Census Region: South													
All Buildings	581	9,366	16.1	0.550	0.533	945	59	41	2,833	4.9	0.30	5.15	16.07
Natural Gas Used for:^a													
Heating	501	7,172	14.3	.470	.456	937	65	45	2,454	4.9	.34	5.23	17.16
And Air-Conditioning	32	742	23.3	Q	Q	Q	65	35	Q	Q	.35	5.30	34.56
And Not Air-Conditioning	470	6,430	13.7	.421	.409	897	66	46	2,197	4.7	.34	5.22	18.16
Air-Conditioning	32	758	23.6	.059	.057	1,818	77	41	297	9.2	.39	5.08	27.43
Water Heating	297	4,816	16.2	.349	.339	1,174	73	44	1,808	6.1	.38	5.18	12.65
Cooking	135	4,094	30.4	.221	.215	1,643	54	34	1,132	8.4	.28	5.11	14.09
Manufacturing	10	295	28.3	Q	Q	Q	121	Q	Q	Q	Q	5.13	36.66
Electricity Generation	Q	161	Q	.024	.023	Q	Q	Q	109	Q	.67	4.54	50.22
Fuels Used for Heating^a													
Natural Gas Only	399	5,148	12.9	.356	.345	891	69	46	1,858	4.7	.36	5.23	16.31
Natural Gas and Electricity Only	77	1,417	18.5	.074	.072	962	52	37	388	5.0	.27	5.25	17.97
Natural Gas and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	88.50
Other Combinations or Fuels	75	2,484	33.3	.075	.073	1,007	30	23	350	4.7	.14	4.66	26.09
No Fuels Used	21	157	7.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	35.97
Fuels Used for Air-Conditioning^a													
Natural Gas Only	23	384	17.0	.014	.014	630	37	23	78	3.4	.20	5.47	26.76
Natural Gas and Electricity Only	10	360	Q	Q	Q	Q	98	47	Q	Q	.51	5.22	42.56
Other Combinations or Fuels	436	8,077	18.5	.393	.381	901	49	34	2,045	4.7	.25	5.20	13.02
No Fuels Used	110	532	4.8	.065	.063	587	121	138	316	2.9	.60	4.90	27.15
Fuels Used for Water Heating^a													
Natural Gas Only	281	4,186	14.9	.287	.279	1,024	69	44	1,490	5.3	.36	5.18	12.32
Natural Gas and Electricity Only	16	538	34.6	Q	Q	2,279	66	33	Q	12.1	.35	5.29	32.25
Natural Gas and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	93.78
Other Combinations or Fuels	154	3,804	24.7	.164	.160	1,067	43	34	858	5.6	.23	5.22	29.61
No Fuels Used	126	758	6.0	.038	.037	305	51	43	180	1.4	.24	4.68	16.01
Fuels Used for Cooking^a													
Natural Gas Only	100	1,993	20.0	.119	.115	1,191	60	33	614	6.2	.31	5.18	13.85
Natural Gas and Electricity Only	35	Q	Q	.099	.096	2,834	49	36	502	14.3	.25	5.06	19.47
Other Combinations or Fuels	90	1,695	18.9	.092	.089	1,029	54	35	488	5.4	.29	5.29	19.14
No Fuels Used	356	3,636	10.2	.240	.232	673	66	53	1,229	3.4	.34	5.13	25.02
Fuels Used for Manufacturing^a													
Natural Gas Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	75.43
Natural Gas and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	44.80
Other Combinations or Fuels	36	562	15.7	.024	.024	682	43	32	131	3.7	.23	5.39	23.81
No Fuels Used	536	8,562	16.0	.494	.479	923	58	40	2,539	4.7	.30	5.14	17.01
Fuels Used to Fire Boilers^a													
Natural Gas Only	69	2,961	43.0	.171	.166	2,485	58	39	911	13.2	.31	5.33	19.33
Natural Gas and Fuel Oil Only	5	180	Q	.040	.038	Q	220	Q	213	Q	1.18	5.37	40.42
Natural Gas and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	48.14
Other Combinations or Fuels	11	435	Q	.011	.011	Q	25	Q	53	Q	.12	4.77	35.73

See footnotes at end of table.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	
Census Region: South													
Year Constructed													
1900 or Before	Q	Q	7.7	Q	Q	348	45	30	Q	2.0	0.26	5.77	31.28
1901 to 1920	50	557	11.2	Q	Q	897	Q	Q	238	4.8	.43	5.33	33.21
1921 to 1945	98	1,041	10.6	0.059	0.057	600	57	37	319	3.3	.31	5.42	22.58
1946 to 1960	169	2,019	11.9	.109	.106	644	54	37	545	3.2	.27	5.00	19.67
1961 to 1970	135	2,236	16.6	.124	.120	920	55	37	626	4.6	.28	5.05	15.70
1971 to 1973	23	563	Q	.026	.025	1,139	47	33	132	5.7	.23	5.01	25.57
1974 to 1979	55	1,099	20.0	.128	.124	Q	116	62	657	Q	.60	5.15	32.29
1980 to 1983	27	Q	Q	.051	.050	1,877	31	30	267	9.8	.16	5.23	32.42
Square Footage Category													
5,000 or Less	320	764	2.4	.158	.154	496	207	75	817	2.6	1.07	5.15	24.90
5,001 to 10,000	113	834	7.4	.042	.041	375	51	27	221	2.0	.26	5.20	18.47
10,001 to 25,000	85	1,288	15.1	.054	.053	638	42	28	279	3.3	.22	5.13	12.24
25,001 to 50,000	31	1,160	37.6	.078	.076	2,539	68	49	416	13.5	.36	5.31	19.26
50,001 to 100,000	17	1,199	69.3	.037	.036	2,131	31	34	195	11.3	.16	5.30	18.26
100,001 to 200,000	9	1,198	130.3	.048	.047	5,233	40	33	240	26.1	.20	4.99	15.55
Over 200,000	6	2,922	483.7	.131	.127	21,689	45	35	665	110.0	.23	5.07	20.31
Number of Floors													
One	383	4,074	10.6	.247	.240	645	61	48	1,279	3.3	.31	5.18	23.66
Two	131	2,110	16.1	.091	.088	694	43	29	464	3.5	.22	5.10	16.58
Three or More	68	3,181	47.1	.212	.205	3,134	67	41	1,089	16.1	.34	5.15	16.74
Principal Activity Within Building													
Assembly	72	942	13.1	.037	.036	521	40	45	201	2.8	.21	5.37	23.69
Educational	42	1,283	30.5	.053	.051	1,263	41	46	274	6.5	.21	5.16	18.59
Food Sales/Service	55	305	5.5	.036	.035	645	117	43	193	3.5	.63	5.42	20.56
Health Care	8	476	Q	.078	.075	Q	163	55	367	Q	.77	4.73	39.52
Lodging	28	514	18.6	.059	.057	2,141	115	Q	292	10.6	.57	4.94	26.73
Mercantile/Services	182	Q	Q	.070	.068	385	27	23	352	1.9	.13	5.03	21.24
Office	81	1,488	18.4	.117	.114	1,451	79	30	626	7.8	.42	5.35	29.62
Residential	22	168	7.7	Q	Q	Q	Q	Q	Q	Q	Q	Q	40.59
Warehouse	44	993	22.6	.053	.051	1,201	53	66	282	6.4	.28	5.35	34.15
Other	21	222	10.6	.014	.014	681	64	37	72	3.4	.32	5.04	25.66
Vacant	27	343	12.5	Q	Q	Q	79	Q	Q	Q	Q	5.11	40.66
Climate Zones:													
45 Year Average													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above													
7,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Below 2,000 CDD and													
5,500-7,000 HDD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Below 2,000 CDD and													
4,000-5,499 HDD	163	Q	Q	.090	.087	553	33	28	493	3.0	.18	5.48	28.88
Below 2,000 CDD and Below													
4,000 HDD	217	2,810	12.9	.197	.192	Q	70	45	1,006	Q	Q	5.09	39.67
Above 2,000 CDD and Below													
4,000 HDD	202	3,802	18.9	.262	.254	1,302	69	44	1,333	6.6	.35	5.08	23.28
Metropolitan Status													
Metropolitan	305	6,004	19.7	.326	.317	1,071	54	33	1,691	5.5	.28	5.18	13.15
Nonmetropolitan	277	3,362	12.2	.223	.217	807	66	63	1,142	4.1	.34	5.11	32.95

See footnotes at end of table.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Floor Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	
Census Region: South													
Number of Establishments in Building													
Vacant	10	88	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	47.86
Single Establishment	480	5,651	11.8	0.436	0.423	908	77	52	2,215	4.6	0.39	5.08	17.23
Multiple Establishment	91	3,627	39.7	.109	.106	1,193	30	21	593	6.5	.16	5.45	18.67
Government Occupancy													
Any Government Occupancy	53	Q	Q	.119	.116	2,255	54	40	617	11.7	.28	5.17	22.96
Federal	7	Q	Q	Q	Q	Q	23	19	Q	Q	.13	5.60	47.49
State	21	656	31.3	.051	.049	2,427	78	53	251	11.9	.38	4.92	26.72
Local	30	587	19.4	.057	.055	1,878	97	55	285	9.4	.48	5.00	30.59
Number of Employees													
Fewer than 10	374	2,083	5.6	.189	.183	Q	Q	Q	960	Q	Q	5.08	31.37
10 to 19	75	972	13.0	.039	.038	523	40	38	198	2.7	.20	5.06	16.67
20 to 49	85	1,782	21.1	.082	.080	972	46	33	441	5.2	.25	5.37	17.37
50 to 99	27	828	30.8	.041	.040	1,531	50	25	205	7.6	.25	4.98	19.14
100 or More	21	3,701	174.0	.198	.192	9,318	54	29	1,028	48.3	.28	5.18	18.14
Hours of Operation During a Typical Week													
39 or Fewer Hours	82	663	8.1	.058	.057	715	88	92	282	3.5	.43	4.83	32.43
40 to 48 Hours	148	1,621	10.9	.049	.048	333	30	31	278	1.9	.17	5.64	14.89
49 to 60 Hours	148	2,056	13.9	.090	.088	611	44	33	459	3.1	.22	5.09	19.54
61 to 84 Hours	92	2,824	30.8	.083	.080	904	29	22	470	5.1	.17	5.67	22.79
85 to 167 Hours	58	899	15.5	.098	.096	Q	Q	Q	501	Q	.56	5.08	34.37
168 Hours	54	1,303	24.2	.170	.165	3,159	131	54	842	15.6	.65	4.94	16.36
Percentage of Exterior Glass													
Less than 25 Percent	383	5,501	14.4	.293	.285	766	53	44	1,485	3.9	.27	5.06	20.96
25 to 49 Percent	140	2,399	17.2	.144	.140	1,032	60	35	758	5.4	.32	5.26	17.30
50 to 74 Percent	46	906	19.9	.074	.072	Q	81	47	366	8.0	.40	4.96	29.13
75 Percent or More	13	560	Q	.038	.037	Q	69	36	222	Q	.40	5.78	38.24
Insulation/Special Glass													
Any Present	408	7,387	18.1	.443	.430	1,085	60	40	2,287	5.6	.31	5.16	18.39
Special Glass	200	5,145	25.7	.268	.260	1,338	52	37	1,371	6.8	.27	5.12	16.47
Roof/Ceiling Insulation	286	5,205	18.2	.361	.350	1,260	69	43	1,840	6.4	.35	5.10	18.13
Exterior Wall Insulation	196	3,506	17.9	.236	.229	1,202	67	41	1,211	6.2	.35	5.14	25.12
None Present	173	1,979	11.4	.107	.104	617	54	44	545	3.1	.28	5.10	16.75
Computerized Energy Management System													
In Use	17	1,041	62.3	.066	.064	3,956	63	34	305	18.2	.29	4.61	21.73
Not in Use	552	8,231	14.9	.476	.462	862	58	41	2,487	4.5	.30	5.22	17.25
Professional Energy Audits													
Performed in Past Year	71	2,862	40.5	.118	.115	1,678	41	27	634	9.0	.22	5.35	16.20
Measures Taken	29	1,056	36.7	.065	.063	2,268	62	29	346	12.0	.33	5.30	17.35
Measures Not Taken	42	Q	Q	.053	.052	1,271	29	26	288	6.9	.16	5.41	25.94
Not Performed	511	6,504	12.7	.431	.418	844	66	47	2,199	4.3	.34	5.10	18.02

See footnotes at end of table.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	
Census Region: West													
All Buildings	324	5,148	15.9	0.319	0.309	984	62	36	1,767	5.5	0.34	5.54	17.53
Natural Gas Used for:^a													
Heating	268	4,289	16.0	.275	.267	1,025	64	37	1,503	5.6	.35	5.46	21.01
And Air-Conditioning	29	392	13.6	Q	Q	Q	Q	Q	Q	Q	Q	6.25	46.77
And Not Air-Conditioning	240	3,897	16.3	.236	.228	983	60	36	1,256	5.2	.32	5.33	20.39
Air-Conditioning	29	394	13.6	Q	Q	Q	Q	Q	Q	Q	Q	6.25	46.36
Water Heating	200	3,640	18.2	.237	.230	1,188	65	38	1,321	6.6	.36	5.57	18.18
Cooking	73	2,077	28.3	.107	.103	1,453	51	32	587	8.0	.28	5.50	21.46
Manufacturing	17	263	15.5	Q	Q	Q	100	Q	Q	9.1	.58	5.84	39.76
Electricity Generation	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	84.38
Fuels Used for Heating^a													
Natural Gas Only	228	3,174	14.0	.236	.229	1,038	74	38	1,289	5.7	.41	5.46	20.59
Natural Gas and Electricity Only	30	Q	31.9	.022	.021	738	Q	23	123	4.1	Q	5.61	22.78
Natural Gas and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	44.87
Other Combinations or Fuels	47	795	17.0	.030	.029	648	38	23	164	3.5	.21	5.41	24.23
No Fuels Used	19	154	8.0	Q	Q	Q	Q	Q	Q	Q	Q	Q	48.96
Fuels Used for Air-Conditioning^a													
Natural Gas Only	18	250	14.1	Q	Q	Q	47	Q	Q	3.5	.24	5.23	37.59
Natural Gas and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	59.02
Other Combinations or Fuels	152	3,380	22.2	.174	.169	1,146	52	28	960	6.3	.28	5.51	18.63
No Fuels Used	142	1,360	9.6	.105	.102	739	77	70	560	3.9	.41	5.34	24.00
Fuels Used for Water Heating^a													
Natural Gas Only	188	3,299	17.6	.211	.205	1,124	64	37	1,177	6.3	.36	5.58	19.82
Natural Gas and Electricity Only	11	240	Q	Q	Q	1,290	59	35	Q	7.1	.32	5.50	32.12
Natural Gas and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	29.81
Other Combinations or Fuels	83	1,301	15.7	.074	.072	890	57	34	400	4.8	.31	5.42	29.14
No Fuels Used	41	214	5.2	.007	.007	173	33	20	41	1.0	.19	5.75	30.64
Fuels Used for Cooking^a													
Natural Gas Only	54	1,089	20.1	.058	.056	1,070	53	31	324	6.0	.30	5.59	21.26
Natural Gas and Electricity Only	17	Q	50.3	.041	.040	2,357	Q	33	229	13.1	Q	5.56	28.84
Other Combinations or Fuels	61	1,040	17.1	.071	.068	1,158	68	45	352	5.8	.34	4.99	25.73
No Fuels Used	191	2,137	11.2	.149	.144	779	70	36	860	4.5	.40	5.78	16.42
Fuels Used for Manufacturing^a													
Natural Gas Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	31.03
Natural Gas and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	62.06
Other Combinations or Fuels	30	474	16.1	.015	.014	494	31	21	79	2.7	.17	5.45	26.67
No Fuels Used	277	4,420	15.9	.278	.270	1,002	63	37	1,534	5.5	.35	5.52	22.62
Fuels Used to Fire Boilers^a													
Natural Gas Only	57	1,911	Q	.101	.098	1,785	53	33	526	9.3	.28	5.21	27.33
Natural Gas and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	50.68
Natural Gas and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	63.11
Other Combinations or Fuels	6	139	22.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	46.18

See footnotes at end of table.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	
Census Region: West													
Year Constructed													
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	120.43
1901 to 1920	18	290	16.2	.016	.015	890	Q	Q	82	4.6	.28	5.15	38.50
1921 to 1945	68	885	13.0	.073	.071	1,079	83	70	428	6.3	.48	5.84	26.89
1946 to 1960	82	751	9.1	.049	.047	591	65	38	283	3.4	.38	5.83	20.04
1961 to 1970	53	1,136	21.5	.047	.046	895	42	21	259	4.9	.23	5.48	16.56
1971 to 1973	24	405	16.9	.015	.015	633	38	19	83	3.5	.20	5.45	28.15
1974 to 1979	49	687	14.1	.063	.061	1,296	Q	38	357	7.3	Q	5.66	31.22
1980 to 1983	16	Q	55.4	.050	.048	3,146	Q	Q	247	15.7	Q	4.98	45.59
Square Footage Category													
5,000 or Less	144	323	2.3	.098	.095	681	303	66	544	3.8	1.68	5.57	28.37
5,001 to 10,000	79	603	7.6	.062	.060	778	102	54	354	Q	Q	5.74	26.35
10,001 to 25,000	61	952	15.7	.040	.039	665	42	26	235	3.9	.25	5.83	12.75
25,001 to 50,000	24	834	35.1	Q	Q	1,668	48	32	207	8.7	.25	5.23	22.46
50,001 to 100,000	9	587	66.6	.025	.024	2,829	42	32	130	14.7	.22	5.21	16.36
100,001 to 200,000	6	723	131.4	.031	.031	5,725	44	31	166	30.2	.23	5.27	18.52
Over 200,000	2	Q	549.4	.023	.022	11,090	20	14	130	63.4	Q	5.72	33.04
Number of Floors													
One	202	2,136	10.6	.179	.174	890	84	52	1,033	5.1	.48	5.76	22.04
Two	79	1,170	14.8	.055	.053	696	47	29	292	3.7	.25	5.31	22.06
Three or More	43	1,842	42.8	.084	.082	1,958	46	24	441	10.3	.24	5.24	23.36
Principal Activity Within Building													
Assembly	31	Q	Q	Q	Q	618	Q	32	98	3.1	Q	5.04	42.47
Educational	20	439	21.6	.024	.023	1,156	54	44	127	6.3	.29	5.41	32.32
Food Sales/Service	35	202	5.8	.018	.018	528	91	33	111	3.2	.55	6.05	32.37
Health Care	Q	180	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	54.10
Lodging	Q	263	Q	.051	.050	Q	Q	Q	253	Q	Q	4.93	74.48
Mercantile/Services	92	1,043	11.3	.076	.074	824	73	46	463	5.0	.44	6.10	19.54
Office	62	1,142	18.6	.061	.060	998	Q	18	344	5.6	Q	5.61	30.45
Residential	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	22.07
Warehouse	30	761	25.4	.017	.017	Q	23	26	93	3.1	.12	5.40	27.38
Other	12	192	16.6	.011	.011	986	59	39	60	5.1	.31	5.22	28.78
Vacant	Q	Q	18.2	Q	Q	Q	Q	Q	Q	Q	Q	5.19	31.07
Climate Zones:													
45 Year Average													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD													
Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	69.78
Below 2,000 CDD and 5,500-7,000 HDD													
Q	Q	12.0	.110	.106	Q	88	64	496	Q	.40	4.52	39.57	
Below 2,000 CDD and 4,000-5,499 HDD													
Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	63.92
Below 2,000 CDD and Below 4,000 HDD													
153	2,220	14.5	.145	.141	951	65	30	935	6.1	.42	6.43	16.74	
Above 2,000 CDD and Below 4,000 HDD													
Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	94.75
Metropolitan Status													
Metropolitan	244	4,454	18.3	.262	.254	1,076	59	34	1,504	6.2	.34	5.73	15.51
Nonmetropolitan	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.64

See footnotes at end of table.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	
Census Region: West													
Number of Establishments in Building													
Vacant	Q	92	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	71.79
Single Establishment	246	3,075	12.5	0.271	0.262	1,101	88	48	1,496	6.1	0.49	5.53	17.75
Multiple Establishment	75	1,982	26.5	.047	.045	623	23	15	262	3.5	.13	5.62	18.67
Government Occupancy													
Any Government Occupancy	33	832	25.5	.067	.065	2,043	80	45	335	Q	.40	5.02	26.69
Federal	Q	194	Q	.008	.008	Q	41	14	41	Q	.21	5.20	40.31
State	11	321	28.6	.040	.039	Q	126	Q	196	Q	.61	4.85	37.40
Local	22	482	21.8	.029	.028	1,318	60	38	149	6.7	.31	5.10	18.48
Number of Employees													
Fewer than 10	159	858	5.4	.085	.083	536	100	125	447	2.8	.52	5.23	24.27
10 to 19	56	527	9.3	.053	.052	943	101	74	298	5.3	.57	5.60	26.84
20 to 49	74	1,308	17.7	.086	.083	1,161	66	39	509	6.9	.39	5.92	18.51
50 to 99	20	737	36.4	.028	.027	1,375	38	22	148	7.3	.20	5.33	15.33
100 or More	14	Q	126.0	.066	.064	4,849	38	17	364	26.7	.21	5.50	20.68
Hours of Operation During a Typical Week													
39 or Fewer Hours	31	267	8.5	Q	Q	Q	42	Q	Q	2.0	.24	5.64	34.62
40 to 48 Hours	98	1,206	12.3	.077	.075	786	64	49	448	4.6	.37	5.80	26.14
49 to 60 Hours	66	1,092	16.6	.057	.056	872	53	29	312	4.8	.29	5.45	24.53
61 to 84 Hours	59	1,032	17.6	.064	.062	1,092	62	26	372	6.3	.36	5.79	25.74
85 to 167 Hours	46	671	14.5	.026	.025	566	39	24	147	3.2	.22	5.61	25.43
168 Hours	23	Q	Q	.083	.080	3,530	Q	Q	425	18.2	Q	5.14	44.99
Percentage of Exterior Glass													
Less than 25 Percent	195	2,832	14.5	.148	.144	761	52	37	814	4.2	.29	5.49	20.04
25 to 49 Percent	99	1,513	15.2	.119	.116	1,198	79	43	635	6.4	.42	5.33	29.94
50 to 74 Percent	22	562	Q	.022	.022	Q	40	16	129	Q	.23	5.78	26.85
75 Percent or More	7	241	Q	Q	Q	Q	Q	Q	Q	Q	Q	6.54	67.70
Insulation/Special Glass													
Any Present	222	4,031	18.1	.251	.243	1,130	62	34	1,361	6.1	.34	5.43	21.35
Special Glass	142	2,977	21.0	.197	.191	1,390	66	34	1,088	7.7	Q	5.53	24.73
Roof/Ceiling Insulation	156	2,788	17.9	.148	.144	949	53	33	759	4.9	.27	5.13	24.23
Exterior Wall Insulation	97	Q	Q	.104	.101	1,066	Q	32	531	5.4	Q	5.11	28.09
None Present	102	1,118	11.0	.068	.066	667	61	46	405	4.0	.36	5.98	22.85
Computerized Energy Management System													
In Use	11	600	Q	.022	.022	Q	37	15	123	Q	.20	5.52	23.05
Not in Use	299	4,455	14.9	.286	.277	954	64	39	1,575	5.3	.35	5.51	19.93

See footnotes at end of table.

Table 16. Natural Gas: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.070	1.073	1.033	1.256	1.256	1.233	1.069	1.172	1.204	1.273	1.067	0.266	

Census Region: West

Professional Energy Audits

Performed in Past Year	57	2,024	35.8	0.107	0.104	1,901	53	31	583	10.3	0.29	5.43	21.47
Measures Taken	23	Q	Q	.070	.068	3,014	Q	36	370	15.9	Q	5.28	41.38
Measures Not Taken	33	826	24.8	.037	.036	1,124	45	24	213	6.4	.26	5.69	22.36
Not Performed	267	3,124	11.7	.211	.205	791	68	40	1,184	4.4	.38	5.60	18.77

^a Fuel consumption and expenditures were not collected separately by end use. For example, although it is known that natural gas was used for heating in certain buildings, the natural gas consumption shown for the category **Natural Gas Used for Heating** includes the natural gas used in those buildings for all purposes, such as water heating, etc.

^{nc} No cases in sample.

^q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 17. Fuel Oil: Consumption and Expenditures by Census Region, 1983

Building Characteristics	All Buildings Using Fuel Oil		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.868	0.836	1.075	1.159	1.158	1.394	1.237	1.527	1.140	1.332	1.203	0.199	
Census Region: Northeast													
All Buildings	227	4,789	21.1	0.206	1,470	908	43	29	1,371	6.0	0.29	6.64	9.98
Fuel Oil Used for:													
Heating	220	4,053	18.5	.193	1,375	877	48	31	1,286	5.9	.32	6.67	10.46
And Air-Conditioning	2	232	117.6	.018	123	Q	76	Q	100	Q	.43	5.67	24.71
And Not Air-Conditioning	218	3,821	17.6	.175	1,252	804	46	32	1,186	5.5	.31	6.78	11.13
Air-Conditioning	2	262	128.9	.020	136	9,591	74	23	109	53.5	.42	5.58	24.87
Water Heating	91	2,393	26.2	.141	1,002	1,547	59	36	904	9.9	.38	6.39	13.70
Cooking	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	25.70
Manufacturing	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	77.07
Electricity Generation	6	815	Q	.025	174	Q	30	14	146	Q	.18	5.90	35.45
Fuels Used for Heating:													
Fuel Oil Only	153	2,566	16.7	.152	1,083	989	59	44	1,012	6.6	.39	6.67	10.85
Fuel Oil and Electricity Only	Q	Q	15.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.26
Fuel Oil and Natural Gas Only	28	671	24.1	.021	150	756	31	19	140	5.0	.21	6.66	22.50
Other Combinations or Fuels	26	1,272	49.1	.022	151	835	17	Q	138	5.3	.11	6.37	30.39
No Fuels Used	Q	Q	Q	.002	16	895	207	299	16	6.4	1.48	7.16	282.27
Fuels Used for Air-Conditioning:													
Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	33.64
Other Combinations or Fuels	144	3,772	26.1	.149	1,060	1,032	40	25	979	6.8	.26	6.57	11.82
No Fuels Used	81	876	10.8	.047	338	579	54	61	331	4.1	.38	7.06	18.50
Fuels Used for Water Heating:													
Fuel Oil Only	79	1,523	21.0	.098	694	1,349	64	47	635	8.7	.42	6.48	16.40
Fuel Oil and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	36.37
Fuel Oil and Natural Gas Only	8	422	Q	.028	198	Q	66	38	171	Q	.41	6.12	32.32
Other Combinations or Fuels	118	2,463	20.9	.063	453	536	26	17	447	3.8	.18	7.08	14.08
No Fuels Used	18	188	10.7	Q	Q	Q	Q	Q	Q	Q	Q	Q	35.22
Fuels Used to Fire Boilers:													
Fuel Oil Only	101	2,396	23.8	.140	997	1,389	58	40	927	9.2	.39	6.62	11.76
Fuel Oil and Natural Gas Only	11	645	Q	.014	100	Q	22	Q	89	Q	.14	6.32	37.46
Other Combinations or Fuels	Q	322	Q	.010	70	Q	30	25	64	Q	.20	6.51	42.90
Year Constructed													
1900 or Before	47	512	10.8	.020	142	417	39	39	143	3.0	.28	7.20	21.88
1901 to 1920	31	779	25.1	.040	283	1,289	51	79	261	8.4	.33	6.52	15.91
1921 to 1945	56	1,142	20.3	.056	398	994	49	30	372	6.6	.33	6.64	21.09
1946 to 1960	45	986	21.7	.045	325	997	46	Q	304	6.7	.31	6.74	24.13
1961 to 1970	24	531	22.6	.022	159	948	42	28	146	6.2	.27	6.53	22.26
1971 to 1973	11	182	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.75
1974 to 1979	10	201	Q	.009	60	Q	43	16	53	Q	.26	6.15	36.82
1980 to 1983	2	Q	262.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.92
Square Footage Category													
5,000 or Less	86	223	2.6	.017	122	196	76	27	132	1.5	.59	7.75	15.39
5,001 to 10,000	48	343	7.1	.018	129	370	52	26	137	2.8	.40	7.66	13.81
10,001 to 25,000	56	803	14.4	.045	322	798	56	36	317	5.7	.39	7.11	11.69
25,001 to 50,000	21	717	34.9	.028	198	1,348	39	Q	192	9.4	.27	6.94	20.80
50,001 to 100,000	9	616	69.4	.035	245	3,922	56	Q	214	24.1	.35	6.15	18.96
100,001 to 200,000	4	558	141.1	.028	198	7,030	50	48	168	42.6	.30	6.06	15.46
Over 200,000	3	1,529	443.5	.037	256	10,659	24	14	211	61.2	.14	5.74	24.59

See footnotes at end of table.

Table 17. Fuel Oil: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.868	0.836	1.075	1.159	1.158	1.394	1.237	1.527	1.140	1.332	1.203	0.199	
Census Region: Northeast													
Number of Floors													
One	61	798	13.1	.024	174	396	30	21	175	2.9	0.22	7.28	20.19
Two	48	648	13.6	.037	263	764	56	46	254	5.3	.39	6.95	21.16
Three or More	119	3,343	28.2	.146	1,033	1,229	44	29	942	7.9	.28	6.46	10.94
Principal Activity Within Building													
Assembly	23	345	15.3	.012	90	552	36	44	93	4.1	.27	7.46	25.56
Educational	11	687	60.7	.032	231	2,843	47	62	199	17.6	.29	6.19	18.21
Food Sales/Service	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	29.99
Health Care	2	305	185.0	.020	141	12,234	66	22	109	66.2	.36	5.41	21.62
Lodging	Q	249	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	56.42
Mercantile/Services	76	792	10.4	.029	205	377	36	Q	211	2.8	.27	7.38	24.86
Office	36	619	17.0	.026	187	713	42	10	178	4.9	.29	6.83	27.41
Residential	31	574	18.5	.033	234	1,066	58	Q	217	7.0	.38	6.55	28.19
Warehouse	18	462	25.1	.018	126	Q	38	35	121	Q	.26	6.93	36.24
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	39.86
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	61.95
Climate Zones:													
45 Year Average													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD													
	Q	591	11.6	.025	180	494	43	31	181	Q	.31	7.20	10.45
Below 2,000 CDD and 5,500-7,000 HDD													
	94	2,014	21.4	.080	576	851	40	24	534	5.7	.27	6.65	15.91
Below 2,000 CDD and 4,000-5,499 HDD													
	82	2,183	26.6	.101	714	1,231	46	Q	655	8.0	.30	6.49	15.94
Below 2,000 CDD and Below 4,000 HDD													
	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Above 2,000 CDD and Below 4,000 HDD													
	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Metropolitan Status													
Metropolitan	162	4,088	25.2	.175	1,245	1,080	43	29	1,148	7.1	.28	6.56	11.80
Nonmetropolitan	65	701	10.7	.031	224	481	45	32	223	3.4	.32	7.11	11.83
Number of Establishments in Building													
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	178.41
Single Establishment	168	2,804	16.7	.133	947	788	47	30	898	5.3	.32	6.78	10.51
Multiple Establishment	58	1,939	33.3	.071	501	1,219	37	Q	454	7.8	.23	6.41	22.10
Government Occupancy													
Any Government Occupancy	23	1,163	49.5	.029	208	1,248	25	Q	183	7.8	.16	6.24	30.60
Federal	5	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	66.50
State	Q	586	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	54.97
Local	14	325	Q	.018	124	Q	54	22	108	Q	.33	6.11	29.13
Number of Employees													
Fewer than 10	144	1,316	9.2	.059	424	411	45	98	431	3.0	.33	7.30	11.66
10 to 19	38	847	22.4	.042	299	1,116	50	80	279	7.4	.33	6.60	25.69
20 to 49	26	611	23.5	.023	163	867	37	30	156	6.0	.26	6.92	21.12
50 to 99	10	495	52.1	.018	128	1,883	36	26	121	12.7	.24	6.74	25.09
100 or More	10	1,520	149.6	.065	455	6,363	43	14	384	37.8	.25	5.94	22.02

See footnotes at end of table.

Table 17. Fuel Oil: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.868	0.836	1.075	1.159	1.158	1.394	1.237	1.527	1.140	1.332	1.203	0.199	
Census Region: Northeast													
Hours of Operation During a Typical Week													
39 or Fewer Hours	22	321	14.5	0.014	100	Q	Q	Q	97	Q	Q	6.86	43.85
40 to 48 Hours	51	739	14.4	.032	226	615	43	47	217	4.2	0.29	6.90	19.56
49 to 60 Hours	69	1,047	15.3	.041	291	591	39	30	282	4.1	.27	6.96	12.12
61 to 84 Hours	42	803	18.9	.044	317	1,047	55	Q	295	7.0	.37	6.64	27.93
85 to 167 Hours	28	792	28.4	.026	188	937	33	35	181	6.5	.23	6.93	22.25
168 Hours	15	1,087	Q	.050	348	3,307	46	16	298	19.9	.27	6.00	23.73
Percentage of Exterior Glass													
Less than 25 Percent	130	2,047	15.8	.068	485	520	33	36	473	3.6	.23	7.01	14.02
25 to 49 Percent	75	1,932	25.9	.097	683	1,298	50	24	622	8.3	.32	6.42	16.66
50 to 74 Percent	20	663	33.3	.038	269	Q	57	40	246	Q	.37	6.56	33.36
75 Percent or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	91.56
Insulation/Special Glass													
Any Present	153	3,829	24.9	.144	1,027	939	38	27	953	6.2	.25	6.61	13.02
Special Glass	82	2,527	30.9	.082	584	1,005	33	21	542	6.6	.21	6.59	15.60
Roof/Ceiling Insulation	94	2,620	28.0	.088	627	938	33	25	577	6.2	.22	6.57	15.35
Exterior Wall Insulation	71	1,880	26.5	.054	386	765	29	19	361	5.1	.19	6.65	22.15
None Present	74	960	13.0	.062	443	845	65	36	418	5.7	.44	6.70	14.43
Computerized Energy Management System													
In Use	9	710	Q	.022	154	Q	Q	Q	130	Q	Q	5.96	35.43
Not in Use	216	4,068	18.9	.182	1,300	846	45	35	1,225	5.7	.30	6.72	10.33
Professional Energy Audits													
Performed in Past Year	26	1,146	44.1	.052	364	1,992	45	19	319	12.3	.28	6.17	20.58
Measures Taken	16	715	44.0	.031	220	Q	44	19	190	Q	.27	6.09	27.03
Measures Not Taken	10	431	44.3	Q	145	Q	48	20	129	Q	.30	6.28	41.05
Not Performed	201	3,643	18.1	.155	1,105	769	42	35	1,052	5.2	.29	6.80	12.42

See footnotes at end of table.

Table 17. Fuel Oil: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.868	0.836	1.075	1.159	1.158	1.394	1.237	1.527	1.140	1.332	1.203	0.199	
Census Region: North Central													
All Buildings	102	1,862	18.3	0.030	214	292	16	14	209	2.1	0.11	7.01	22.53
Fuel Oil Used for:^a													
Heating	88	1,081	12.2	.024	169	266	22	19	165	1.9	.15	7.01	21.45
And Air-Conditioning	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	98.00
And Not Air-Conditioning	87	1,017	11.6	.023	166	263	23	19	162	1.8	.16	7.03	22.23
Air-Conditioning	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	98.00
Water Heating	8	280	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	55.97
Cooking	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	87.03
Manufacturing	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	135.00
Electricity Generation	4	592	149.0	Q	Q	567	4	Q	Q	4.0	.03	7.13	34.22
Fuels Used for Heating^a													
Fuel Oil Only	59	396	6.7	.016	117	273	41	48	116	2.0	.29	7.16	22.53
Fuel Oil and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	120.44
Fuel Oil and Natural Gas Only	15	450	Q	.005	39	Q	Q	Q	35	Q	Q	6.52	48.29
Other Combinations or Fuels	22	989	45.0	.008	55	347	Q	Q	53	2.4	.05	7.01	36.50
No Fuels Used	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Fuels Used for Air-Conditioning^a													
Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	81.70
Other Combinations or Fuels	46	1,519	34.9	.019	139	415	12	10	133	2.9	.08	6.90	27.73
No Fuels Used	54	234	4.3	.010	75	192	Q	47	75	1.4	Q	7.22	25.59
Fuels Used for Water Heating^a													
Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	64.22
Fuel Oil and Electricity Only	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Fuel Oil and Natural Gas Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	70.74
Other Combinations or Fuels	77	1,496	19.5	.022	158	285	15	13	156	2.0	.10	7.10	26.49
No Fuels Used	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	90.77
Fuels Used to Fire Boilers^a													
Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	39.63
Fuel Oil and Natural Gas Only	2	434	199.9	.004	Q	Q	Q	Q	24	Q	Q	6.23	44.93
Other Combinations or Fuels	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	49.03
Year Constructed													
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	96.17
1901 to 1920	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	38.23
1921 to 1945	16	245	15.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.13
1946 to 1960	32	679	Q	.009	64	278	Q	Q	65	2.0	Q	7.34	35.43
1961 to 1970	15	299	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	33.11
1971 to 1973	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	113.23
1974 to 1979	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	60.81
1980 to 1983	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.41
Square Footage Category													
5,000 or Less	59	133	2.3	.009	64	151	67	37	66	1.1	.49	7.38	19.87
5,001 to 10,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	36.47
10,001 to 25,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	44.94
25,001 to 50,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	38.34
50,001 to 100,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	37.76
100,001 to 200,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	83.51
Over 200,000	Q	706	310.6	.004	26	Q	5	Q	Q	10.6	.03	6.69	36.52

See footnotes at end of table.

Table 17. Fuel Oil: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.868	0.836	1.075	1.159	1.158	1.394	1.237	1.527	1.140	1.332	1.203	0.199	
Census Region: North Central													
Number of Floors													
One	49	303	6.2	0.006	46	131	21	20	48	1.0	0.16	7.54	21.49
Two	33	Q	Q	.011	76	Q	Q	24	76	Q	Q	7.18	42.80
Three or More	20	858	Q	.013	91	630	15	Q	84	4.2	.10	6.61	37.35
Principal Activity Within Building													
Assembly	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	53.70
Educational	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	36.14
Food Sales/Service	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	70.91
Health Care	6	604	102.1	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.19
Lodging	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	80.01
Mercantile/Services	30	282	9.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	28.51
Office	10	179	17.7	.003	18	251	14	6	18	1.8	.10	7.00	37.29
Residential	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	89.73
Warehouse	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	48.97
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	117.97
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	61.40
Climate Zones:													
45 Year Average													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD													
	Q	386	Q	.010	68	356	25	22	Q	2.5	.17	6.90	41.70
Below 2,000 CDD and 5,500-7,000 HDD													
	65	1,348	20.7	.018	130	277	13	12	127	1.9	.09	7.05	27.98
Below 2,000 CDD and 4,000-5,499 HDD													
	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	118.53
Below 2,000 CDD and Below 4,000 HDD													
	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Above 2,000 CDD and Below 4,000 HDD													
	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Metropolitan Status													
Metropolitan	55	1,389	25.1	.018	133	334	13	11	129	2.3	.09	6.99	22.65
Nonmetropolitan	Q	Q	10.2	Q	Q	Q	24	Q	Q	1.7	.17	7.05	39.78
Number of Establishments in Building													
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	69.28
Single Establishment	89	1,470	16.5	.026	186	289	18	15	182	2.0	.12	7.05	24.12
Multiple Establishment	12	347	Q	.004	26	Q	Q	8	25	2.0	.07	6.83	38.49
Government Occupancy													
Any Government Occupancy	14	293	20.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	44.12
Federal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	84.62
State	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	144.89
Local	12	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.71
Number of Employees													
Fewer than 10	79	460	5.8	.016	112	196	34	52	115	1.4	.25	7.39	20.39
10 to 19	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	33.43
20 to 49	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	43.87
50 to 99	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	61.56
100 or More	5	830	180.4	.005	38	1,145	6	3	32	7.0	.04	6.15	25.22

See footnotes at end of table.

Table 17. Fuel Oil: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.868	0.836	1.075	1.159	1.158	1.394	1.237	1.527	1.140	1.332	1.203	0.199	
Census Region: North Central													
Hours of Operation During a Typical Week													
39 or Fewer Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	34.04
40 to 48 Hours	14	92	6.5	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.73
49 to 60 Hours	19	233	12.0	0.006	42	301	25	Q	43	2.2	0.18	7.37	34.02
61 to 84 Hours	20	322	Q	.007	54	383	23	Q	50	2.5	Q	6.66	40.22
85 to 167 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	52.62
168 Hours	11	599	Q	.004	28	Q	6	4	27	Q	.04	6.94	42.33
Percentage of Exterior Glass													
Less than 25 Percent	60	611	10.1	Q	Q	249	25	28	106	1.8	.17	7.06	31.20
25 to 49 Percent	32	760	23.7	.009	64	277	Q	9	63	2.0	Q	7.11	26.25
50 to 74 Percent	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	67.63
75 Percent or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	60.71
Insulation/Special Glass													
Any Present	77	1,528	19.9	.021	152	275	14	11	144	1.9	.09	6.84	21.93
Special Glass	44	1,280	29.1	.015	110	349	12	9	105	2.4	.08	6.82	26.67
Roof/Ceiling Insulation	64	1,331	20.8	.019	136	296	14	12	129	2.0	.10	6.81	22.32
Exterior Wall Insulation	36	775	21.3	.009	65	248	12	8	64	1.7	.08	7.05	27.60
None Present	25	334	13.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	32.61
Computerized Energy Management System													
In Use	1	212	153.3	Q	Q	Q	Q	Q	Q	Q	Q	5.88	49.14
Not in Use	100	1,650	16.4	.028	199	275	17	16	196	2.0	.12	7.10	23.11
Professional Energy Audits													
Performed in Past Year	9	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	7.16	60.45
Measures Taken	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	107.29
Measures Not Taken	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	72.63
Not Performed	93	1,405	15.1	.026	187	280	18	15	182	2.0	.13	6.99	19.75

See footnotes at end of table.

Table 17. Fuel Oil: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.868	0.836	1.075	1.159	1.158	1.394	1.237	1.527	1.140	1.332	1.203	0.199	
Census Region: South													
All Buildings	172	2,934	17.1	0.107	764	624	37	17	710	4.1	0.24	6.62	19.90
Fuel Oil Used for:^a													
Heating	149	2,103	14.1	.085	602	569	40	27	554	3.7	.26	6.54	20.33
And Air-Conditioning	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	95.57
And Not Air-Conditioning	148	2,070	14.0	.083	592	564	40	27	546	3.7	.26	6.56	20.68
Air-Conditioning	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	95.57
Water Heating	27	601	22.5	.025	176	926	41	30	170	6.3	.28	6.86	23.42
Cooking	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	215.01
Manufacturing	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	93.57
Electricity Generation	Q	723	Q	Q	Q	3,347	Q	Q	Q	22.8	Q	6.81	72.54
Fuels Used for Heating^a													
Fuel Oil Only	109	1,156	10.6	.046	326	426	40	Q	289	2.7	.25	6.23	24.48
Fuel Oil and Electricity Only	20	336	16.9	Q	Q	Q	Q	Q	Q	Q	Q	Q	43.79
Fuel Oil and Natural Gas Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	72.14
Other Combinations or Fuels	30	1,244	40.9	Q	Q	Q	Q	Q	Q	Q	Q	6.79	58.36
No Fuels Used	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	113.07
Fuels Used for Air-Conditioning^a													
Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	164.91
Other Combinations or Fuels	132	2,673	20.3	.099	704	748	37	17	648	4.9	.24	6.56	21.34
No Fuels Used	39	255	6.6	Q	Q	215	Q	Q	Q	1.6	Q	7.36	31.30
Fuels Used for Water Heating^a													
Fuel Oil Only	20	378	18.9	.019	136	956	51	38	126	6.3	.33	6.60	30.51
Fuel Oil and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	74.87
Fuel Oil and Natural Gas Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	92.89
Other Combinations or Fuels	90	1,982	22.1	.068	489	760	34	Q	456	5.1	.23	6.68	26.81
No Fuels Used	57	389	6.9	Q	Q	Q	Q	Q	Q	Q	Q	5.96	46.11
Fuels Used to Fire Boilers^a													
Fuel Oil Only	36	1,077	30.2	.043	301	1,205	40	Q	262	7.3	.24	6.09	31.28
Fuel Oil and Natural Gas Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	62.10
Other Combinations or Fuels	Q	424	Q	Q	Q	826	Q	Q	Q	5.2	Q	6.26	44.16
Year Constructed													
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	93.95
1901 to 1920	17	217	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.95
1921 to 1945	29	Q	12.9	Q	Q	Q	Q	Q	Q	Q	Q	7.04	42.82
1946 to 1960	58	900	15.4	.022	160	383	25	Q	151	2.6	.17	6.74	29.02
1961 to 1970	35	543	15.7	Q	Q	Q	Q	Q	Q	Q	Q	7.00	57.79
1971 to 1973	7	203	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.62
1974 to 1979	15	341	23.3	Q	Q	Q	Q	Q	Q	Q	Q	4.95	56.31
1980 to 1983	2	Q	120.4	.001	10	566	Q	Q	9	Q	Q	6.53	56.49
Square Footage Category													
5,000 or Less	94	217	2.3	Q	Q	183	Q	Q	126	1.3	.58	7.31	32.15
5,001 to 10,000	34	231	6.8	Q	Q	Q	Q	Q	Q	Q	Q	Q	39.56
10,001 to 25,000	26	424	16.4	Q	Q	Q	Q	Q	Q	Q	Q	7.29	50.60
25,001 to 50,000	7	238	34.1	Q	Q	1,296	38	34	Q	8.4	.25	6.46	34.39
50,001 to 100,000	5	334	64.5	Q	Q	Q	Q	Q	Q	Q	Q	5.44	50.79
100,001 to 200,000	2	321	137.4	.005	32	1,976	14	10	27	11.7	.09	5.93	23.91
Over 200,000	3	1,169	380.7	Q	Q	Q	Q	Q	Q	Q	Q	5.36	50.03

See footnotes at end of table.

Table 17. Fuel Oil: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.868	0.836	1.075	1.159	1.158	1.394	1.237	1.527	1.140	1.332	1.203	0.199	
Census Region: South													
Number of Floors													
One	90	740	8.2	0.028	199	305	37	31	190	2.1	0.26	6.88	24.25
Two	58	832	14.3	Q	Q	935	Q	Q	Q	6.3	Q	6.71	38.21
Three or More	23	1,361	Q	.025	177	Q	19	7	155	Q	.11	6.13	30.02
Principal Activity Within Building													
Assembly	32	233	7.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	32.76
Educational	15	474	31.4	.024	171	1,585	51	58	154	10.2	.33	6.43	30.20
Food Sales/Service	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.26
Health Care	Q	231	Q	Q	Q	Q	Q	Q	Q	Q	Q	5.97	65.46
Lodging	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	57.55
Mercantile/Services	45	362	8.1	Q	Q	177	Q	17	Q	1.3	Q	7.55	31.20
Office	19	696	36.3	Q	Q	Q	Q	Q	Q	Q	Q	6.52	45.73
Residential	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	31.05
Warehouse	14	502	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	72.57
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	58.19
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	123.61
Climate Zones:													
45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD													
NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Below 2,000 CDD and 5,500-7,000 HDD													
NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Below 2,000 CDD and 4,000-5,499 HDD													
88	1,230	13.9	.056	397	633	45	Q	366	4.1	.30	6.55	27.10	
Below 2,000 CDD and Below 4,000 HDD													
Q	755	Q	Q	Q	324	14	Q	Q	2.2	.09	6.79	56.07	
Above 2,000 CDD and Below 4,000 HDD													
Q	949	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	6.67	62.33
Metropolitan Status													
Metropolitan	41	1,374	33.7	Q	Q	Q	Q	Q	Q	Q	Q	6.33	49.40
Nonmetropolitan	131	1,559	11.9	.061	440	467	39	Q	419	3.2	.27	6.84	21.06
Number of Establishments in Building													
Vacant	Q	Q	Q	Q	Q	Q	Q	NC	Q	Q	Q	Q	154.96
Single Establishment	155	2,258	14.5	.087	617	559	38	22	567	3.7	.25	6.53	16.60
Multiple Establishment	13	631	48.0	Q	Q	Q	Q	Q	Q	Q	Q	6.96	65.61
Government Occupancy													
Any Government Occupancy	14	606	43.0	Q	Q	Q	Q	Q	Q	Q	Q	6.81	58.66
Federal	1	229	345.8	Q	Q	Q	Q	Q	Q	Q	Q	Q	62.53
State	4	230	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	53.22
Local	13	415	Q	Q	Q	Q	Q	Q	Q	Q	Q	6.86	62.71
Number of Employees													
Fewer than 10	113	599	5.3	Q	Q	196	37	56	160	1.4	.27	7.24	29.46
10 to 19	25	281	11.2	.005	39	218	19	18	41	1.6	.15	7.50	24.47
20 to 49	17	547	32.4	Q	Q	Q	Q	90	Q	20.8	Q	6.92	33.85
50 to 99	8	339	44.6	.005	36	659	15	11	33	4.3	.10	6.57	25.52
100 or More	10	1,168	Q	Q	Q	Q	21	Q	126	Q	.11	5.22	43.51

See footnotes at end of table.

Table 17. Fuel Oil: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor	
	Number of Buildings (thousands)	Square Feet (millions)												
RSE Column Factor:	0.868	0.836	1.075	1.159	1.158	1.394	1.237	1.527	1.140	1.332	1.203	0.199		
Census Region: South														
Hours of Operation During a Typical Week														
39 or Fewer Hours	40	283	7.0	Q	Q	Q	40	Q	Q	Q	Q	0.28	6.93	38.82
40 to 48 Hours	48	880	18.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	7.05	49.46
49 to 60 Hours	31	480	15.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	6.34	36.77
61 to 84 Hours	24	467	Q	Q	Q	351	18	10	Q	2.6	.14	7.53	36.43	
85 to 167 Hours	13	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	5.08	119.28
168 Hours	15	426	27.7	Q	Q	Q	22	6	Q	Q	.14	6.52	37.24	
Percentage of Exterior Glass														
Less than 25 Percent	105	1,351	12.8	0.054	383	513	40	21	344	3.3	.25	6.37	23.93	
25 to 49 Percent	49	897	18.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	6.76	36.27
50 to 74 Percent	11	490	45.2	.007	47	Q	13	Q	44	Q	.09	6.69	39.21	
75 Percent or More	Q	194	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	72.65	
Insulation/Special Glass														
Any Present	113	2,111	18.7	Q	Q	627	34	Q	459	4.1	.22	6.49	28.35	
Special Glass	54	1,285	23.8	.038	263	696	29	Q	231	4.3	.18	6.14	28.15	
Roof/Ceiling Insulation	84	1,690	20.0	Q	Q	Q	35	Q	Q	Q	.23	6.43	34.42	
Exterior Wall Insulation	44	941	21.3	.021	147	477	22	6	125	2.8	.13	5.96	24.48	
None Present	59	823	14.0	Q	Q	Q	Q	Q	Q	Q	Q	6.88	33.90	
Computerized Energy Management System														
In Use	2	287	172.1	Q	Q	Q	Q	Q	Q	Q	Q	4.88	54.65	
Not in Use	168	2,639	15.7	.095	679	564	36	Q	644	3.8	.24	6.79	21.87	
Professional Energy Audits														
Performed in Past Year	21	678	33.0	Q	Q	Q	78	Q	Q	Q	.50	6.44	37.07	
Measures Taken	12	327	28.2	Q	Q	4,222	Q	Q	Q	27.2	Q	6.44	44.24	
Measures Not Taken	9	352	Q	Q	Q	Q	Q	Q	Q	Q	Q	6.48	80.84	
Not Performed	151	2,255	14.9	.055	389	360	24	17	370	2.4	.16	6.79	19.10	

^a Fuel consumption and expenditures data were not collected separately by end use. For example, although it is known that fuel oil was used for heating in certain buildings, the fuel oil consumption shown for the category **Fuel Oil Used for Heating** includes the fuel oil used in those buildings for all purposes, such as water heating, etc.

^{nc} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: Data on fuel oil in the West Census Region are not presented, due to a scarcity of data. To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 18. Propane: Consumption and Expenditures by Census Region, 1983

Building Characteristics	All Buildings Using Propane		Square Feet per Building (thousand square feet)	Total Amount Consumed (quad-ril-lion Btu)	Total Amount Consumed (mil-lion gal-lions)	Energy Consumed per Building (mil-lion Btu)	Energy Consumed per Square Foot (thou-sand Btu)	Energy Consumed per Em-ploy-ee (mil-lion Btu)	Total Expen-ditures (mil-lion dol-lars)	Expen-di-tures per Build-ing (thou-sand dol-lars)	Expen-di-tures per Square Foot (dol-lars)	Expen-di-tures per Mil-lion Btu (dol-lars)	RSE Row Factor
	Number of Build-ings (thou-sands)	Square Feet (mil-lions)											
RSE Column Factor:	0.936	0.875	1.614	1.082	1.082	1.381	1.168	1.053	1.087	1.279	1.150	0.257	
Census Region: South													
All Buildings	144	1,657	11.5	0.023	254	161	14	8	224	1.6	0.14	9.68	19.08
Propane Used for:^a													
Heating	76	578	7.6	.010	115	139	Q	11	105	1.4	Q	9.97	29.68
Water Heating	27	Q	Q	Q	Q	Q	59	Q	Q	Q	.55	9.22	53.98
Cooking	46	524	11.3	Q	Q	274	24	10	Q	2.6	.23	9.34	28.88
Manufacturing	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	102.38
Fuels Used for Heating^a													
Propane Only	55	214	3.9	.006	61	102	26	9	56	1.0	.26	10.10	30.58
Propane and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	27.38
Other Combinations or Fuels	70	1,264	18.1	.013	145	190	10	7	125	1.8	.10	9.45	22.48
No Fuels Used	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	82.58
Fuels Used for Water Heating^a													
Propane Only	Q	Q	Q	Q	Q	Q	71	Q	Q	Q	.65	9.19	55.48
Propane and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	84.67
Other Combinations or Fuels	71	1,310	18.4	.008	92	119	6	5	85	1.2	.06	10.06	16.88
No Fuels Used	46	164	3.6	.003	37	73	Q	11	35	.8	Q	10.26	34.98
Fuels Used for Cooking^a													
Propane Only	34	383	11.2	Q	Q	323	29	Q	Q	3.0	.27	9.25	32.88
Propane and Electricity Only	12	134	11.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	39.78
Other Combinations or Fuels	26	Q	Q	.003	35	Q	Q	Q	31	1.2	Q	9.84	44.98
No Fuels Used	73	668	9.2	.007	81	101	11	6	75	1.0	.11	10.20	20.98
Year Constructed													
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	88.38
1901 to 1920	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	54.08
1921 to 1945	28	178	6.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	21.88
1946 to 1960	44	474	10.7	.006	71	146	Q	Q	Q	1.5	Q	10.24	37.41
1961 to 1970	22	Q	Q	Q	Q	Q	Q	8	25	1.1	Q	9.87	40.48
1971 to 1973	16	179	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	33.41
1974 to 1979	26	307	11.7	Q	Q	Q	Q	Q	Q	Q	Q	9.78	44.88
1980 to 1983	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	54.88
Square Footage Category													
5,000 or Less	92	202	2.2	.012	131	130	59	11	116	1.3	.57	9.64	22.47
5,001 to 10,000	26	177	6.7	Q	Q	Q	Q	Q	Q	Q	Q	Q	25.38
10,001 to 25,000	17	277	16.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	32.61
25,001 to 50,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	41.88
50,001 to 100,000	2	116	65.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	30.18
100,001 to 200,000	2	213	136.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	35.98
Over 200,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	43.98
Number of Floors													
One	110	845	7.7	.013	145	120	16	12	132	1.2	.16	9.93	22.87
Two	25	418	Q	.008	88	327	19	6	75	3.0	.18	9.25	31.28
Three or More	9	394	41.9	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.87
Principal Activity Within Building													
Assembly	38	236	6.2	Q	Q	Q	Q	Q	Q	Q	.32	9.12	45.98
Educational	Q	235	Q	.001	7	Q	3	4	5	Q	.02	9.20	37.37
Food Sales/Service	23	134	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.07
Health Care	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	74.67
Lodging	11	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	37.58
Mercantile/Services	35	Q	Q	.003	35	93	Q	9	33	1.0	Q	10.36	39.08
Office	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	71.58
Residential	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	50.38

See footnotes at end of table.

Table 18. Propane: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Propane		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.936	0.875	1.614	1.082	1.082	1.381	1.168	1.053	1.087	1.279	1.150	0.257	
Census Region: South													
Principal Activity Within Building													
Warehouse	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	50.46
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	85.32
Vacant	Q	Q	Q	*	*	82	*	NC	*	0.9	*	10.64	69.41
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD													
	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Below 2,000 CDD and 5,500-7,000 HDD													
	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Below 2,000 CDD and 4,000-5,499 HDD													
	34	401	11.8	0.008	92	247	21	Q	77	2.3	0.19	9.21	19.78
Below 2,000 CDD and Below 4,000 HDD													
	Q	442	Q	.006	62	Q	Q	15	Q	Q	Q	9.64	63.26
Above 2,000 CDD and Below 4,000 HDD													
	Q	Q	10.8	Q	Q	Q	11	8	Q	1.2	.11	10.12	40.19
Metropolitan Status													
Metropolitan	45	478	10.7	Q	Q	Q	Q	9	Q	Q	Q	9.67	39.62
Nonmetropolitan	100	1,179	11.8	.018	192	176	15	8	169	1.7	.14	9.68	24.63
Number of Establishments in Building													
Vacant	Q	Q	Q	*	*	82	*	NC	*	.9	*	10.64	69.41
Single Establishment	129	1,394	10.8	.020	221	156	14	8	195	1.5	.14	9.66	18.79
Multiple Establishment	15	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	64.08
Government Occupancy													
Any Government Occupancy	8	158	20.5	.001	11	136	Q	8	10	1.2	Q	9.15	35.09
Federal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	119.49
State	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	75.21
Local	4	143	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.58
Number of Employees													
Fewer than 10	100	377	3.8	.008	89	81	22	22	83	.8	.22	10.31	22.48
10 to 19	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	26.10
20 to 49	23	462	20.3	Q	Q	279	Q	9	Q	2.7	Q	9.63	30.03
50 to 99	3	213	71.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	28.48
100 or More	Q	Q	Q	Q	Q	Q	11	Q	Q	Q	Q	8.60	60.42
Hours of Operation During a Typical Week													
39 or Fewer Hours	27	121	4.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	31.54
40 to 48 Hours	29	405	13.9	.007	81	254	Q	11	68	2.3	Q	9.14	32.72
49 to 60 Hours	20	269	13.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	62.73
61 to 84 Hours	26	293	11.5	Q	Q	Q	17	12	Q	Q	.16	9.72	38.89
85 to 167 Hours	27	Q	Q	.004	39	130	Q	9	37	1.4	Q	10.41	34.64
168 Hours	15	Q	Q	.003	35	211	17	Q	31	2.1	.17	9.75	35.96
Percentage of Exterior Glass													
Less than 25 Percent	105	772	7.4	.015	168	147	20	9	148	1.4	.19	9.68	21.31
25 to 49 Percent	27	Q	24.3	Q	Q	Q	Q	Q	52	Q	Q	9.55	52.08
50 to 74 Percent	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	84.83
75 Percent or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	85.47

See footnotes at end of table.

Table 18. Propane: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Propane		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.936	0.875	1.614	1.082	1.082	1.381	1.168	1.053	1.087	1.279	1.150	0.257	
Census Region: South													
Insulation/Special Glass													
Any Present	106	1,214	11.5	0.020	217	188	16	8	190	1.8	0.16	9.57	20.69
Special Glass	44	825	18.6	.013	140	287	15	6	117	2.6	.14	9.20	25.29
Roof/Ceiling Insulation	76	945	12.4	.012	132	158	13	8	119	1.6	.13	9.89	24.49
Exterior Wall Insulation	40	437	10.9	.011	124	283	26	8	106	2.6	.24	9.35	23.07
None Present	39	442	11.4	.003	37	87	Q	11	35	.9	Q	10.29	35.58
Computerized Energy Management System													
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	66.57
Not in Use	142	1,578	11.1	.022	241	155	14	8	213	1.5	.14	9.70	20.46
Professional Energy Audits													
Performed in Past Year	14	252	18.0	Q	Q	Q	26	Q	Q	Q	.23	8.91	40.80
Measures Taken	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	65.75
Measures Not Taken	9	Q	12.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	37.75
Not Performed	130	1,405	10.8	.017	182	128	12	9	166	1.3	.12	9.98	20.27

^a Fuel consumption and expenditures were not collected separately by end use. For example, although it is known that propane was used for heating in certain buildings, the propane consumption shown in the category **Propane Used for Heating** includes the propane used in those buildings for all purposes, such as water heating, etc.

^{nc} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

* Total Amount Consumed of less than 500 billion Btu is rounded to zero. Total Amount Consumed of less than 500,000 gallons is rounded to zero. Energy Consumed per Square Foot of less than 500 Btu is rounded to zero. Total Expenditures of less than 500,000 dollars is rounded to zero. Expenditures per Square Foot of less than 0.5 cents is rounded to zero.

Note: Data on propane in the Northeast, North Central, and West Census regions are not presented, due to a scarcity of data. To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 19. Purchased Steam: Consumption and Expenditures by Census Region, 1983

Building Characteristics	All Buildings Using Steam		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion pounds)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.065	0.916	1.012	1.071	1.071	1.845	0.819	1.108	1.022	1.979	0.900	0.311	
Census Region: Northeast													
All Buildings	16	1,336	83.3	0.086	86	Q	64	36	1,004	Q	0.75	11.71	34.97
Purchased Steam Used for:^a													
Heating	15	1,284	83.9	.077	77	Q	60	33	910	Q	.71	11.82	36.26
And Air-Conditioning	1	231	Q	.019	19	23,574	84	21	244	298.8	1.06	12.67	16.86
And Not Air-Conditioning	14	1,053	72.7	Q	Q	Q	Q	Q	Q	Q	.63	11.54	42.88
Air-Conditioning	1	235	Q	.020	20	23,723	84	21	249	300.6	1.06	12.67	16.75
Water Heating	7	874	129.1	.068	68	Q	77	35	793	Q	.91	11.72	30.23
Cooking	1	242	Q	.013	13	Q	Q	23	153	Q	Q	12.17	35.51
Fuels Used for Heating^a													
Purchased Steam Only	13	1,102	85.3	Q	Q	Q	63	34	826	Q	.75	11.93	37.48
Other Combinations or Fuels	Q	Q	74.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	58.26
Fuels Used for Air-Conditioning^a													
Purchased Steam Only	Q	160	Q	.014	14	Q	87	25	175	Q	1.09	12.61	23.03
Other Combinations or Fuels	13	964	76.3	.066	66	Q	88	36	754	Q	.78	11.43	35.82
No Fuels Used	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	112.84
Fuels Used for Water Heating^a													
Purchased Steam Only	5	756	141.0	.058	58	Q	77	33	695	Q	.92	11.90	31.65
Other Combinations or Fuels	10	Q	51.5	Q	Q	Q	Q	Q	Q	Q	Q	11.22	78.87
No Fuels Used	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	83.70
Fuels Used for Cooking^a													
Purchased Steam and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	33.87
Other Combinations or Fuels	10	835	85.5	.048	48	Q	58	33	557	Q	.67	11.53	28.52
No Fuels Used	Q	Q	74.8	Q	Q	Q	Q	Q	Q	Q	Q	11.82	65.20
Year Constructed													
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	80.01
1901 to 1920	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.99
1921 to 1945	Q	Q	Q	Q	Q	Q	Q	Q	62	Q	Q	10.84	74.75
1946 to 1960	6	229	Q	.011	11	Q	Q	28	125	Q	Q	11.80	46.95
1961 to 1970	3	320	Q	Q	Q	Q	100	Q	Q	Q	1.19	11.89	50.68
1971 to 1973	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	32.64
1974 to 1979	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.87
1980 to 1983	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	21.89
Square Footage Category													
5,000 or Less	Q	Q	Q	.001	1	335	74	56	13	4.0	.89	11.96	76.52
5,001 to 10,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	80.21
10,001 to 25,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	120.95
25,001 to 50,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	63.92
50,001 to 100,000	Q	Q	65.7	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.25
100,001 to 200,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	58.11
Over 200,000	2	786	480.9	Q	Q	Q	59	Q	540	Q	.69	11.74	34.89
Number of Floors													
One or Two	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	70.90
Three or More	Q	1,166	119.4	.068	68	Q	58	30	803	Q	.69	11.84	36.39

See footnotes at end of table.

Table 19. Purchased Steam: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Steam		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion pounds)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.065	0.916	1.012	1.071	1.071	1.845	0.819	1.108	1.022	1.979	0.900	0.311	
Census Region: Northeast													
Principal Activity Within Building													
Assembly	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	81.73
Educational	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	56.96
Food Sales/Service	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	76.70
Health Care	Q	117	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	58.91
Lodging	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	85.27
Mercantile/Services	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	107.45
Office	Q	451	Q	0.022	22	Q	48	14	286	Q	0.63	13.10	23.41
Residential	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	80.21
Warehouse	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	94.75
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	118.21
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	174.69
Climate Zones:													
45 Year Average													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD													
	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	70.35
Below 2,000 CDD and 5,500-7,000 HDD													
	10	Q	55.9	Q	Q	Q	Q	41	Q	Q	Q	11.41	73.43
Below 2,000 CDD and 4,000-5,499 HDD													
	4	644	143.9	.035	35	7,907	55	24	429	95.8	.67	12.12	28.05
Below 2,000 CDD and Below 4,000 HDD													
	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Above 2,000 CDD and Below 4,000 HDD													
	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Metropolitan Status													
Metropolitan	14	1,193	83.5	.066	66	Q	55	29	775	Q	.65	11.79	31.73
Nonmetropolitan	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	70.80
Number of Establishments in Building													
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	143.12
Single Establishment	12	735	60.0	Q	Q	Q	Q	Q	Q	Q	Q	11.25	53.76
Multiple Establishment	Q	585	162.9	.029	29	Q	50	19	365	Q	.62	12.55	34.67
Government Occupancy													
Any Government Occupancy	Q	395	91.0	.029	29	Q	74	28	333	Q	.84	11.38	48.37
Federal	Q	142	Q	.008	8	Q	59	14	110	Q	.77	13.07	33.04
State	Q	128	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	40.63
Local	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	35.22
Number of Employees													
Fewer than 10	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	116.22
10 to 19	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	61.25
20 to 49	Q	Q	52.5	Q	Q	Q	Q	Q	Q	Q	Q	Q	151.49
50 to 99	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	85.06
100 or More	3	801	309.0	.055	55	Q	69	26	650	Q	.81	11.85	34.87
Hours of Operation During a Typical Week													
39 or Fewer Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	181.90
40 to 48 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	100.24
49 to 60 Hours	Q	338	Q	Q	Q	Q	Q	Q	Q	Q	Q	11.81	68.47
61 to 84 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	109.36
85 to 167 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	39.22
168 Hours	3	400	134.1	.034	34	Q	85	40	388	Q	.97	11.36	41.12

See footnotes at end of table.

Table 19. Purchased Steam: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Steam		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion pounds)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.065	0.916	1.012	1.071	1.071	1.845	0.819	1.108	1.022	1.979	0.900	0.311	
Census Region: Northeast													
Percentage of Exterior Glass													
Less than 50 Percent	Q	934	86.0	Q	Q	Q	72	51	Q	Q	0.82	11.40	43.40
50 percent or More	5	402	Q	0.019	19	Q	46	17	238	Q	.59	12.81	28.26
Insulation/Special Glass													
Any Present	13	984	75.8	Q	Q	Q	72	34	815	Q	.83	11.56	38.36
Special Glass	Q	728	132.7	Q	Q	Q	74	Q	Q	Q	.88	11.98	48.33
Roof/Ceiling Insulation	11	643	60.9	Q	Q	Q	84	Q	Q	Q	.93	11.10	46.84
Exterior Wall Insulation	5	359	Q	.024	24	Q	67	26	283	Q	.79	11.73	38.90
None Present	Q	352	Q	Q	Q	Q	Q	45	Q	Q	Q	12.35	59.40
Computerized Energy Management System													
In Use	2	311	Q	.019	19	Q	60	33	224	Q	.72	12.01	32.16
Not in Use	14	1,023	75.5	Q	Q	Q	Q	Q	Q	Q	Q	11.62	48.88
Professional Energy Audits													
Performed in Past Year	5	640	120.2	Q	Q	Q	68	Q	Q	Q	.76	11.13	45.10
Measures Taken	Q	326	Q	Q	Q	Q	91	Q	Q	Q	1.02	11.20	60.48
Measures Not Taken	3	314	106.3	.014	14	Q	Q	40	154	Q	Q	10.99	49.46
Not Performed	11	696	65.0	.042	42	Q	60	32	516	Q	Q	12.30	38.03

See footnotes at end of table.

Table 19. Purchased Steam: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Steam		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion pounds)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE 30 th Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.065	0.916	1.012	1.071	1.071	1.845	0.819	1.108	1.022	1.979	0.900	0.311	
Census Region: North Central													
All Buildings	22	1,907	88.5	0.144	144	6,676	75	40	1,063	49.3	0.56	7.39	17.44
Purchased Steam Used for:^a													
Heating	21	1,830	88.4	.137	137	6,637	75	40	1,023	49.4	.56	7.44	18.12
And Air-Conditioning	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	39.53
And Not Air-Conditioning	20	1,709	84.9	.121	121	6,009	71	40	902	44.8	.53	7.46	20.73
Air-Conditioning	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	46.95
Water Heating	10	1,235	122.6	.102	102	10,102	82	43	728	72.2	.59	7.15	22.73
Cooking	1	329	253.6	.026	26	20,169	80	56	181	139.5	.55	6.91	14.83
Fuels Used for Heating^a													
Purchased Steam Only	19	1,698	91.2	.131	131	7,063	77	42	976	52.4	.57	7.43	18.32
Other Combinations or Fuels	3	201	Q	Q	Q	Q	61	26	85	Q	.42	6.99	44.35
Fuels Used for Air-Conditioning^a													
Purchased Steam Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	74.21
Other Combinations or Fuels	16	1,624	102.6	.116	116	7,319	71	36	843	53.2	.52	7.27	17.93
No Fuels Used	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	74.79
Fuels Used for Water Heating^a													
Purchased Steam Only	10	1,149	118.4	.097	97	9,978	84	43	694	71.6	.60	7.17	25.47
Other Combinations or Fuels	11	709	65.5	.040	40	Q	56	31	316	Q	.45	7.90	39.78
No Fuels Used	Q	Q	Q	.007	7	6,818	166	283	51	51.0	1.24	7.48	96.85
Fuels Used for Cooking^a													
Purchased Steam and Electricity Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	64.88
Other Combinations or Fuels	8	894	114.7	.074	74	9,519	83	40	559	71.6	.62	7.52	26.82
No Fuels Used	13	940	71.1	.060	60	4,565	64	38	438	33.2	.47	7.26	18.34
Year Constructed													
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	63.36
1901 to 1920	3	261	100.7	.011	11	4,123	41	Q	86	33.4	.33	8.09	14.22
1921 to 1945	7	377	52.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	34.78
1946 to 1960	6	393	63.3	.033	33	Q	85	54	252	Q	.64	7.56	39.71
1961 to 1970	2	336	174.6	.033	33	Q	98	57	232	Q	Q	7.01	37.79
1971 to 1973	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	70.52
1974 to 1979	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	54.67
1980 to 1983	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	72.47
Square Footage Category													
5,000 or Less	Q	Q	Q	*	*	1	3	*	*	*	.02	7.00	76.52
5,001 to 10,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	28.13
10,001 to 25,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.46
25,001 to 50,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	26.90
50,001 to 100,000	3	241	74.1	Q	Q	Q	Q	Q	Q	Q	Q	Q	15.83
100,001 to 200,000	Q	340	136.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	44.72
Over 200,000	3	1,115	356.0	.067	67	21,420	60	31	491	156.9	.44	7.33	60.02
Number of Floors													
One or Two	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	62.96
Three or More	19	1,865	100.2	.141	141	7,552	75	40	1,040	55.9	.56	7.40	17.50

See footnotes at end of table.

Table 19. Purchased Steam: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Steam		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion pounds)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.065	0.916	1.012	1.071	1.071	1.845	0.819	1.108	1.022	1.979	0.900	0.311	
Census Region: North Central													
Principal Activity Within Building													
Assembly	Q	258	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	41.26
Educational	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	133.88
Food Sales/Service	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Health Care	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	41.95
Lodging	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	69.60
Mercantile/Services	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	64.36
Office	4	369	84.3	Q	Q	Q	85	23	Q	Q	0.62	7.33	36.25
Residential	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	76.10
Warehouse	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	80.99
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	59.36
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	63.29
Climate Zones:													
45 Year Average													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD													
	9	806	93.9	0.042	42	Q	52	36	286	Q	.35	6.77	28.25
Below 2,000 CDD and 5,500-7,000 HDD													
	12	967	80.7	.095	95	7,964	99	45	716	59.8	.74	7.51	23.07
Below 2,000 CDD and 4,000-5,499 HDD													
	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	81.08
Below 2,000 CDD and Below 4,000 HDD													
	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Above 2,000 CDD and Below 4,000 HDD													
	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Metropolitan Status													
Metropolitan	20	1,900	93.1	.143	143	7,030	75	40	1,060	51.9	.56	7.39	17.63
Nonmetropolitan	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	79.88
Number of Establishments in Building													
Vacant	Q	Q	Q	Q	Q	Q	Q	NC	Q	Q	Q	Q	75.88
Single Establishment	18	1,439	81.8	.107	107	6,081	74	47	789	Q	.55	7.38	20.88
Multiple Establishment	4	464	117.5	.037	37	9,300	79	29	272	69.0	.59	7.42	16.34
Government Occupancy													
Any Government Occupancy	Q	607	89.3	.044	44	Q	73	32	335	Q	.55	7.60	25.84
Federal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.86
State	Q	353	81.9	Q	Q	Q	Q	Q	Q	Q	Q	Q	43.26
Local	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	47.27
Number of Employees													
Fewer than 10	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	97.89
10 to 19	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	37.93
20 to 49	5	241	49.7	Q	Q	Q	Q	Q	Q	Q	Q	Q	26.05
50 to 99	Q	209	77.7	Q	Q	Q	Q	Q	Q	Q	Q	Q	50.97
100 or More	6	1,349	210.0	.098	98	15,303	73	31	714	111.2	.53	7.26	15.81
Hours of Operation During a Typical Week													
39 or Fewer Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	95.38
40 to 48 Hours	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	44.29
49 to 60 Hours	8	Q	72.1	Q	Q	3,103	43	24	Q	24.0	.33	7.73	33.73
61 to 84 Hours	3	283	92.7	Q	Q	Q	80	Q	156	Q	.55	6.90	37.19
85 to 167 Hours	Q	Q	116.5	Q	Q	Q	Q	Q	Q	Q	Q	Q	54.24
168 Hours	3	508	146.6	.053	53	15,296	104	73	392	113.3	.77	7.41	26.56

See footnotes at end of table.

Table 19. Purchased Steam: Consumption and Expenditures by Census Region, 1983 (Continued)

Building Characteristics	All Buildings Using Steam		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion pounds)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.065	0.916	1.012	1.071	1.071	1.845	0.819	1.108	1.022	1.979	0.900	0.311	
Census Region: North Central													
Percentage of Exterior Glass													
Less than 50 Percent	19	1,412	75.6	0.100	100	5,343	71	41	729	39.0	0.52	7.30	17.52
50 percent or More	3	495	172.8	.044	44	15,367	89	39	334	116.7	.68	7.59	21.36
Insulation/Special Glass													
Any Present	16	1,516	95.1	.105	105	6,610	70	36	763	47.8	.50	7.23	15.83
Special Glass	10	1,150	118.6	.080	80	8,277	70	38	580	59.9	.50	7.23	17.43
Roof/Ceiling Insulation	13	1,298	97.2	.086	86	6,406	66	32	617	46.2	.48	7.21	15.93
Exterior Wall Insulation	3	698	209.1	.043	43	Q	61	27	297	Q	.43	6.95	26.86
None Present	Q	Q	69.7	Q	Q	Q	Q	Q	Q	Q	Q	Q	37.95
Computerized Energy Management System													
In Use	4	882	226.4	.057	57	14,571	64	29	411	105.5	.47	7.24	19.96
Not in Use	18	1,025	58.1	.087	87	4,936	85	53	652	Q	.64	7.49	23.51
Professional Energy Audits													
Performed in Past Year	3	475	159.0	.035	35	11,824	74	35	268	89.7	.56	7.59	26.16
Measures Taken	1	289	219.6	.018	18	13,417	61	34	143	108.3	.49	8.08	27.69
Measures Not Taken	Q	186	111.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	52.12
Not Performed	19	1,432	77.2	.109	109	5,847	76	43	795	42.8	.56	7.32	26.84

^a Fuel consumption and expenditures data were not collected separately by end use. For example, although it is known that purchased steam was used for heating in certain buildings, the purchased steam consumption shown for the category **Purchased Steam Used for Heating** includes the purchased steam used in those buildings for all purposes, such as water heating, etc.

^{NC} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

^{*} Total Amount Consumed of less than 500 billion Btu is rounded to zero. Total Amount Consumed of less than 500 million pounds of steam is rounded to zero. Energy Consumed per Employee of less than 500,000 Btu is rounded to zero. Total Expenditures of less than 500,000 dollars is rounded to zero. Expenditures per Building of less than 50 dollars is rounded to zero.

Note: Data on purchased steam in the South and West Census regions are not presented, due to a scarcity of data. To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 20. Electricity: Consumption and Expenditures in Buildings That Heat with Electricity (With or Without Air-Conditioning), 1983

Building Characteristics	All Buildings Using Electricity (for Heating)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.122	1.187	1.005	1.465	1.465	1.180	0.920	0.944	1.372	1.034	0.935	0.375	
All Buildings	1,103	15,896	14.4	0.831	243	753	52	32	14,619	13.3	0.92	17.60	9.17
Electricity Used for: ^a													
Heating	1,103	15,896	14.4	.831	243	753	52	32	14,619	13.3	.92	17.60	9.17
And Air-Conditioning	914	14,200	15.5	.770	226	843	54	32	13,598	14.9	.96	17.65	10.13
And Not Air-Conditioning	189	1,696	9.0	.061	18	319	36	29	1,020	5.4	.60	16.86	16.02
Water Heating	682	10,770	15.8	.579	170	850	54	32	10,037	14.7	.93	17.32	11.22
Cooking	357	7,435	20.8	.417	122	1,167	56	31	7,114	19.9	.96	17.06	14.35
Manufacturing	89	1,372	15.4	.076	22	848	55	35	1,242	13.9	.91	16.44	15.20
Fuels Used for Heating ^a													
Electricity Only	758	9,254	12.2	.563	165	742	61	34	9,676	12.8	1.05	17.20	13.09
Electricity and Natural Gas													
Only	219	4,208	19.2	.175	51	799	42	30	3,008	13.7	.71	17.20	10.63
Electricity and Fuel Oil Only	50	709	14.1	.029	9	582	41	26	601	12.0	.85	20.56	22.21
Electricity and Propane Only	27	209	Q	.008	2	302	39	25	156	Q	.75	19.00	31.85
Electricity, Natural Gas and Fuel Oil Only	9	752	Q	Q	Q	Q	Q	Q	Q	Q	.86	23.85	52.60
Other Combinations with Electricity	40	764	19.3	.029	8	723	38	28	532	13.4	.70	18.55	20.01
Fuels Used to Fire Boilers ^a													
Electricity Only	11	486	44.4	.040	12	3,613	81	38	616	56.2	1.27	15.55	23.58
Electricity and Natural Gas													
Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.76
Electricity and Fuel Oil Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	65.52
Other Combinations or Fuels	99	3,599	36.5	.153	45	1,552	43	28	2,845	28.9	.79	18.59	15.26
Year Constructed													
1900 or Before	41	508	12.3	.013	4	310	25	20	370	8.9	.73	28.86	23.26
1901 to 1920	71	1,054	14.9	.024	7	341	23	18	437	6.2	.41	18.08	23.16
1921 to 1945	146	1,453	10.0	.050	15	345	35	22	963	6.6	.66	19.16	12.95
1946 to 1960	214	2,207	10.3	.083	24	388	38	21	1,614	7.6	.73	19.48	18.21
1961 to 1970	246	2,937	11.9	.174	51	708	59	36	2,892	11.8	.98	16.62	13.61
1971 to 1973	81	1,355	16.7	.088	26	1,088	65	34	1,658	20.4	1.22	18.75	14.60
1974 to 1979	242	2,997	12.4	.222	65	914	74	37	3,828	15.8	1.28	17.28	11.03
1980 to 1983	62	3,384	54.6	.177	52	2,850	52	37	2,857	46.1	.84	16.18	27.66
Square Footage Category													
5,000 or Less	587	1,250	2.1	.139	41	236	111	31	2,580	4.4	2.06	18.60	8.98
5,001 to 10,000	217	1,544	7.1	.074	22	341	48	25	1,399	6.5	.91	18.94	10.83
10,001 to 25,000	187	2,954	15.8	.113	33	604	38	26	2,188	11.7	.74	19.36	13.22
25,001 to 50,000	60	2,135	35.3	.120	35	1,978	56	36	2,289	37.9	1.07	19.15	10.74
50,001 to 100,000	29	1,920	66.9	.113	33	3,920	59	44	1,769	61.6	.92	15.71	12.13
100,001 to 200,000	15	1,962	127.7	.098	29	6,403	50	35	1,666	108.4	.85	16.94	9.73
Over 200,000	8	4,131	521.1	.175	51	22,054	42	30	2,729	344.2	.66	15.61	23.21
Number of Floors													
One	724	6,924	9.6	.366	107	506	53	35	6,338	8.8	.92	17.31	15.34
Two	228	3,645	16.0	.158	46	694	43	30	2,765	12.1	.76	17.50	11.92
Three or More	151	5,326	35.2	.307	90	2,026	58	29	5,516	36.4	1.04	17.98	9.56
Principal Activity Within Building													
Assembly	138	1,810	13.1	.039	11	283	22	22	788	5.7	.44	20.23	26.05
Educational	52	1,229	23.9	.039	12	766	32	29	659	12.8	.54	16.70	22.23
Food Sales/Service	121	686	5.7	.090	26	744	131	43	1,623	13.4	2.36	18.03	11.83
Health Care	18	398	21.5	.026	8	1,405	65	24	450	Q	1.13	17.37	24.72
Lodging	54	813	15.1	.084	25	1,573	104	74	1,451	27.0	1.78	17.18	20.22
Mercantile/Services	243	3,847	15.9	.154	45	634	40	31	2,620	10.8	.68	17.03	25.31
Office	231	2,920	12.6	.224	66	970	77	23	4,070	17.6	1.39	18.16	10.07

See footnotes at end of table.

Table 20. Electricity: Consumption and Expenditures in Buildings That Heat with Electricity (With or Without Air-Conditioning), 1983 (Continued)

Building Characteristics	All Buildings Using Electricity (for Heating)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.122	1.187	1.005	1.465	1.465	1.180	0.920	0.944	1.372	1.034	0.935	0.375	
Principal Activity Within Building													
Residential	49	476	9.6	.0018	5	364	38	43	332	6.7	0.70	18.40	27.07
Warehouse	104	2,053	19.8	.087	26	844	43	45	1,434	13.9	.70	16.42	15.86
Other	50	964	19.4	.040	12	814	Q	37	705	14.2	Q	17.41	31.85
Vacant	44	699	15.8	.028	8	638	40	48	488	11.0	.70	17.29	20.00
Census Region													
Northeast	116	2,581	22.3	.114	33	982	44	27	2,500	21.6	.97	22.01	16.35
North Central	203	2,790	13.8	.156	46	768	56	30	2,635	13.0	.94	16.93	11.45
South	602	7,669	12.7	.448	131	744	58	35	7,889	13.1	1.03	17.63	14.81
West	183	2,856	15.6	.114	33	623	40	27	1,595	8.7	.56	13.99	15.30
Climate Zones: 45 Year Average													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above													
7,000 HDD	88	1,021	11.6	.054	16	609	52	30	862	9.8	.84	16.10	20.99
Below 2,000 CDD and													
5,500-7,000 HDD	209	3,602	17.2	.182	53	871	51	31	3,118	14.9	.87	17.12	14.43
Below 2,000 CDD and													
4,000-5,499 HDD	244	4,511	18.5	.193	56	790	43	30	3,308	13.6	.73	17.16	24.83
Below 2,000 CDD and Below													
4,000 HDD	207	2,492	12.0	.129	38	623	52	33	2,307	11.1	.93	17.88	17.73
Above 2,000 CDD and Below													
4,000 HDD	Q	Q	12.0	.273	80	770	64	33	5,024	14.1	1.18	18.37	23.81
Climate Zones: 1983 Weather Data													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above													
7,000 HDD	Q	Q	Q	Q	Q	Q	87	Q	Q	Q	.89	Q	89.86
Below 2,000 CDD and													
5,500-7,000 HDD	185	3,777	20.5	.194	57	1,052	51	33	3,293	17.8	.87	16.96	23.13
Below 2,000 CDD and													
4,000-5,499 HDD	263	4,621	17.6	.200	59	761	43	29	3,392	12.9	.73	16.97	14.45
Below 2,000 CDD and Below													
4,000 HDD	373	3,754	10.1	.192	56	516	51	32	3,466	9.3	.92	18.03	10.03
Above 2,000 CDD and Below													
4,000 HDD	Q	Q	13.4	.238	70	872	65	33	4,376	16.1	1.20	18.42	29.33
Metropolitan Status													
Metropolitan	590	10,215	17.3	.572	168	969	56	31	10,244	17.4	1.00	17.91	8.74
Nonmetropolitan	513	5,680	11.1	.259	76	505	46	33	4,375	8.5	.77	16.91	17.82
Number of Establishments in Building													
Vacant	10	189	Q	.005	2	Q	29	Q	101	Q	.54	18.56	77.75
Single Establishment	881	9,090	10.3	.542	159	615	60	36	9,441	10.7	1.04	17.40	7.22
Multiple Establishment	212	6,617	31.3	.283	83	1,337	43	26	5,076	24.0	.77	17.94	19.59
Government Occupancy													
Any Government Occupancy	102	3,415	33.6	.132	39	1,295	39	28	2,038	20.1	.60	15.49	27.55
Federal	19	Q	Q	Q	Q	Q	38	Q	Q	Q	.56	14.66	58.01
State	27	1,009	37.5	.031	9	1,168	Q	23	534	19.9	Q	17.01	25.59
Local	64	1,206	19.0	.053	15	830	44	28	851	13.4	.71	16.14	17.58

See footnotes at end of table.

Table 20. Electricity: Consumption and Expenditures in Buildings That Heat with Electricity (With or Without Air-Conditioning), 1983 (Continued)

Building Characteristics	All Buildings Using Electricity (for Heating)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
	1.122	1.187											
RSE Column Factor:			1.005	1.465	1.465	1.180	0.920	0.944	1.372	1.034	0.935	0.375	
Number of Employees													
Fewer than 10	632	3,279	5.2	0.146	43	231	45	56	2,733	4.3	0.83	18.69	12.75
10 to 19	198	2,269	11.5	.072	21	365	32	29	1,367	6.9	.60	18.95	19.52
20 to 49	181	3,121	17.2	.162	47	891	52	30	3,008	16.6	.96	18.60	11.96
50 to 99	50	1,487	29.4	.090	26	1,780	60	28	1,577	31.2	1.06	17.54	14.36
100 or More	41	5,740	138.8	.361	106	8,725	63	29	5,934	143.5	1.03	16.45	16.26
Hours of Operation During a Typical Week													
39 or Fewer Hours	178	1,209	6.8	Q	Q	Q	Q	Q	670	3.8	Q	17.53	36.07
40 to 48 Hours	226	2,548	11.3	.089	26	395	35	29	1,510	6.7	.59	16.90	13.00
49 to 60 Hours	279	3,498	12.5	.136	40	487	39	24	2,691	9.6	.77	19.77	7.96
61 to 84 Hours	173	3,488	20.2	.191	56	1,107	55	34	3,230	18.7	.93	16.88	22.65
85 to 167 Hours	128	2,754	21.5	.196	57	1,529	71	34	3,438	26.9	1.25	17.57	14.13
168 Hours	118	2,399	20.2	.180	53	1,520	75	38	3,079	26.0	1.28	17.09	17.82
Percent Heated													
1 to 50	174	2,329	13.4	.071	21	408	31	33	1,268	7.3	.54	17.89	14.36
51 to 99	189	2,864	15.2	.146	43	772	51	26	2,713	14.4	.95	18.63	10.38
100	740	10,702	14.5	.614	180	830	57	33	10,635	14.4	.99	17.32	11.39
Type of Heating System													
Central System	827	13,225	16.0	.674	197	815	51	30	11,958	14.5	.90	17.75	9.98
Self Contained Units Only	276	2,670	9.7	.157	46	569	59	40	2,661	9.6	1.00	16.95	13.10
Heat Distribution System													
Ducted Forced Air	590	10,857	18.4	.590	173	1,001	54	31	10,476	17.8	.96	17.75	11.37
Baseboards	252	4,070	16.2	.181	53	720	45	28	3,287	13.0	.81	18.13	10.44
Electric	222	3,298	14.9	.141	41	637	43	29	2,480	11.2	.75	17.55	12.73
Hot Water	44	981	22.4	.058	17	1,318	59	28	1,131	25.9	1.15	19.63	15.93
Steam	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	55.57
Radiators, Convectors, or Panels	197	4,331	22.0	.202	59	1,023	47	28	3,802	19.3	.88	18.85	12.29
Heat Pump													
Present	159	Q	15.1	Q	Q	859	57	39	2,165	13.6	.90	15.89	28.63
Not Ascertained	944	13,494	14.3	.695	204	736	51	31	12,454	13.2	.92	17.93	8.05
Percentage of Exterior Glass													
Less than 25 Percent	748	9,399	12.6	.398	117	532	42	31	7,045	9.4	.75	17.72	12.68
25 to 49 Percent	267	4,164	15.6	.256	75	960	62	32	4,428	16.6	1.06	17.27	12.09
50 to 74 Percent	68	1,558	23.0	.124	36	1,831	80	31	2,237	33.0	1.44	18.04	15.10
75 Percent or More	20	775	38.1	.053	15	2,597	68	32	908	44.7	1.17	17.20	24.37
Insulation/Special Glass													
Any Present	871	13,463	15.5	.743	218	853	55	32	12,811	14.7	.95	17.24	9.95
Special Glass	521	10,021	19.3	.551	161	1,058	55	32	9,329	17.9	.93	16.93	12.89
Roof/Ceiling Insulation	640	9,842	15.4	.548	161	857	56	31	9,532	14.9	.97	17.39	8.75
Exterior Wall Insulation	517	8,404	16.3	.484	142	937	58	33	8,346	16.2	.99	17.24	12.83
None Present	232	2,433	10.5	.088	26	379	36	27	1,808	7.8	.74	20.58	10.45
Passive Solar													
In Use	19	319	16.7	.020	6	1,059	63	21	354	18.5	1.11	17.45	18.25
Not in Use	1,080	15,570	14.4	.810	237	750	52	32	14,259	13.2	.92	17.60	9.29

See footnotes at end of table.

Table 20. Electricity: Consumption and Expenditures in Buildings That Heat with Electricity (With or Without Air-Conditioning), 1983 (Continued)

Building Characteristics	All Buildings Using Electricity (for Heating)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.122	1.187	1.005	1.465	1.465	1.180	0.920	0.944	1.372	1.034	0.935	0.375	
Computerized Energy Management System													
In Use	39	2,155	55.0	0.133	39	3,408	62	29	2,210	56.4	1.03	16.56	16.75
Not in Use	1,064	13,740	12.9	.697	204	655	61	32	12,409	11.7	.90	17.80	9.76
Regular Maintenance Program for HVAC													
In Use	858	14,352	16.7	.776	227	904	54	32	13,505	15.7	.94	17.41	9.36
Not in Use	245	1,544	6.3	.055	16	225	36	24	1,113	4.5	.72	20.20	14.60
Occupant Control of Heating													
Yes	859	9,448	11.0	.434	127	506	46	28	7,942	9.2	.84	18.28	8.95
No	233	6,326	27.1	.390	114	1,674	62	36	6,569	28.2	1.04	16.84	14.75
Reduced Heating when Building Not in Use													
Yes	946	13,818	14.6	.697	204	736	50	30	12,324	13.0	.89	17.68	9.77
No	129	1,567	12.1	.097	29	754	62	38	1,657	12.8	1.06	17.01	12.73
Professional Energy Audits													
Performed in Past Year	141	4,386	31.2	.254	75	1,808	58	32	4,367	31.0	1.00	17.16	20.31
Measures Taken	59	1,790	30.3	.092	27	1,556	51	28	1,651	27.9	.92	17.93	18.90
Measures Not Taken	82	Q	31.8	.162	48	1,991	63	35	2,716	33.3	1.05	16.72	27.83
Not Performed	962	11,510	12.0	.576	169	599	50	31	10,252	10.7	.89	17.79	7.72

^a Fuel consumption and expenditures data were not collected separately by end use. For example, although it is known that electricity was used for heating in certain buildings, the electricity consumption shown for the category **Electricity Used for Heating** includes the electricity used in those buildings for all purposes, such as lighting, water heating, etc.

^{NC} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 21. Electricity: Consumption and Expenditures in Buildings That Both Heat and Air-Condition with Electricity, 1983

Building Characteristics	All Buildings Using Electricity (for Heating and Air-Conditioning)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.203	1.258	1.024	1.416	1.416	1.179	0.941	0.922	1.348	1.016	0.944	0.345	
All Buildings	914	14,200	15.5	0.770	226	843	54	32	13,598	14.9	0.96	17.65	10.13
Electricity Also Used for:^a													
Water Heating	583	9,896	17.0	.543	159	931	55	32	9,456	16.2	.96	17.43	12.23
Cooking	297	6,869	23.1	.393	115	1,323	57	31	6,736	22.7	.98	17.15	15.79
Manufacturing	72	1,206	16.8	.067	20	943	56	34	1,117	15.6	.93	16.57	17.24
Fuels Used for Heating^a													
Electricity Only	661	8,495	12.8	.534	156	807	63	34	9,195	13.9	1.08	17.23	13.96
Electricity and Natural Gas Only	171	3,646	21.3	.155	45	903	42	30	2,679	15.6	.73	17.30	11.90
Electricity and Fuel Oil Only	33	543	16.6	.027	8	833	50	29	562	17.2	1.03	20.64	21.91
Electricity and Propane Only	15	147	9.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	31.45
Other Combinations With Electricity	33	1,368	41.9	.049	14	1,498	36	Q	1,047	32.0	.77	21.38	24.52
Fuels Used for Air-Conditioning^a													
Electricity Only	896	13,805	15.4	.742	218	828	54	32	13,084	14.6	.95	17.63	10.55
Electricity and Natural Gas Only	16	285	Q	.020	6	Q	71	36	352	Q	1.24	17.41	38.43
Other Combinations With Electricity	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	49.89
Fuels Used to Fire Boilers^a													
Electricity Only	8	392	47.5	.035	10	4,230	89	35	563	68.2	1.43	16.11	22.81
Electricity and Natural Gas Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	54.66
Other Combinations or Fuels	80	3,369	42.1	.139	41	1,741	41	27	2,631	32.9	.78	18.88	15.36
Year Constructed													
1900 or Before	24	339	14.2	.011	3	474	33	22	336	14.1	.99	29.67	31.04
1901 to 1920	59	788	13.3	.017	5	285	21	14	320	5.4	.41	18.88	27.87
1921 to 1945	110	1,165	10.6	.046	14	422	40	22	891	8.1	.76	19.27	14.64
1946 to 1960	171	2,025	11.8	.071	21	413	35	19	1,399	8.2	.69	19.81	21.64
1961 to 1970	219	2,714	12.4	.164	48	750	61	36	2,741	12.5	1.01	16.69	13.36
1971 to 1973	63	1,186	18.9	.079	23	1,265	67	38	1,502	24.0	1.27	18.94	16.85
1974 to 1979	214	2,774	13.0	.214	63	1,003	77	37	3,717	17.4	1.34	17.34	11.69
1980 to 1983	54	3,209	59.2	Q	Q	3,085	52	38	2,693	49.7	.84	16.10	29.92
Square Footage Category													
5,000 or Less	478	1,050	2.2	.121	36	254	116	31	2,265	4.7	2.16	18.65	9.65
5,001 to 10,000	180	1,272	7.1	.063	19	353	50	24	1,248	6.9	.98	19.69	12.23
10,001 to 25,000	154	2,440	15.8	.102	30	663	42	27	1,966	12.7	.81	19.22	14.75
25,001 to 50,000	54	1,905	35.1	.114	33	2,097	60	37	2,187	40.3	1.15	19.21	10.90
50,001 to 100,000	25	1,669	67.3	.101	30	4,073	61	44	1,612	65.0	.97	15.97	11.13
100,001 to 200,000	15	1,866	128.6	.097	28	6,664	52	35	1,643	113.2	.88	16.99	9.68
Over 200,000	8	3,998	532.6	.172	50	22,857	43	30	2,677	356.6	.67	15.60	23.64
Number of Floors													
One	610	6,306	10.3	.333	98	546	53	36	5,774	9.5	.92	17.35	17.03
Two	180	3,049	17.0	.149	44	829	49	31	2,597	14.5	.85	17.44	12.84
Three or More	124	4,844	39.0	.289	85	2,321	60	29	5,227	42.1	1.08	18.11	10.39

See footnotes at end of table.

Table 21. Electricity: Consumption and Expenditures in Buildings That Both Heat and Air-Condition with Electricity, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity (for Heating and Air-Conditioning)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.203	1.258	1.024	1.416	1.416	1.179	0.941	0.922	1.348	1.016	0.944	0.345	
Principal Activity Within Building													
Assembly	104	1,529	14.7	0.037	11	352	24	25	750	7.2	0.49	20.48	26.90
Educational	48	1,097	22.7	.038	11	787	35	31	627	13.0	.57	16.49	22.85
Food Sales/Service	108	552	5.1	.080	23	745	145	47	1,444	13.4	2.61	18.02	12.79
Health Care	17	366	Q	.025	7	Q	68	26	426	Q	1.16	17.25	27.00
Lodging	43	737	17.0	.079	23	1,836	108	73	1,357	31.4	1.84	17.10	21.13
Mercantile/Services	193	3,565	18.4	.144	42	745	40	31	2,456	12.7	.69	17.05	27.65
Office	214	2,853	13.3	.219	64	1,023	77	23	3,995	18.7	1.40	18.23	10.65
Residential	33	368	11.1	.013	4	392	35	Q	262	7.9	.71	20.20	31.40
Warehouse	82	1,704	20.8	.081	24	986	47	46	1,303	15.9	.76	16.17	16.04
Other	39	813	21.1	Q	Q	923	Q	41	622	16.1	Q	17.47	36.63
Vacant	33	616	18.9	.019	6	583	31	37	356	10.9	.58	18.72	20.00
Census Region													
Northeast	79	2,161	27.3	.101	30	1,276	47	27	2,240	28.3	1.04	22.20	15.33
North Central	163	2,479	15.2	.142	42	869	57	30	2,395	14.7	.97	16.89	12.73
South	551	7,331	13.3	.430	126	780	59	35	7,613	13.8	1.04	17.71	15.33
West	120	2,228	18.6	.098	29	814	44	29	1,351	11.2	.61	13.82	17.90
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD	53	745	14.1	.046	13	872	62	33	731	13.8	.98	15.88	22.85
Below 2,000 CDD and 5,500-7,000 HDD	153	3,065	20.0	.159	46	1,037	52	32	2,705	17.7	.88	17.06	14.20
Below 2,000 CDD and 4,000-5,499 HDD	191	3,950	20.7	.179	52	936	45	30	3,116	16.3	.79	17.41	25.95
Below 2,000 CDD and Below 4,000 HDD	174	2,199	12.6	.116	34	667	53	31	2,079	11.9	.95	17.90	18.83
Above 2,000 CDD and Below 4,000 HDD	Q	Q	12.4	.271	79	790	64	33	4,968	14.5	1.17	18.36	23.63
Climate Zones: 1983 Weather Data Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	31.53
Below 2,000 CDD and 5,500-7,000 HDD	121	3,213	26.5	.173	51	1,422	54	34	2,908	23.9	.91	16.85	26.73
Below 2,000 CDD and 4,000-5,499 HDD	202	3,937	19.5	.179	53	888	46	29	3,081	15.3	.78	17.20	15.69
Below 2,000 CDD and Below 4,000 HDD	317	3,352	10.6	.176	52	557	53	31	3,177	10.0	.95	18.01	10.41
Above 2,000 CDD and Below 4,000 HDD	Q	Q	13.5	.236	69	883	65	33	4,355	16.3	1.20	18.42	29.73
Metropolitan Status													
Metropolitan	503	9,191	18.3	.534	156	1,062	58	31	9,586	19.1	1.04	17.96	9.52
Nonmetropolitan	411	5,009	12.2	.236	69	575	47	35	4,013	9.8	.80	16.97	20.59

See footnotes at end of table.

Table 21. Electricity: Consumption and Expenditures in Buildings That Both Heat and Air-Condition with Electricity, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity (for Heating and Air-Conditioning)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.203	1.258	1.024	1.416	1.416	1.179	0.941	0.922	1.348	1.016	0.944	0.345	
Number of Establishments in Building													
Vacant	Q	138	Q	0.004	1	Q	31	Q	81	Q	0.59	19.04	84.90
Single Establishment	726	7,883	10.9	.492	144	677	62	36	8,604	11.8	1.09	17.50	7.86
Multiple Establishment	182	6,178	34.0	.274	80	1,510	44	26	4,914	27.1	.80	17.91	20.68
Government Occupancy													
Any Government Occupancy	73	3,098	42.7	Q	Q	1,608	38	27	1,814	25.0	.59	15.54	30.79
Federal	14	Q	Q	Q	Q	Q	40	Q	Q	Q	.59	14.61	55.92
State	21	932	43.8	.027	8	1,268	Q	21	484	22.7	Q	17.94	27.45
Local	45	1,052	23.6	.043	13	976	41	26	694	15.6	.66	15.97	18.14
Number of Employees													
Fewer than 10	493	2,464	5.0	.122	36	247	49	58	2,300	4.7	.93	18.89	14.08
10 to 19	176	2,000	11.4	.064	19	362	32	29	1,239	7.1	.62	19.47	21.28
20 to 49	159	2,762	17.4	.149	44	941	54	32	2,797	17.6	1.01	18.72	13.04
50 to 99	47	1,366	29.3	.086	25	1,845	63	30	1,509	32.4	1.10	17.56	14.91
100 or More	40	5,608	140.4	.350	102	8,752	62	29	5,753	144.1	1.03	16.46	16.80
Hours of Operation During a Typical Week													
39 or Fewer Hours	123	990	8.0	Q	Q	Q	Q	Q	Q	5.0	Q	17.77	39.07
40 to 48 Hours	198	2,212	11.1	.080	24	405	36	28	1,370	6.9	.62	17.03	14.34
49 to 60 Hours	243	2,981	12.3	.123	36	507	41	24	2,493	10.3	.84	20.26	8.91
61 to 84 Hours	136	3,221	23.7	.177	52	1,307	55	35	2,943	21.7	.91	16.58	23.95
85 to 167 Hours	109	2,543	23.4	.187	55	1,714	73	35	3,283	30.2	1.29	17.60	15.57
168 Hours	105	2,253	21.5	.168	49	1,606	75	37	2,898	27.6	1.29	17.21	19.12
Percent Heated													
1 to 50	130	1,754	13.5	.058	17	443	33	30	1,017	7.8	.58	17.62	16.34
51 to 99	169	2,662	15.8	.139	41	825	52	26	2,604	15.4	.98	18.67	11.34
100	614	9,783	15.9	.573	168	933	59	34	9,975	16.2	1.02	17.41	12.14
Percent Air-Conditioned													
1 to 50	238	3,810	16.0	.106	31	446	28	26	1,867	7.8	.49	17.58	13.09
51 to 99	213	3,664	17.2	.209	61	985	57	27	3,844	18.1	1.05	18.36	9.36
100	463	6,725	14.5	.455	133	983	68	37	7,887	17.0	1.17	17.35	16.48
Type of Heating System													
Central System	705	12,077	17.1	.637	187	904	53	31	11,318	16.1	.94	17.77	10.80
Self Contained Units Only	209	2,122	10.2	.133	39	639	63	40	2,280	10.9	1.07	17.09	13.75
Heat Distribution System													
Ducted Forced Air	530	10,172	19.2	.571	167	1,078	56	31	10,130	19.1	1.00	17.73	12.13
Baseboards	173	3,279	18.9	.154	45	890	47	29	2,827	16.3	.86	18.34	10.89
Electric	152	2,637	17.4	.120	35	791	45	30	2,131	14.1	.81	17.79	13.00
Hot Water	34	822	24.4	.051	15	1,522	62	30	1,000	29.8	1.22	19.55	15.84
Steam	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	57.59
Radiators, Convectors, or Panels	159	3,875	24.4	.179	52	1,127	46	28	3,390	21.4	.87	18.96	14.03
Type of Air-Conditioning System													
Window Units	218	3,208	14.7	.111	33	510	35	25	2,250	10.3	.70	20.23	13.40
Wall Units	166	2,219	13.3	.103	30	619	46	31	1,873	11.3	.84	18.19	15.86
Central System	649	12,040	18.6	.693	203	1,069	58	33	12,084	18.6	1.00	17.43	11.01

See footnotes at end of table.

Table 21. Electricity: Consumption and Expenditures in Buildings That Both Heat and Air-Condition with Electricity, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity (for Heating and Air-Conditioning)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.203	1.258	1.024	1.416	1.416	1.179	0.941	0.922	1.348	1.016	0.944	0.345	
Heat Pump													
Present	149	Q	15.7	Q	Q	892	57	39	2,097	14.1	0.90	15.78	29.24
Not Ascertained	764	11,866	15.5	0.637	187	834	54	31	11,502	15.0	.97	18.05	9.17
Percentage of Exterior Glass													
Less than 25 Percent	617	8,301	13.5	.366	107	592	44	32	6,492	10.5	.78	17.76	14.21
25 to 49 Percent	217	3,671	16.9	.238	70	1,099	65	34	4,089	18.9	1.11	17.17	13.36
50 to 74 Percent	59	1,456	24.5	.114	33	1,915	78	29	2,111	35.5	1.45	18.56	13.23
75 Percent or More	20	772	38.0	.053	15	2,595	68	32	906	44.6	1.17	17.18	24.38
Insulation/Special Glass													
Any Present	745	12,332	16.5	.700	205	939	57	33	12,104	16.2	.98	17.29	10.73
Special Glass	458	9,349	20.4	.525	154	1,146	56	33	8,923	19.5	.95	16.99	13.50
Roof/Ceiling Insulation	546	9,054	16.6	.519	152	952	57	32	9,065	16.6	1.00	17.45	9.15
Exterior Wall Insulation	427	7,609	17.8	.452	132	1,059	59	33	7,807	18.3	1.03	17.28	13.44
None Present	168	1,867	11.1	.070	21	418	38	25	1,495	8.9	.80	21.28	13.04
Passive Solar													
In Use	10	258	26.0	.015	4	1,546	59	22	258	26.1	1.00	16.86	20.71
Not in Use	901	13,941	15.5	.755	221	837	54	32	13,338	14.8	.96	17.67	10.24
Computerized Energy Management System													
In Use	37	2,056	55.5	.127	37	3,420	62	28	2,109	57.0	1.03	16.66	17.33
Not in Use	877	12,143	13.9	.644	189	734	53	33	11,489	13.1	.95	17.85	10.96
Regular Maintenance Program for HVAC													
In Use	731	13,121	17.9	.728	213	995	55	32	12,720	17.4	.97	17.47	10.26
Not in Use	182	1,079	5.9	.042	12	232	39	24	879	4.8	.81	20.81	16.74
Occupant Control of Heating													
Yes	700	8,196	11.7	.394	116	563	48	29	7,249	10.4	.88	18.38	9.86
No	209	5,939	28.4	.371	109	1,777	62	36	6,263	30.0	1.05	16.88	15.77
Occupant Control of Air-Conditioning													
Yes	455	5,890	13.0	.306	90	673	52	29	5,618	12.4	.95	18.37	10.91
No	184	5,109	27.8	.341	100	1,858	67	35	5,901	32.1	1.16	17.29	11.77
Reduced Heating when Building Not in Use													
Yes	780	12,341	15.8	.647	190	830	52	30	11,484	14.7	.93	17.74	10.63
No	111	1,392	12.5	.087	26	783	63	38	1,484	13.3	1.07	17.02	12.89

See footnotes at end of table.

Table 21. Electricity: Consumption and Expenditures in Buildings That Both Heat and Air-Condition with Electricity, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity (for Heating and Air-Conditioning)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.203	1.258	1.024	1.416	1.416	1.179	0.941	0.922	1.348	1.016	0.944	0.345	
Reduced Air-Conditioning When Building Not in Use													
Yes	792	12,612	15.9	0.647	190	816	51	30	11,568	14.6	0.92	17.88	11.23
No	100	1,161	11.6	.097	29	970	84	49	1,581	15.7	1.36	16.23	11.16
Professional Energy Audits													
Performed in Past Year	125	4,167	33.4	.250	73	2,007	60	32	4,282	34.4	1.03	17.12	21.34
Measures Taken	51	1,639	31.9	.089	26	1,723	54	29	1,582	30.7	.97	17.85	20.25
Measures Not Taken	73	Q	34.6	Q	Q	2,207	64	35	2,701	36.9	1.07	16.72	28.61
Not Performed	789	10,032	12.7	.520	152	659	52	32	9,316	11.8	.93	17.91	8.98

^a Fuel consumption and expenditures data were not collected separately by end use. For example, although it is known that electricity was used for heating in certain buildings, the electricity consumption shown for the category **Electricity Used for Heating** includes the electricity used in those buildings for all purposes, such as lighting, water heating, etc.

^{NC} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 22. Electricity: Consumption and Expenditures in Buildings That Air-Condition But Do Not Heat with Electricity, 1983

Building Characteristics	All Buildings Using Electricity (for Air-Conditioning but not Heating)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.047	1.041	0.787	1.361	1.361	1.337	0.988	1.100	1.276	1.252	0.958	0.385	
All Buildings	1,588	25,246	15.9	1.086	318	684	43	27	20,830	13.1	0.83	19.18	6.13
Electricity Also Used for:^a													
Water Heating	453	6,552	14.5	.287	84	634	44	26	5,447	12.0	.83	18.97	11.35
Cooking	357	7,307	20.5	.315	92	882	43	26	5,796	16.2	.79	18.41	6.94
Manufacturing	134	2,928	21.9	.102	30	765	35	32	1,979	14.8	.68	19.35	10.98
Fuels Used for Heating^a													
Natural Gas	1,160	17,926	15.5	.774	227	667	43	27	14,452	12.5	.81	18.67	6.66
Fuel Oil	238	4,185	17.6	.141	41	590	34	22	3,261	13.7	.78	23.17	13.48
Propane	68	355	5.2	.010	3	154	30	12	237	3.5	.67	22.62	19.57
Purchased Steam	31	2,683	85.2	.152	44	4,812	56	30	2,569	81.6	.96	16.95	17.32
Other	28	399	14.5	.016	5	Q	40	29	269	9.8	.67	17.06	27.27
No Heating	62	642	10.3	.017	5	276	27	31	448	7.2	.70	26.17	22.90
Fuels Used for Air-Conditioning^a													
Electricity Only	1,569	24,485	15.6	1.029	302	656	42	27	19,690	12.6	.80	19.13	6.29
Electricity and Natural Gas Only	18	499	27.4	.031	9	Q	63	28	557	Q	1.12	17.81	30.72
Other Combinations With Electricity	1	263	177.9	.026	7	17,301	97	24	584	394.8	2.22	22.82	27.25
Year Constructed													
1900 or Before	141	1,554	11.0	.028	8	195	18	11	588	4.2	.38	21.37	17.87
1901 to 1920	179	2,959	16.5	.077	23	429	26	21	1,716	9.6	.58	22.30	12.57
1921 to 1945	299	4,742	15.9	.170	50	570	36	26	3,508	11.7	.74	20.62	12.43
1946 to 1960	393	5,029	12.8	.186	54	473	37	25	3,643	9.3	.72	19.61	11.52
1961 to 1970	285	5,165	18.1	.262	77	919	51	31	4,928	17.3	.95	18.81	9.37
1971 to 1973	81	1,476	18.3	.089	26	1,103	60	33	1,656	20.5	1.12	18.63	15.78
1974 to 1979	161	2,585	16.0	.172	50	1,066	66	30	3,093	19.2	1.20	18.00	11.46
1980 to 1983	50	1,737	34.7	.103	30	2,055	59	35	1,698	33.9	.98	16.51	21.22
Square Footage Category													
5,000 or Less	796	1,857	2.3	.148	43	186	80	22	3,170	4.0	1.71	21.46	10.59
5,001 to 10,000	316	2,283	7.2	.083	24	263	36	20	1,823	5.8	.80	21.93	8.70
10,001 to 25,000	267	4,255	15.9	.159	47	595	37	25	3,218	12.1	.76	20.26	10.04
25,001 to 50,000	112	3,867	34.5	.157	46	1,398	40	32	2,991	26.7	.77	19.10	11.20
50,001 to 100,000	56	3,758	66.7	.130	38	2,307	35	32	2,392	42.4	.64	18.39	9.90
100,001 to 200,000	24	3,340	137.1	.119	35	4,901	36	29	2,158	88.6	.65	18.08	9.22
Over 200,000	17	5,887	350.2	.290	85	17,270	49	30	5,080	302.2	.86	17.50	10.13
Number of Floors													
One	788	6,887	8.7	.368	108	467	53	33	7,165	9.1	1.04	19.47	9.35
Two	403	5,790	14.4	.214	63	530	37	24	4,142	10.3	.72	19.38	10.12
Three or More	397	12,570	31.6	.504	148	1,270	40	25	9,524	24.0	.76	18.89	8.19
Principal Activity Within Building													
Assembly	176	2,475	14.1	.062	18	351	25	20	1,373	7.8	.56	22.25	14.27
Educational	74	3,076	41.3	.073	21	983	24	23	1,447	19.4	.47	19.76	13.27
Food Sales/Service	194	1,000	5.2	.108	32	557	108	36	2,109	10.9	2.11	19.53	10.97
Health Care	36	1,617	44.5	.100	29	2,754	62	29	1,653	Q	1.02	16.53	22.05
Lodging	34	994	29.0	.051	15	1,480	51	53	971	28.4	.98	19.18	21.82
Mercantile/Services	440	4,750	10.8	.227	67	516	48	35	4,130	9.4	.87	18.19	9.94
Office	273	4,540	16.7	.249	73	913	55	18	4,841	17.8	1.07	19.45	8.80
Residential	121	1,356	11.2	.018	5	149	13	29	454	3.8	.34	25.20	15.80
Warehouse	126	3,306	26.1	.100	29	794	30	39	1,895	15.0	.57	18.87	11.78

See footnotes at end of table.

Table 22. Electricity: Consumption and Expenditures in Buildings That Air-Condition But Do Not Heat with Electricity, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity (for Air-Conditioning but not Heating)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.047	1.041	0.787	1.361	1.361	1.337	0.988	1.100	1.276	1.252	0.958	0.385	
Principal Activity Within Building													
Other	58	1,303	22.3	0.062	18	1,057	47	27	1,220	20.9	0.94	19.79	16.23
Vacant	55	830	15.1	.036	11	660	44	52	737	13.4	.89	20.28	29.89
Census Region													
Northeast	337	6,226	18.5	.176	52	523	28	18	4,947	14.7	.79	28.03	9.29
North Central	587	9,449	16.1	.433	127	737	46	31	7,467	12.7	.79	17.25	8.11
South	522	7,081	13.6	.330	97	633	47	30	5,891	11.3	.83	17.83	12.79
West	142	2,491	17.5	.146	43	1,027	59	27	2,526	17.8	1.01	17.29	20.95
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above													
7,000 HDD	168	3,108	18.5	.140	41	834	45	32	2,218	13.2	.71	15.83	18.27
Below 2,000 CDD and 5,500-7,000 HDD													
5,500-7,000 HDD	510	8,798	17.2	.353	104	692	40	24	6,812	13.4	.77	19.28	9.21
Below 2,000 CDD and 4,000-5,499 HDD													
4,000-5,499 HDD	453	6,558	14.5	.225	66	496	34	24	5,134	11.3	.78	22.82	15.49
Below 2,000 CDD and Below													
4,000 HDD	245	3,497	14.3	.165	48	675	47	27	3,122	12.8	.89	18.90	20.63
Above 2,000 CDD and Below													
4,000 HDD	212	3,286	15.5	.202	59	956	62	37	3,546	16.7	1.08	17.51	18.92
Climate Zones: 1983 Weather Data Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above													
7,000 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	80.21
Below 2,000 CDD and 5,500-7,000 HDD													
5,500-7,000 HDD	494	9,217	18.7	.373	109	756	40	25	7,229	14.6	.78	19.38	10.57
Below 2,000 CDD and 4,000-5,499 HDD													
4,000-5,499 HDD	528	7,811	14.8	.266	78	504	34	25	5,680	10.7	.73	21.34	12.33
Below 2,000 CDD and Below													
4,000 HDD	381	5,051	13.2	.242	71	634	48	28	4,432	11.6	.88	18.34	16.32
Above 2,000 CDD and Below													
4,000 HDD	161	2,517	15.6	.157	46	975	62	33	2,811	17.4	1.12	17.91	19.27
Metropolitan Status													
Metropolitan	998	19,459	19.5	.889	261	890	46	28	17,257	17.3	.89	19.41	7.16
Nonmetropolitan	590	5,787	9.8	.197	58	334	34	24	3,573	6.1	.62	18.14	12.58
Number of Establishments in Building													
Vacant	Q	198	Q	Q	Q	Q	Q	Q	Q	Q	Q	22.52	90.71
Single Establishment	1,273	17,913	14.1	.780	229	613	44	29	14,850	11.7	.83	19.03	6.54
Multiple Establishment	302	7,135	23.6	.298	87	986	42	23	5,800	19.2	.81	19.49	8.86
Government Occupancy													
Any Government Occupancy	129	4,597	35.7	.240	70	1,864	52	26	4,214	32.7	.92	17.56	9.57
Federal	23	1,022	44.5	.088	26	3,834	86	29	1,498	65.3	1.47	17.03	20.83
State	46	1,679	36.6	.088	26	1,908	52	22	1,597	34.8	.95	18.22	17.47
Local	82	2,623	32.1	.103	30	1,257	39	25	1,880	23.0	.72	18.33	12.30

See footnotes at end of table.

Table 22. Electricity: Consumption and Expenditures in Buildings That Air-Condition But Do Not Heat with Electricity, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity (for Air-Conditioning but not Heating)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.047	1.041	0.787	1.361	1.361	1.337	0.988	1.100	1.276	1.252	0.958	0.385	
Number of Employees													
Fewer than 10	935	5,928	6.3	0.172	51	185	29	44	3,633	3.9	0.61	21.06	13.01
10 to 19	254	3,016	11.9	.094	27	369	31	28	2,167	8.5	.72	23.12	11.75
20 to 49	259	5,182	20.0	.224	66	864	43	29	4,465	17.2	.86	19.97	9.71
50 to 99	72	2,900	40.2	.161	47	2,238	56	36	2,725	37.8	.94	16.90	13.17
100 or More	68	8,220	120.4	.435	127	6,368	53	21	7,841	114.8	.95	18.03	9.49
Hours of Operation During a Typical Week													
39 or Fewer Hours	175	1,512	8.6	.026	8	149	17	16	614	3.5	.41	23.53	19.55
40 to 48 Hours	362	4,538	12.5	.134	39	369	29	23	2,739	7.6	.60	20.50	13.45
49 to 60 Hours	400	6,061	15.2	.211	62	527	35	25	4,022	10.1	.66	19.10	11.88
61 to 84 Hours	332	6,101	18.4	.268	79	808	44	26	5,125	15.5	.84	19.13	10.64
85 to 167 Hours	212	3,575	16.8	.203	60	958	57	36	3,907	18.4	1.09	19.21	9.77
168 Hours	107	3,458	32.4	.244	72	2,293	71	30	4,422	41.5	1.28	18.09	13.02
Percent Air-Conditioned													
1 to 50	724	11,762	16.2	.336	98	464	29	27	6,563	9.1	.56	19.53	7.57
51 to 99	265	5,819	22.0	.303	89	1,144	52	27	5,922	22.3	1.02	19.54	8.61
100	598	7,639	12.8	.447	131	747	58	27	8,339	13.9	1.09	18.67	9.87
Type of Air-Conditioning System													
Window Units	572	7,983	14.0	.230	67	401	29	21	4,775	8.3	.60	20.80	10.86
Wall Units	226	3,467	15.3	.155	45	685	45	29	2,974	13.2	.86	19.20	13.89
Central System	977	19,220	19.7	.950	278	972	49	28	17,894	18.3	.93	18.83	6.39
Heat Pump													
Present	10	153	15.8	.012	3	Q	78	35	218	Q	1.42	18.25	31.03
Not Ascertained	1,579	25,093	15.9	1.074	315	680	43	27	20,613	13.1	.82	19.19	6.16
Percentage of Exterior Glass													
Less than 25 Percent	1,037	13,103	12.6	.569	167	549	43	32	10,723	10.3	.82	18.84	7.07
25 to 49 Percent	417	8,066	19.4	.345	101	827	43	23	6,761	16.2	.84	19.61	9.31
50 to 74 Percent	112	2,927	26.0	.116	34	1,029	40	23	2,248	20.0	.77	19.43	11.17
75 Percent or More	22	1,151	52.5	.056	17	2,570	49	23	1,099	50.1	.96	19.51	16.73
Insulation/Special Glass													
Any Present	1,196	20,150	16.9	.929	272	777	46	28	17,315	14.5	.86	18.64	6.28
Special Glass	691	13,766	19.9	.675	198	977	49	27	12,339	17.9	.90	18.28	7.16
Roof/Ceiling Insulation	797	14,384	18.1	.684	201	859	48	30	12,434	15.6	.86	18.17	7.43
Exterior Wall Insulation	562	8,339	14.8	.405	119	721	49	26	7,278	12.9	.87	17.96	8.61
None Present	393	5,097	13.0	.157	46	401	31	23	3,515	9.0	.69	22.35	9.50
Passive Solar													
In Use	13	320	24.9	.011	3	Q	34	12	211	16.3	.66	19.59	27.19
Not in Use	1,570	24,730	15.8	1.067	313	680	43	27	20,449	13.0	.83	19.16	6.13
Computerized Energy Management System													
In Use	50	3,357	67.3	.207	61	4,150	62	31	3,558	71.4	1.06	17.20	13.80
Not in Use	1,538	21,889	14.2	.879	258	571	40	26	17,272	11.2	.79	19.65	6.17

See footnotes at end of table.

Table 22. Electricity: Consumption and Expenditures in Buildings That Air-Condition But Do Not Heat with Electricity, 1983 (Continued)

Building Characteristics	All Buildings Using Electricity (for Air-Conditioning but not Heating)		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (billion kWh)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.047	1.041	0.787	1.361	1.361	1.337	0.988	1.100	1.276	1.252	0.958	0.385	
Regular Maintenance Program for HVAC													
In Use	1,360	23,606	17.4	1,050	308	772	44	28	20,000	14.7	0.85	19.05	6.09
Not in Use	228	1,641	7.2	.036	11	158	22	18	831	3.6	.51	23.01	15.53
Occupant Control of Air-Conditioning													
Yes	631	8,127	12.9	.343	100	543	42	24	6,561	10.4	.81	19.15	8.31
No	321	10,643	33.2	.585	171	1,824	55	32	10,849	33.8	1.02	18.55	7.13
Reduced Air-Conditioning When Building Not in Use													
Yes	1,389	22,266	16.0	.912	267	657	41	26	17,580	12.7	.79	19.27	6.19
No	171	2,555	15.0	.152	44	888	59	34	2,808	16.4	1.10	18.51	13.20
Professional Energy Audits													
Performed in Past Year	205	6,834	33.4	.341	100	1,666	50	25	6,395	31.2	.94	18.75	9.93
Measures Taken	87	3,740	42.9	.166	49	1,903	44	23	3,228	37.0	.86	19.44	12.53
Measures Not Taken	117	3,094	26.3	.175	51	1,490	57	28	3,166	27.0	1.02	18.10	14.24
Not Performed	1,384	18,412	13.3	.745	218	538	40	28	14,436	10.4	.78	19.38	6.44

^a Fuel consumption and expenditures data were not collected separately by end use. For example, although it is known that electricity was used for air-conditioning in certain buildings, the electricity consumption shown for the category **Electricity Used for Air-conditioning** includes the electricity used in those buildings for all purposes, such as lighting, water heating, etc.

^{NC} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, Multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 23. Natural Gas: Consumption and Expenditures in Buildings That Heat with Natural Gas, 1983

Building Characteristics	All Buildings Using Natural Gas for Heating		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.077	1.109	0.905	1.355	1.355	1.263	1.099	1.164	1.328	1.264	1.107	0.227	
All Buildings	1,951	28,463	14.6	1,992	1,932	1,021	70	48	11,003	5.6	0.39	5.52	6.54
Natural Gas Also Used for:^a													
Air-Conditioning	137	2,633	19.2	.218	.211	1,589	83	47	1,221	8.9	.46	5.61	14.04
Water Heating	1,210	20,562	17.0	1,523	1,477	1,258	74	49	8,428	7.0	.41	5.53	7.00
Cooking	521	11,190	21.5	.848	.822	1,625	76	46	4,719	9.1	.42	5.57	8.09
Manufacturing	63	1,210	19.1	.188	.182	2,969	155	101	995	15.7	.82	5.30	13.43
Electricity Generation	21	663	32.1	.059	.057	2,859	89	49	308	14.9	.46	5.23	19.39
Fuels Used for Heating:^a													
Natural Gas Only	1,626	21,384	13.2	1,614	1,566	993	75	51	8,916	5.5	.42	5.52	6.21
Natural Gas and Electricity													
Only	219	4,208	19.2	.220	.213	1,003	52	38	1,210	5.5	.29	5.51	11.56
Natural Gas and Fuel Oil Only	54	1,357	25.0	.106	.103	1,963	78	50	599	11.0	.44	5.63	25.13
Other Combinations With													
Natural Gas	52	1,514	29.0	.051	.050	984	34	22	277	5.3	.18	5.39	22.65
Fuels Used to Fire Boilers:^a													
Natural Gas Only	434	11,034	25.4	.820	.795	1,890	74	54	4,579	10.6	.41	5.58	7.21
Natural Gas and Fuel Oil Only	28	2,238	79.8	.182	.176	6,482	81	45	952	34.0	.43	5.24	14.84
Natural Gas and Electricity													
Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	79.44
Other Combinations or Fuels	33	994	30.0	.038	.037	1,150	38	29	218	6.6	.22	5.72	25.06
Year Constructed													
1900 or Before	170	1,807	10.6	.094	.091	553	52	45	560	3.3	.31	5.94	13.30
1901 to 1920	226	2,918	12.9	.162	.157	717	56	49	899	4.0	.31	5.55	13.04
1921 to 1945	403	4,548	11.3	.340	.330	843	75	56	1,911	4.7	.42	5.62	10.04
1946 to 1960	450	5,982	13.3	.355	.344	788	59	42	1,935	4.3	.32	5.46	10.21
1961 to 1970	353	5,882	16.7	.422	.410	1,198	72	45	2,290	6.5	.39	5.42	8.52
1971 to 1973	93	1,868	20.1	.124	.120	1,330	66	40	693	7.5	.37	5.61	11.73
1974 to 1979	193	3,243	16.8	.353	.342	1,824	109	57	1,974	10.2	.61	5.60	14.02
1980 to 1983	63	2,217	35.4	.142	.138	2,271	64	44	741	11.8	.33	5.21	21.04
Square Footage Category													
5,000 or Less	985	2,333	2.4	.420	.407	426	180	60	2,381	2.4	1.02	5.67	11.21
5,001 to 10,000	423	3,058	7.2	.247	.240	584	81	46	1,476	3.5	.48	5.97	9.29
10,001 to 25,000	315	4,986	15.8	.275	.267	872	55	41	1,558	4.9	.31	5.67	7.39
25,001 to 50,000	126	4,386	34.9	.295	.286	2,350	67	51	1,621	12.9	.37	5.49	8.85
50,001 to 100,000	58	3,891	67.2	.219	.212	3,780	56	56	1,184	20.5	.30	5.41	10.22
100,001 to 200,000	30	3,960	133.2	.224	.217	7,519	56	51	1,164	39.1	.29	5.20	6.90
Over 200,000	15	5,850	385.4	.313	.303	20,601	53	37	1,619	106.7	.28	5.18	11.66
Number of Floors													
One	1,016	9,330	9.2	.776	.753	764	83	55	4,358	4.3	.47	5.61	10.40
Two	503	7,104	14.1	.415	.402	825	58	42	2,260	4.5	.32	5.45	7.96
Three or More	432	12,029	27.8	.801	.777	1,851	67	45	4,385	10.1	.36	5.48	7.02
Principal Activity Within Building													
Assembly	239	3,365	14.1	.167	.162	699	50	52	929	3.9	.28	5.55	12.13
Educational	100	3,534	35.4	.222	.215	2,221	63	62	1,190	11.9	.34	5.37	9.70
Food Sales/Service	200	1,179	5.9	.171	.166	857	145	50	1,020	5.1	.87	5.96	11.44
Health Care	33	1,637	49.5	.182	.177	5,511	111	49	940	28.4	.57	5.16	16.83
Lodging	40	935	23.6	.145	.140	3,650	155	131	730	18.4	.78	5.04	19.55
Mercantile/Services	580	6,078	10.5	.286	.278	493	47	33	1,686	2.9	.28	5.89	10.96
Office	307	4,353	14.2	.352	.341	1,147	81	30	1,929	6.3	.44	5.48	12.59
Residential	143	1,424	10.0	.089	.087	626	63	109	553	3.9	.39	6.20	14.07
Warehouse	169	3,932	23.2	.241	.234	1,424	61	80	1,316	7.8	.33	5.46	12.85
Other	60	1,039	17.3	.074	.072	1,233	71	42	382	6.4	.37	5.17	18.72
Vacant	81	987	12.2	.062	.060	770	63	76	326	4.0	.33	5.25	22.89

See footnotes at end of table.

Table 23. Natural Gas: Consumption and Expenditures in Buildings That Heat with Natural Gas, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas for Heating		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.077	1.109	0.905	1.355	1.355	1.263	1.099	1.164	1.328	1.264	1.107	0.227	
Census Region													
Northeast	335	5,260	15.7	0.283	0.274	845	54	35	1,922	5.7	0.37	6.80	8.88
North Central	847	11,742	13.9	.964	.935	1,139	82	60	5,124	6.1	.44	5.31	7.44
South	501	7,172	14.3	.470	.456	937	65	45	2,454	4.9	.34	5.23	17.16
West	268	4,289	16.0	.275	.267	1,025	64	37	1,503	5.6	.35	5.46	21.01
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD	226	3,218	14.2	.271	.262	1,196	84	58	1,466	6.5	.46	5.42	21.35
Below 2,000 CDD and 5,500-7,000 HDD	751	11,370	15.1	.873	.847	1,163	77	56	4,787	6.4	.42	5.48	6.97
Below 2,000 CDD and 4,000-5,499 HDD	488	5,823	11.9	.312	.302	639	54	37	1,871	3.8	.32	6.01	16.41
Below 2,000 CDD and Below 4,000 HDD	305	4,258	14.0	.294	.285	963	69	39	1,646	5.4	.39	5.61	22.07
Above 2,000 CDD and Below 4,000 HDD	181	3,795	20.9	.243	.235	1,339	64	43	1,233	6.8	.32	5.08	27.26
Climate Zones: 1983 Weather Data Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD	Q	Q	Q	Q	Q	Q	113	Q	Q	Q	.57	5.02	131.37
Below 2,000 CDD and 5,500-7,000 HDD	757	11,896	15.7	.906	.879	1,197	76	53	4,929	6.5	.41	5.44	8.14
Below 2,000 CDD and 4,000-5,499 HDD	635	7,618	12.0	.484	.469	763	64	49	2,839	4.5	.37	5.87	10.69
Below 2,000 CDD and Below 4,000 HDD	382	5,421	14.2	.403	.391	1,055	74	45	2,216	5.8	.41	5.50	21.91
Above 2,000 CDD and Below 4,000 HDD	153	3,084	20.2	.149	.144	971	48	30	767	5.0	.25	5.16	22.98
Metropolitan Status													
Metropolitan	1,270	21,695	17.1	1.457	1.413	1,147	67	44	8,186	6.4	.38	5.62	6.92
Nonmetropolitan	682	6,768	9.9	.535	.519	785	79	62	2,817	4.1	.42	5.26	16.40
Number of Establishments in Building													
Vacant	16	281	17.8	.013	.012	Q	45	Q	66	Q	.24	5.20	30.82
Single Establishment	1,569	19,536	12.4	1.594	1.546	1,016	82	59	8,726	5.6	.45	5.48	7.00
Multiple Establishment	366	8,645	23.6	.385	.374	1,052	45	26	2,210	6.0	.26	5.74	8.08
Government Occupancy													
Any Government Occupancy	162	4,977	30.8	.379	.368	2,347	76	42	1,991	12.3	.40	5.25	10.73
Federal	24	1,358	56.8	.069	.067	2,871	51	20	374	15.6	.28	5.45	23.32
State	51	1,614	31.7	.145	.141	2,848	90	48	736	14.5	.46	5.08	18.43
Local	109	2,755	25.4	.212	.206	1,957	77	50	1,118	10.3	.41	5.27	11.05
Number of Employees													
Fewer than 10	1,208	7,374	6.1	.532	.516	440	72	110	2,980	2.5	.40	5.60	12.05
10 to 19	280	3,293	11.7	.217	.211	775	66	60	1,205	4.3	.37	5.55	10.08
20 to 49	313	6,507	20.8	.454	.441	1,451	70	49	2,580	8.2	.40	5.68	9.84
50 to 99	81	3,011	37.1	.209	.202	2,572	69	42	1,167	14.4	.39	5.59	11.78
100 or More	69	8,279	120.7	.580	.583	8,455	70	30	3,071	44.8	.37	5.30	9.86

See footnotes at end of table.

Table 23. Natural Gas: Consumption and Expenditures in Buildings That Heat with Natural Gas, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas for Heating		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.077	1.109	0.905	1.355	1.355	1.263	1.099	1.164	1.328	1.264	1.107	0.227	
Hours of Operation During a Typical Week													
39 or Fewer Hours	252	2,095	8.3	0.132	0.128	522	63	68	744	2.9	0.36	5.65	12.93
40 to 48 Hours	474	5,423	11.4	.287	.278	604	53	48	1,662	3.5	.31	5.80	10.34
49 to 60 Hours	493	6,632	13.4	.373	.362	757	56	42	2,068	4.2	.31	5.54	10.63
61 to 84 Hours	369	6,301	17.1	.407	.395	1,104	65	39	2,309	6.3	.37	5.67	7.72
85 to 167 Hours	244	3,961	16.2	.337	.327	1,378	85	55	1,872	7.7	.47	5.56	13.91
168 Hours	118	4,051	34.3	.456	.443	3,860	113	55	2,349	19.9	.58	5.15	13.69
Percent Heated													
1 to 50	273	3,331	12.2	.203	.197	744	61	66	1,171	4.3	.35	5.76	13.29
51 to 99	317	4,557	14.4	.284	.276	897	62	39	1,602	5.1	.35	5.63	10.45
100	1,361	20,574	15.1	1.504	1.459	1,105	73	48	8,230	6.0	.40	5.47	7.29
Type of Heating System													
Central System	1,886	25,885	15.4	1.846	1.790	1,095	71	47	10,206	6.1	.39	5.53	8.60
Self Contained Units Only	265	2,578	9.7	.146	.142	551	57	51	797	3.0	.31	5.45	13.29
Heat Distribution System													
Ducted Forced Air	1,109	18,171	16.4	1.317	1.278	1,187	72	43	7,244	6.5	.40	5.50	7.57
Baseboards	268	5,836	21.8	.448	.435	1,674	77	44	2,444	9.1	.42	5.46	7.53
Electric	112	2,049	18.3	.112	.108	997	55	38	622	5.5	.30	5.56	12.95
Hot Water	147	3,450	23.4	.302	.293	2,048	88	44	1,650	11.2	.48	5.47	9.51
Steam	21	985	47.4	.093	.090	4,467	94	46	506	24.3	.51	5.45	17.33
Radiators, Convectors, or Panels	541	11,545	21.3	.808	.784	1,494	70	50	4,456	8.2	.39	5.51	7.45
Occupant Control of Heating													
Yes	1,411	15,626	11.1	1.026	.995	727	66	46	5,662	4.0	.36	5.52	8.39
No	531	12,666	23.9	.953	.925	1,795	75	50	5,269	9.9	.42	5.53	7.73
Reduced Heating when Building Not in Use													
Yes	1,677	24,345	14.5	1.629	1.580	971	67	47	9,063	5.4	.37	5.56	6.52
No	236	3,495	14.8	.321	.311	1,359	92	53	1,715	7.3	.49	5.35	10.25
Heat Pump													
Present	17	381	22.2	.017	.016	964	43	28	89	5.2	.24	5.40	19.70
Not Ascertained	1,934	28,083	14.5	1.975	1.916	1,021	70	48	10,913	5.6	.39	5.52	6.61
Percentage of Exterior Glass													
Less than 25 Percent	1,271	15,434	12.1	1.013	.983	797	66	51	5,616	4.4	.36	5.54	7.70
25 to 49 Percent	518	8,848	17.1	.650	.630	1,254	73	44	3,551	6.9	.40	5.47	8.84
50 to 74 Percent	132	2,902	22.1	.236	.229	1,794	81	49	1,270	9.7	.44	5.38	10.93
75 Percent or More	31	1,280	40.9	.093	.090	2,980	73	41	567	18.1	.44	6.08	25.56
Insulation/Special Glass													
Any Present	1,428	22,720	15.9	1.649	1.599	1,155	73	46	9,040	6.3	.40	5.48	6.95
Special Glass	828	15,706	19.0	1.186	1.150	1,432	76	45	6,485	7.8	.41	5.47	7.55
Roof/Ceiling Insulation	963	16,567	17.2	1.150	1.115	1,194	69	44	6,195	6.4	.37	5.39	7.95
Exterior Wall Insulation	705	10,420	14.8	.759	.736	1,077	73	42	4,121	5.8	.40	5.43	8.98
None Present	524	5,743	11.0	.343	.333	655	60	57	1,963	3.7	.34	5.72	8.52
Passive Solar													
In Use	18	397	21.6	.030	.029	1,626	75	31	158	8.6	.40	5.31	24.78
Not in Use	1,927	27,891	14.5	1.948	1.890	1,011	70	48	10,758	5.6	.39	5.52	6.61

See footnotes at end of table.

Table 23. Natural Gas: Consumption and Expenditures in Buildings That Heat with Natural Gas, 1983 (Continued)

Building Characteristics	All Buildings Using Natural Gas for Heating		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Total Amount Consumed (trillion cubic feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.077	1.109	0.905	1.355	1.355	1.263	1.099	1.164	1.328	1.264	1.107	0.227	
Computerized Energy Management System													
In Use	56	3,274	58.2	0.223	0.216	3,955	68	35	1,159	20.6	0.35	5.21	11.20
Not in Use	1,895	25,189	13.3	1.769	1.716	934	70	50	9,844	5.2	.39	5.56	6.70
Regular Maintenance Program for HVAC													
In Use	1,630	26,304	16.1	1.874	1.818	1,150	71	48	10,302	6.3	.39	5.50	6.67
Not in Use	322	2,159	6.7	.117	.114	365	54	46	701	2.2	.32	5.97	11.26
Professional Energy Audits													
Performed in Past Year	237	7,466	31.5	.506	.491	2,135	68	41	2,754	11.6	.37	5.44	9.11
Measures Taken	109	3,977	36.4	.308	.298	2,816	77	44	1,647	15.1	.41	5.36	14.20
Measures Not Taken	128	3,488	27.3	.199	.193	1,554	57	38	1,106	8.7	.32	5.57	10.52
Not Performed	1,714	20,998	12.2	1.486	1.441	867	71	50	8,249	4.8	.39	5.55	6.97

^a Fuel consumption and expenditures data were not collected separately by end use. For example, although it is known that natural gas was used for heating in certain buildings, the natural gas consumption shown for the category **Natural Gas Used for Heating** includes the natural gas used in those buildings for all purposes, such as water heating, etc.

^{nc} No cases in sample.

^o Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

KSE
 MHI 35K
 BME 128K
 RSE
 SDS

Table 24. Fuel Oil: Consumption and Expenditures in Buildings That Heat with Fuel Oil, 1983

Building Characteristics	All Buildings Using Fuel Oil for Heating		Square Feet per Building (thousand square feet)	Total Amount Consumed (quad-ril-lion btu)	Total Amount Consumed (mil-lion gal-lons)	Energy Consumed per Building (mil-lion btu)	Energy Consumed per Square Foot (thou-sand btu)	Energy Consumed per Em-ploy-ee (mil-lion btu)	Total Expen-ditures (mil-lion dol-lars)	Expen-di-tures per Build-ing (thou-sand dol-lars)	Expen-di-tures per Square Foot (dol-lars)	Expen-di-tures per Mil-lion Btu (dol-lars)	RSE Row Fac-tor
	Number of Build-ings (thou-sands)	Square Feet (mil-lions)											
RSE Column Factor:	0.928	0.867	0.876	1.216	1.213	1.430	1.143	1.835	1.178	1.331	1.084	0.189	
All Buildings	491	7,565	15.4	0.311	2,219	634	41	28	2,080	4.2	0.27	6.69	10.29
Fuel Oil Used for:^a													
Heating	491	7,565	15.4	.311	2,219	634	41	28	2,080	4.2	.27	6.69	10.29
And Air-Conditioning	4	329	81.4	.020	136	Q	59	23	111	Q	.34	5.67	27.22
And Not Air-Conditioning	487	7,235	14.9	.292	2,083	599	40	28	1,969	4.0	.27	6.76	11.01
Water Heating	123	3,204	26.1	.162	1,152	1,320	51	32	1,048	8.5	.33	6.48	11.28
Cooking	Q	232	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	58.45
Electricity Generation	8	583	77.6	.025	175	3,280	42	12	148	19.7	.25	6.02	32.17
Fuels Used for Heating^a													
Fuel Oil Only	342	4,265	12.5	.222	1,578	647	52	37	1,471	4.3	.34	6.64	10.73
Fuel Oil and Electricity Only	50	709	14.1	.036	261	721	51	Q	255	5.1	.36	7.02	31.90
Fuel Oil and Natural Gas Only	54	1,357	25.0	.036	256	662	26	17	237	4.4	.17	6.60	24.30
Other Combinations With Fuel Oil	44	1,235	28.2	.017	124	396	14	Q	118	2.7	.10	6.79	24.16
Fuels Used to Fire Boilers^a													
Fuel Oil Only	155	3,671	23.6	.188	1,340	1,212	51	36	1,236	8.0	.34	6.57	11.80
Fuel Oil and Natural Gas Only	17	1,251	74.4	.028	197	1,642	22	Q	175	10.4	.14	6.36	34.47
Other Combinations or Fuels	Q	528	Q	.011	80	Q	21	26	73	Q	.14	6.49	41.49
Year Constructed													
1900 or Before	67	660	9.8	.026	186	384	39	22	186	2.8	.28	7.19	20.71
1901 to 1920	66	1,078	16.4	.048	338	724	44	61	315	4.8	.29	6.61	16.34
1921 to 1945	102	1,865	16.2	.087	623	847	52	35	596	5.8	.36	6.87	22.53
1946 to 1960	134	2,127	15.8	.073	522	542	34	22	496	3.7	.23	6.82	16.94
1961 to 1970	65	1,040	16.0	.034	242	522	33	25	225	3.5	.22	6.64	15.54
1971 to 1973	24	321	13.5	.012	88	515	38	Q	83	3.5	.26	6.79	26.60
1974 to 1979	30	555	18.4	Q	Q	Q	49	Q	150	Q	.27	5.50	38.17
1980 to 1983	2	119	56.9	.005	32	Q	38	Q	29	Q	.24	6.36	41.63
Square Footage Category													
5,000 or Less	245	578	2.4	.041	294	166	70	22	307	1.3	.53	7.54	16.60
5,001 to 10,000	99	689	7.0	.048	348	487	70	44	354	3.6	.51	7.35	23.54
10,001 to 25,000	90	1,328	14.7	.057	414	636	43	31	415	4.6	.31	7.22	11.68
25,001 to 50,000	29	1,013	34.9	.039	280	1,349	39	38	266	9.2	.26	6.79	16.70
50,001 to 100,000	14	959	66.2	.047	328	3,237	49	Q	279	19.3	.29	5.95	20.50
100,001 to 200,000	8	1,102	143.4	.036	260	4,739	33	32	222	28.9	.20	6.10	15.33
Over 200,000	5	1,896	409.3	.042	295	9,089	22	Q	236	51.0	.12	5.61	22.79
Number of Floors													
One	200	1,313	6.6	.057	412	286	44	26	408	2.0	.31	7.14	16.00
Two	127	1,782	14.0	.082	587	646	46	33	557	4.4	.31	6.79	23.49
Three or More	164	4,469	27.3	.172	1,220	1,049	38	27	1,116	6.8	.25	6.49	11.54
Principal Activity Within Building													
Assembly	79	661	8.4	.024	172	303	36	Q	185	2.4	.28	7.77	18.61
Educational	29	1,324	46.5	.061	434	2,125	46	59	382	13.4	.29	6.31	17.83
Food Sales/Service	35	249	7.1	Q	Q	248	35	Q	Q	1.9	.26	7.60	26.88
Health Care	7	388	Q	.022	157	Q	58	19	127	Q	.33	5.70	31.17
Lodging	11	357	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	41.23
Mercantile/Services	157	1,418	9.1	.040	290	258	28	Q	301	1.9	.21	7.46	17.63
Office	58	920	15.8	.059	424	1,018	65	18	388	6.7	.42	6.54	31.89
Residential	45	696	15.3	.035	248	773	50	133	232	5.1	.33	6.59	26.65
Warehouse	42	1,020	24.2	Q	Q	Q	29	Q	189	Q	.18	6.40	37.96
Other	14	251	17.5	.010	73	Q	40	Q	71	Q	.28	6.96	23.56
Vacant	Q	279	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	37.99

See footnotes at end of table.

Table 24. Fuel Oil: Consumption and Expenditures in Buildings That Heat with Fuel Oil, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil for Heating		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million btu)	Energy Consumed per Square Foot (thousand btu)	Energy Consumed per Employee (million btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.928	0.867	0.876	1.216	1.213	1.430	1.143	1.835	1.178	1.331	1.084	0.189	
Census Region													
Northeast	220	4,053	18.5	0.193	1,375	877	48	31	1,286	5.9	0.32	6.67	10.46
North Central	88	1,081	12.2	.024	169	266	22	19	165	1.9	.15	7.01	21.45
South	149	2,103	14.1	.085	602	569	40	27	554	3.7	.26	6.54	20.33
West	34	327	Q	Q	Q	299	31	Q	Q	2.2	.23	7.42	36.32
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD	84	881	10.5	.035	251	418	40	31	252	3.0	.29	7.18	18.06
Below 2,000 CDD and 5,500-7,000 HDD	155	2,249	14.5	.090	647	581	40	23	609	3.9	.27	6.77	14.62
Below 2,000 CDD and 4,000-5,499 HDD	186	3,272	17.6	.154	1,096	828	47	Q	1,013	5.4	.31	6.57	16.63
Below 2,000 CDD and Below 4,000 HDD	Q	631	Q	Q	Q	369	17	Q	Q	2.5	.11	6.72	57.61
Above 2,000 CDD and Below 4,000 HDD	Q	Q	Q	Q	Q	Q	40	Q	Q	Q	.25	6.39	61.11
Climate Zones: 1983 Weather Data Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	106.56
Below 2,000 CDD and 5,500-7,000 HDD	165	2,605	15.8	.085	609	516	33	18	587	3.6	.23	6.91	16.56
Below 2,000 CDD and 4,000-5,499 HDD	200	3,118	15.6	.175	1,244	873	56	48	1,151	5.8	.37	6.58	15.71
Below 2,000 CDD and Below 4,000 HDD	100	1,384	13.9	.036	262	366	26	Q	249	2.5	.18	6.83	21.15
Above 2,000 CDD and Below 4,000 HDD	21	Q	16.8	Q	Q	Q	Q	Q	Q	Q	.21	6.22	66.80
Metropolitan Status													
Metropolitan	248	5,115	20.6	.208	1,481	840	41	27	1,359	5.5	.27	6.53	11.84
Nonmetropolitan	243	2,450	10.1	.103	738	423	42	32	721	3.0	.29	7.02	15.76
Number of Establishments in Building													
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	107.20
Single Establishment	407	5,356	13.2	.235	1,676	577	44	30	1,583	3.9	.30	6.75	10.91
Multiple Establishment	80	2,096	26.3	.072	515	907	35	Q	471	5.9	.22	6.51	19.68
Government Occupancy													
Any Government Occupancy	48	1,461	30.2	.047	332	962	32	14	298	6.1	.20	6.39	19.24
Federal	6	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	60.73
State	10	473	47.8	.015	107	1,507	32	Q	97	9.8	.21	6.53	31.39
Local	38	931	24.6	.033	232	862	35	23	207	5.5	.22	6.35	18.47
Number of Employees													
Fewer than 10	337	2,291	6.8	.094	679	280	41	74	690	2.0	.30	7.32	12.24
10 to 19	73	821	11.3	.049	346	671	59	51	328	4.5	.40	6.73	21.02
20 to 49	47	1,201	25.7	.062	448	1,332	52	44	429	9.2	.36	6.90	22.89
50 to 99	18	931	52.2	.025	178	1,392	27	21	167	9.3	.18	6.72	19.23
100 or More	17	2,321	139.8	.081	569	4,875	35	13	466	28.1	.20	5.76	23.63

See footnotes at end of table.

Table 24. Fuel Oil: Consumption and Expenditures in Buildings That Heat with Fuel Oil, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil for Heating		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million btu)	Energy Consumed per Square Foot (thousand btu)	Energy Consumed per Employee (million btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.928	0.867	0.876	1.216	1.213	1.430	1.143	1.835	1.178	1.331	1.084	0.189	
Hours of Operation During a Typical Week													
39 or Fewer Hours	86	708	8.2	0.029	208	338	41	48	203	2.4	0.29	6.99	24.53
40 to 48 Hours	113	1,579	14.0	.050	361	447	32	30	350	3.1	.22	6.95	14.60
49 to 60 Hours	118	1,611	13.6	.086	611	724	53	42	574	4.8	.36	6.70	21.20
61 to 84 Hours	85	1,486	17.5	.059	425	701	40	33	403	4.7	.27	6.78	22.16
85 to 167 Hours	55	822	14.9	.035	250	Q	43	Q	231	4.2	.28	6.60	30.57
168 Hours	33	1,358	40.7	.051	365	1,540	38	14	319	9.5	.23	6.20	22.07
Percent Heated													
1 to 50	70	730	10.4	Q	Q	Q	28	Q	137	1.9	.19	6.57	33.59
51 to 99	80	1,521	18.9	.068	484	841	44	25	467	5.8	.31	6.91	24.39
100	340	5,314	15.6	.223	1,589	654	42	29	1,477	4.3	.28	6.63	9.92
Type of Heating System													
Central System	476	7,424	15.6	.309	2,201	648	42	28	2,062	4.3	.28	6.68	10.36
Self Contained Units Only	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	40.38
Heat Distribution System													
Ducted Forced Air	255	3,903	15.3	.143	1,016	559	37	20	935	3.7	.24	6.55	14.33
Baseboards	109	1,988	18.3	.100	719	922	50	28	670	6.2	.34	6.69	16.35
Electric	38	555	14.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	33.18
Hot Water	67	1,376	20.4	.059	421	871	43	24	386	5.7	.28	6.57	14.21
Steam	10	367	Q	.017	120	Q	45	24	107	10.8	.29	6.41	23.38
Radiators, Convectors, or Panels	216	4,713	21.8	.206	1,469	954	44	27	1,359	6.3	.29	6.60	10.30
Heat Pump													
Present	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	49.47
Not Ascertained	484	7,413	15.3	.307	2,188	634	41	28	2,044	4.2	.28	6.66	10.39
Percentage of Exterior Glass													
Less than 25 Percent	285	3,143	11.0	.128	913	449	41	32	865	3.0	.28	6.77	15.36
25 to 49 Percent	159	3,008	18.9	.124	884	779	41	23	818	5.1	.27	6.58	13.82
50 to 74 Percent	37	1,112	29.7	.050	355	1,324	45	36	328	8.8	.30	6.63	22.44
75 Percent or More	9	301	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	44.83
Insulation/Special Glass													
Any Present	337	5,629	16.7	.214	1,525	635	38	25	1,416	4.2	.25	6.61	11.34
Special Glass	168	3,363	20.0	.125	887	745	37	21	817	4.9	.24	6.53	15.63
Roof/Ceiling Insulation	236	4,030	17.0	.145	1,030	612	36	25	945	4.0	.23	6.53	12.69
Exterior Wall Insulation	150	2,431	16.3	.081	575	541	33	18	535	3.6	.22	6.62	18.10
None Present	154	1,936	12.6	.097	694	631	50	36	664	4.3	.34	6.85	18.46
Passive Solar													
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	58.00
Not in Use	487	7,496	15.4	.308	2,196	633	41	29	2,059	4.2	.27	6.69	10.35
Computerized Energy Management System													
In Use	11	884	83.6	.034	234	Q	Q	Q	189	17.9	Q	5.64	34.51
Not in Use	480	6,681	13.9	.278	1,986	578	42	31	1,891	3.9	.28	6.81	10.27
Regular Maintenance Program for HVAC													
In Use	439	7,258	16.5	.300	2,140	684	41	28	2,002	4.6	.28	6.67	10.25
Not in Use	52	307	5.9	.011	79	211	36	36	78	1.5	.26	7.15	21.16

See footnotes at end of table.

Table 24. Fuel Oil: Consumption and Expenditures in Buildings That Heat with Fuel Oil, 1983 (Continued)

Building Characteristics	All Buildings Using Fuel Oil for Heating		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion btu)	Total Amount Consumed (million gallons)	Energy Consumed per Building (million btu)	Energy Consumed per Square Foot (thousand btu)	Energy Consumed per Employee (million btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.928	0.867	0.876	1.216	1.213	1.430	1.143	1.835	1.178	1.331	1.084	0.189	
Occupant Control of Heating													
Yes	336	3,879	11.5	0.155	1,104	460	40	26	1,058	3.1	0.27	6.84	16.12
No	150	3,564	23.7	.150	1,068	998	42	30	978	6.5	.27	6.53	11.90
Reduced Heating when Building Not in Use													
Yes	435	6,441	14.8	.264	1,888	608	41	27	1,774	4.1	.28	6.71	10.76
No	53	1,018	19.3	.046	324	870	45	40	299	5.7	.29	6.53	25.13
Professional Energy Audits													
Performed in Past Year	52	1,445	27.9	.083	593	1,613	58	23	525	10.2	.36	6.29	23.81
Measures Taken	28	889	32.1	.063	445	2,274	71	32	390	14.1	.44	6.19	28.14
Measures Not Taken	24	556	23.1	.020	147	Q	37	Q	135	5.6	.24	6.60	29.11
Not Performed	439	6,120	13.9	.228	1,627	518	37	31	1,555	3.5	.25	6.83	10.24

^a Fuel consumption and expenditures data were not collected separately by end use. For example, although it is known that fuel oil was used for heating in certain buildings, the fuel oil consumption shown for the category **Fuel Oil Used for Heating** includes the fuel oil used in those buildings for all purposes, such as water heating, etc.

^{nc} No cases in sample.

^Q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 25. Propane: Consumption and Expenditures, in Buildings that Heat with Propane, 1983

Building Characteristics	All Buildings Using Propane		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)*	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.972	0.958	1.402	1.101	1.101	1.211	1.291	1.166	1.122	1.167	1.281	0.228	
All Buildings	151	961	6.4	0.020	223	135	21	13	192	1.3	0.20	9.44	18.86
Year Constructed													
1900 or Before	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	119.80
1901 to 1920	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	40.91
1921 to 1945	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	41.22
1946 to 1960	43	289	Q	.006	62	132	Q	17	54	1.3	Q	9.46	37.66
1961 to 1970	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	30.84
1971 to 1973	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	30.01
1974 to 1979	24	133	5.5	Q	Q	Q	Q	Q	Q	Q	Q	Q	35.27
1980 to 1983	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	47.21
Square Footage Category													
5,000 or Less	116	255	2.2	.010	115	90	41	15	102	.9	.40	9.70	19.72
5,001 to 10,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	28.22
10,001 to 25,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	24.44
25,001 to 50,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	38.90
50,001 to 100,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	70.00
100,001 to 200,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	103.17
Over 200,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	58.96
Principal Activity Within Building													
Assembly	28	81	2.9	Q	Q	Q	Q	Q	Q	Q	Q	Q	24.54
Educational	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	83.40
Food Sales/Service	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	28.22
Lodging	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	91.91
Mercantile/Services	59	269	Q	.005	60	93	20	15	52	.9	.19	9.40	22.27
Office	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	32.67
Residential	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	94.75
Warehouse	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.96
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.75
Vacant	Q	Q	Q	Q	Q	Q	Q	NC	Q	Q	Q	Q	92.77
Census Region													
Northeast	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	66.12
North Central	54	321	Q	.007	76	128	22	15	63	1.2	.20	9.03	28.51
South	76	578	7.6	.010	115	139	Q	11	105	1.4	Q	9.97	29.66
West	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	29.74
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.36
Below 2,000 CDD and 5,500-7,000 HDD	Q	Q	Q	Q	Q	Q	30	16	Q	Q	.26	8.63	56.26
Below 2,000 CDD and 4,000-5,499 HDD	24	Q	11.1	.004	48	181	16	8	41	1.7	.15	9.31	32.37
Below 2,000 CDD and Below 4,000 HDD	Q	301	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	113.61
Above 2,000 CDD and Below 4,000 HDD	Q	Q	3.6	Q	Q	Q	29	12	Q	Q	.30	10.34	43.21

See footnotes at end of table.

Table 25. Propane: Consumption and Expenditures, in Buildings that Heat with Propane, 1983 (Continued)

Building Characteristics	All Buildings Using Propane		Square Feet per Building (thousand square feet)	Total Amount Consumed (quad-million Btu) ^a	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.972	0.958	1.402	1.101	1.101	1.211	1.291	1.166	1.122	1.167	1.281	0.228	
Climate Zones:													
1983 Weather Data													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD													
	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	85.77
Below 2,000 CDD and 5,500-7,000 HDD													
	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	56.17
Below 2,000 CDD and 4,000-5,499 HDD													
	58	355	Q	0.008	84	132	22	16	68	1.2	0.19	8.87	27.09
Below 2,000 CDD and Below 4,000 HDD													
	56	466	8.4	.007	82	134	Q	Q	74	1.3	Q	9.89	30.69
Above 2,000 CDD and Below 4,000 HDD													
	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	64.62
Metropolitan Status													
Metropolitan	38	168	4.5	.004	49	118	26	12	41	1.1	.24	9.20	26.00
Nonmetropolitan	113	793	7.0	.016	174	141	20	13	152	1.3	.19	9.51	22.07
Percent Heated													
1 to 50	27	123	4.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	43.36
51 to 99	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.65
100	104	751	7.2	.015	168	147	20	12	146	1.4	.19	9.50	21.01
Type of Heating System													
Central System	113	769	6.8	.017	184	149	22	12	159	1.4	.21	9.48	20.24
Self Contained Units Only	37	192	5.1	.004	39	Q	18	Q	33	.9	.17	9.27	25.58
Heat Distribution System													
Ducted Forced Air	56	387	6.9	.011	116	188	27	10	97	1.7	.25	9.14	20.47
Baseboards	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	40.52
Electric	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	48.45
Radiators, Convectors, or Panels	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	43.38
Percentage of Exterior Glass													
Less than 25 Percent	122	570	4.7	.014	154	115	25	15	134	1.1	.23	9.54	16.26
25 to 49 Percent	22	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	51.22
50 to 74 Percent	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	79.03
75 Percent or More	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	73.64
Insulation/Special Glass													
Any Present	103	638	6.2	.017	191	170	27	13	164	1.6	.26	9.37	17.19
Special Glass	41	317	7.7	.008	91	201	26	9	75	1.8	.24	9.04	20.52
Roof/Ceiling Insulation	75	414	5.5	.013	138	168	31	15	118	1.6	.28	9.32	18.28
Exterior Wall Insulation	59	402	6.8	.012	128	199	29	13	108	1.8	.27	9.22	17.82
None Present	48	323	Q	.003	32	Q	Q	13	29	Q	Q	9.89	45.21
Passive Solar													
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	87.59
Not in Use	149	939	6.3	.020	216	133	21	14	187	1.3	.20	9.51	19.00
Regular Maintenance Program for HVAC													
In Use	119	820	6.9	.016	175	134	19	11	149	1.3	.18	9.37	21.16
Not in Use	32	141	4.5	Q	Q	Q	Q	Q	Q	Q	Q	Q	19.83

See footnotes at end of table.

Table 25. Propane: Consumption and Expenditures, in Buildings that Heat with Propane, 1983 (Continued)

Building Characteristics	All Buildings Using Propane		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu) ^a	Total Amount Consumed (million gallons)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	0.972	0.958	1.402	1.101	1.101	1.211	1.291	1.166	1.122	1.167	1.281	0.228	
Occupant Control of Heating													
Yes	107	461	4.3	0.013	148	126	29	17	126	1.2	0.27	9.38	16.46
No	44	500	11.4	.007	76	157	Q	Q	66	1.5	Q	9.56	35.12
Reduced Heating when Building Not in Use													
Yes	139	842	6.1	.018	196	129	21	13	169	1.2	.20	9.43	19.06
No	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	64.65
Professional Energy Audits													
Performed in Past Year	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	56.19
Measures Taken	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	71.93
Measures Not Taken	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	57.06
Not Performed	144	891	6.2	.018	202	129	21	13	173	1.2	.19	9.39	18.23

^a Fuel consumption and expenditures data were not collected separately by end use. For example, although it is known that propane was used for heating in certain buildings the propane consumption shown in this table includes the propane used in the buildings for all purposes, such as water heating, etc.

^{nc} No cases in sample.

^q Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table 26. Purchased Steam: Consumption and Expenditures, in Buildings that Heat with Purchased Steam, 1983

Building Characteristics	All Buildings Using Steam		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)*	Total Amount Consumed (billion pounds)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.003	0.888	0.930	1.050	1.050	1.951	0.865	1.055	1.048	1.997	0.903	0.342	
All Buildings	53	4,279	80.1	0.267	267	4,994	62	34	2,422	45.3	0.57	9.08	16.07
Year Constructed													
1900 or Before	Q	Q	130.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	56.46
1901 to 1920	5	430	89.5	.019	19	4,012	45	29	190	39.6	.44	9.87	15.81
1921 to 1945	16	941	58.5	.057	57	3,571	61	36	510	31.7	.54	8.88	27.23
1946 to 1960	17	864	49.5	.060	60	Q	Q	41	531	Q	.61	8.80	25.19
1961 to 1970	8	918	117.7	.076	76	Q	Q	45	727	Q	.79	9.57	33.84
1971 to 1973	Q	241	Q	.008	8	Q	Q	35	75	Q	.31	8.94	42.91
1974 to 1979	1	306	Q	.022	22	Q	Q	73	188	Q	.61	8.45	37.78
1980 to 1983	Q	Q	198.8	Q	Q	Q	Q	Q	Q	Q	Q	Q	35.65
Square Footage Category													
5,000 or Less	Q	Q	Q	.001	1	335	74	56	13	4.0	.89	11.96	81.12
5,001 to 10,000	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	84.97
10,001 to 25,000	13	230	17.8	Q	Q	Q	Q	Q	Q	Q	Q	Q	42.20
25,001 to 50,000	11	369	34.2	Q	Q	2,287	67	71	Q	19.5	.57	8.53	25.47
50,001 to 100,000	8	568	70.1	.033	33	4,068	58	44	292	36.0	.51	8.86	15.85
100,001 to 200,000	5	626	137.5	.054	54	11,916	87	55	480	105.5	.77	8.85	25.63
Over 200,000	6	2,409	408.6	.131	131	22,274	55	24	1,211	205.4	.50	9.22	18.03
Principal Activity Within Building													
Assembly	8	467	57.5	.022	22	Q	47	Q	194	Q	.42	8.87	39.88
Educational	6	356	55.8	Q	Q	Q	53	Q	Q	Q	.38	7.17	46.50
Food Sales/Service	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	78.78
Health Care	Q	350	Q	.053	53	Q	152	Q	457	Q	1.31	8.58	38.54
Lodging	8	472	Q	.021	21	Q	44	76	179	Q	.38	8.67	44.79
Mercantile/Services	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	43.85
Office	8	1,183	144.9	.067	67	8,150	56	16	653	80.0	.55	9.81	17.61
Residential	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	65.02
Warehouse	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	76.15
Other	6	437	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.83
Vacant	4	275	63.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	45.81
Census Region													
Northeast	15	1,284	83.9	.077	77	Q	60	33	910	Q	.71	11.82	36.26
North Central	21	1,830	88.4	.137	137	6,637	75	40	1,023	49.4	.56	7.44	18.12
South	9	713	Q	.029	29	Q	40	19	275	Q	.38	9.57	51.16
West	9	451	51.6	.024	24	Q	53	38	215	Q	.48	9.07	33.29
Climate Zones: 45 Year Average Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above 7,000 HDD	12	1,005	83.5	Q	Q	Q	66	48	Q	Q	Q	8.28	48.38
Below 2,000 CDD and 5,500-7,000 HDD	27	1,689	62.5	.127	127	4,710	75	43	1,085	40.1	.64	8.52	23.85
Below 2,000 CDD and 4,000-5,499 HDD	9	1,298	140.6	.057	57	Q	44	19	651	Q	.50	11.39	23.53
Below 2,000 CDD and Below 4,000 HDD	Q	165	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	86.21
Above 2,000 CDD and Below 4,000 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	182.44

See footnotes at end of table.

Table 26. Purchased Steam: Consumption and Expenditures, in Buildings that Heat with Purchased Steam, 1983 (Continued)

Building Characteristics	All Buildings Using Steam		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu) ^a	Total Amount Consumed (billion pounds)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.003	0.888	0.930	1.050	1.050	1.951	0.865	1.055	1.048	1.997	0.903	0.342	
Climate Zones:													
1983 Weather Data													
Annual Heating (HDD) and Cooling Degree-Days (CDD)													
Below 2,000 CDD and Above													
7,000 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	80.21
Below 2,000 CDD and													
5,500-7,000 HDD	27	1,814	68.2	0.132	132	Q	73	44	1,164	Q	0.64	8.84	33.39
Below 2,000 CDD and													
4,000-5,499 HDD	20	1,822	92.0	.106	106	5,360	58	28	1,020	51.5	.56	9.62	24.57
Below 2,000 CDD and Below													
4,000 HDD	Q	232	Q	.013	13	Q	Q	Q	115	Q	Q	Q	126.99
Above 2,000 CDD and Below													
4,000 HDD	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	113.06
Metropolitan Status													
Metropolitan	46	3,973	85.9	.240	240	5,196	61	32	2,135	46.1	.54	8.88	13.74
Nonmetropolitan	7	306	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	143.29
Percent Heated													
1 to 50	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	101.24
51 to 99	8	736	86.9	.043	43	5,013	58	28	386	45.5	.52	9.07	23.50
100	42	3,321	78.4	.209	209	4,925	63	34	1,914	45.2	.58	9.17	17.84
Heat Distribution System													
Ducted Forced Air	26	2,956	112.6	.187	187	7,115	63	30	1,642	62.6	.56	8.79	15.41
Baseboards	21	1,722	81.6	.105	105	4,960	61	32	901	42.7	.52	8.61	17.74
Electric	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	61.91
Hot Water	12	1,185	Q	.081	81	6,694	68	33	679	56.2	.57	8.39	21.22
Steam	9	863	94.9	.046	46	Q	53	32	375	Q	.44	8.23	31.06
Radiators, Convectors, or Panels	43	3,315	77.6	.208	208	4,878	63	35	1,906	44.6	.57	9.15	13.86
Percentage of Exterior Glass													
Less than 50 Percent	40	3,141	78.6	.192	192	4,800	61	36	1,739	43.5	.55	9.07	20.15
50 percent or More	13	1,138	84.4	.075	75	Q	66	29	683	Q	.60	9.10	20.82
Insulation/Special Glass													
Any Present	40	3,288	82.7	.209	209	5,267	64	31	1,913	48.1	.58	9.13	17.56
Special Glass	17	2,164	125.3	.147	147	8,515	88	31	1,342	77.7	.62	9.12	21.72
Roof/Ceiling Insulation	34	2,675	79.5	.169	169	5,028	63	31	1,512	45.0	.57	8.94	19.69
Exterior Wall Insulation	11	1,184	104.1	.073	73	6,396	61	25	657	57.8	.56	9.04	23.74
None Present	14	991	72.6	.057	57	4,202	58	48	510	37.3	.51	8.88	25.81
Passive Solar													
In Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	58.99
Not in Use	53	4,216	79.6	.264	264	4,982	63	34	2,394	45.2	.57	9.07	16.24
Computerized Energy Management System													
In Use	9	1,422	165.3	.084	84	9,819	59	27	736	85.5	.52	8.71	15.49
Not in Use	45	2,857	63.7	.182	182	4,069	64	38	1,687	37.6	.59	9.25	21.65
Regular Maintenance Program for HVAC													
In Use	50	4,160	83.1	.260	260	5,205	63	33	2,367	47.3	.57	9.09	16.36
Not in Use	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	50.77

See footnotes at end of table.

Table 26. Purchased Steam: Consumption and Expenditures, in Buildings that Heat with Purchased Steam, 1983 (Continued)

Building Characteristics	All Buildings Using Steam		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu) ^a	Total Amount Consumed (billion pounds)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor
	Number of Buildings (thousands)	Square Feet (millions)											
RSE Column Factor:	1.003	0.888	0.930	1.050	1.050	1.951	0.865	1.055	1.048	1.997	0.903	0.342	
Occupant Control of Heating													
Yes	24	1,572	64.7	0.127	127	5,235	81	37	1,140	46.9	0.73	8.96	22.06
No	27	2,673	99.2	.138	138	5,108	51	31	1,266	47.0	.47	9.20	14.74
Reduced Heating when Building Not in Use													
Yes	40	3,554	88.3	.199	199	4,936	56	28	1,827	45.4	.51	9.20	15.01
No	12	621	Q	Q	Q	Q	95	Q	Q	Q	Q	8.93	52.73
Professional Energy Audits													
Performed in Past Year	13	1,534	122.4	.098	98	7,780	64	32	934	Q	.61	9.58	28.54
Measures Taken	6	866	141.2	Q	Q	Q	65	Q	Q	Q	.66	10.21	39.47
Measures Not Taken	6	668	104.3	.042	42	Q	62	35	363	Q	.54	8.73	31.06
Not Performed	41	2,745	67.1	.169	169	4,140	62	35	1,488	36.4	.54	8.79	15.21

^a Fuel consumption data were not collected separately by end use. For example, although it is known that purchased steam was used for heating in certain buildings, the purchased steam consumption shown in this table includes the purchased steam used in those buildings for all purposes, such as water heating, etc.

^{nc} No cases in sample.

^o Data withheld either because the RSE was greater than 50%, or fewer than 20 buildings were sampled.

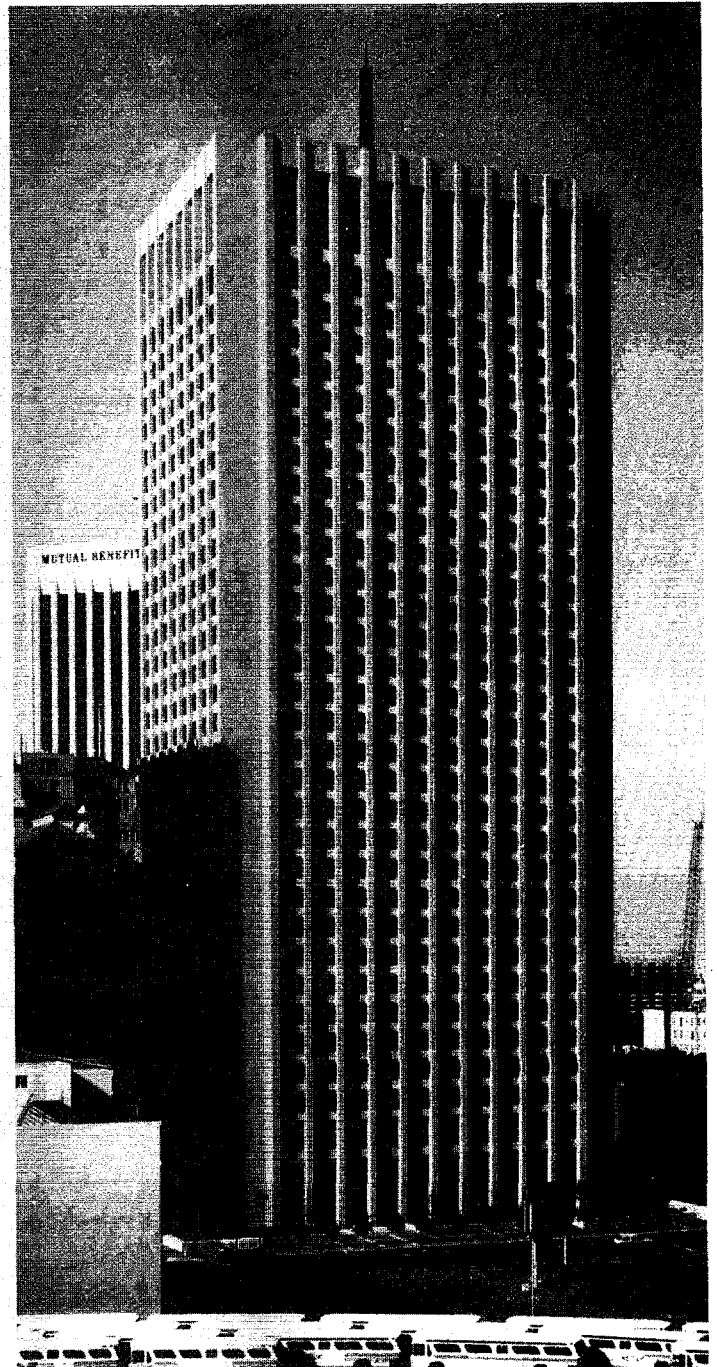
Note: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.



Appendix A

How the Survey Was Conducted



Office buildings, such as these, are buildings which are used for general office space, professional offices and administrative offices.



How the Survey Was Conducted

Introduction

The recurring Nonresidential Buildings Energy Consumption Survey (NBECS) was designed by the Energy Information Administration (EIA) to provide basic statistical information concerning the consumption of and expenditures for energy in nonresidential buildings, along with data on their energy-related characteristics. Information about selected units was collected through personal interviews in the 1979 NBECS and through telephone interviews in the 1983 NBECS for a national probability sample of nonresidential buildings. The 1983 NBECS sample included all the buildings that had been selected for the 1979 NBECS, as well as a sample of new buildings constructed since the 1979 NBECS. Data concerning the actual consumption of energy were obtained from fuel records maintained by the buildings' energy suppliers. This information was collected in a mail survey by means of mandatory Form EIA-788C. A survey research firm conducted both the interviews and the mail survey, under EIA's direction.

This report examines the consumption of energy in commercial buildings and the associated expenditures for that energy. The data are primarily from the energy suppliers' portion of the 1983 NBECS. Because the survey of energy suppliers was wholly dependent on the survey of buildings, a description of the latter survey and the collection of waivers is given below. This appendix has two major sections: (1) data-collection forms and (2) data-collection procedures; subsections in each deal with the survey of buildings, the collection of waivers, and the survey of energy suppliers.

Data-Collection Forms

The 1983 NBECS required two major types of forms, corresponding to the two portions of the survey: forms for buildings (including waivers) and forms for energy suppliers. How the 1983 forms differed from the 1979 forms is explained below. It may be useful to refer to the 1983 NBECS questionnaires (Appendix E). Forms EIA-788A and B are the questionnaires for buildings (including the waiver); Form EIA-788C includes all the forms for energy suppliers. A more complete description of the 1979 NBECS is given in *Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures* (DOE/EIA-0318(79)).

Questionnaires for the Survey of Buildings

Two building questionnaires were administered for the 1983 NBECS, one designed for buildings for which information was collected in 1979 (Form EIA-788A-Questionnaire 1) and one for buildings that did not participate in 1979 (Form EIA-788B-Questionnaire 2). The latter group included the new buildings identified from the update survey as well as buildings nonrespondent to the 1979 NBECS. (See Appendix B for details on the sample design.) In short, Questionnaire 1 was designed to collect data concerning *changes* in some of the building's characteristics since 1979, while Questionnaire 2 was designed to obtain basic information about the building's characteristics. Response to both questionnaires was voluntary.

The 1979 questionnaire was revised for the 1983 survey to achieve several goals. First, improvements were made to portions of the form that had proved to be ambiguous or repetitive for respondents in the 1979 NBECS. These improvements included rewording the questions on vacancy, employment, and hours of operation. Second, additional

response categories were added to reduce the number of cases with responses of "other." Third, questions and responses were recategorized and reformatted to facilitate telephone interviewing. Finally, questions on certain topics were deleted or added.

Major changes were made in the wording of the questions on heating and cooling to allow for the differences in the methods of data collection (telephone versus in-person) and to forestall certain problems encountered in the course of the 1979 NBECS. In the 1979 NBECS, data had been obtained from the respondents with the aid of a descriptive "probe" card. Since this card could not be used in telephone interviews, the descriptions were reworded so that they could be read to the respondent by a telephone interviewer.

Questions that had been in the 1979 NBECS but were deleted from the 1983 NBECS covered the following topics:

- Management offices
- The year of construction
- The year in which conservation features such as insulation, weatherstripping, and caulking were last installed
- The number of floors
- The average temperature maintained in the building
- Special systems to conserve energy
- Capacity of fuel-oil tank
- Conversion from fuel oil
- Temperature-setback programs.

Some of the questions were deleted because the answers were not likely to have changed substantially. This was the case with questions on year of construction, percentage and type of glass, number of floors, and capacity of fuel-oil tank; in the 1983 survey, questions on those topics were asked only for buildings that had not participated in the 1979 survey.

Questions were added to the 1983 NBECS to elicit information concerning:

- The presence of insulation in the roof or walls
- Plans to add insulation and where it was to be added
- Special energy-generating or usage systems in the building
- Energy audits.

Waivers

The waivers, or authorizations, were signed forms provided by building representatives to authorize utility companies and other energy suppliers to release records of actual costs and consumption for the building to EIA's survey contractor. Response to this form was voluntary. Although the format of the waiver was unchanged from the 1979 NBECS, the number of individual waivers obtained per building was changed.

In the 1979 NBECS, the number of waivers to be obtained had been determined by the number of separately billed tenants. If there was just one bill, just one waiver was obtained. If there were two or three separately billed tenants, two or three waivers were obtained. If there were four or more separately billed tenants, only the owner or manager of the building was asked to sign a waiver. In this situation, the utility company was asked to provide aggregated consumption data for all the tenants within the building. This plan was designed to obtain consumption data for the building as a whole, while reducing the burden to the utility of providing data for each tenant in the building.

In the 1983 NBECS, this plan was modified. The practice of obtaining separate waivers for tenants in buildings was eliminated. Instead, only one waiver was obtained for each building, and the utility company involved was asked to provide consumption data aggregated for all the tenants in the building.

Forms for the Survey of Energy Suppliers

Suppliers of electricity, natural gas, fuel oil, steam, purchased chilled water, purchased hot water, coal, wood, and bottled gas were asked to supply consumption and expenditures data on a mailed survey form. Response to the form was mandatory for the supplier. The format of the form varied by the type of energy supplied, the number of customers served by the supplier in each building, and whether or not a signed waiver had been obtained. To meet these varying needs, 11 data-collection instruments were developed, 9 of which were in booklet or folder form and 2 of which were single sheets printed on two-part paper.

Generally, the reporting form for each energy source had one of three types of format:

1. *Individual Form (Form Type 01)*. This format was used when a waiver had been obtained and there was only one customer in the building.
2. *Aggregate Form (Form Type 02)*. This format was used when a waiver had been obtained and the supplier was asked to provide aggregate data for a group of customers in a building.
3. *Worksheet (Form Type 05)*. This was a special one-page form used when a waiver had not been obtained. The supplier was requested to aggregate cost and consumption data for a group of buildings and to report the yearly totals. Only the total for all the buildings was supplied to EIA. This form was used only for suppliers of natural gas and electricity.

Since there were differences in data items by energy source, there were corresponding variations in the reporting forms as well. The electricity forms requested kW demand; the natural-gas forms included a system for reporting variable units of measure (such as therms, cubic feet, 100 cubic feet); and the fuel-oil forms requested fuel-tank data.

Despite the above-mentioned differences, the forms for the different fuels were similar in terms of the data requested. In each case, the supplier was asked to report the following data: (1) quantity consumed or delivered, (2) cost, (3) unit of measure, (4) number of customers included in the consumption and cost data reported on the form, and (5) data on deliveries or consumption for a 14-month period between December 1, 1982, and January 31, 1984. (The 14-month period was required to ensure that data would cover a full calendar year no matter what the actual billing period had been. For example, if the billing period ended on the 10th of each month, the first bill would be from December 10 through January 9.) The bills were then prorated to obtain data for the calendar year. (See Appendix C: Data Quality--Technical Notes.)

Suppliers were not required to transcribe data onto the survey forms. Responses were accepted in any format (including computer printouts), as long as the necessary information was provided.

Because of problems in the 1979 NBECS, changes were made in the 1983 NBECS forms to address the following considerations:

- Reconciling counts of customers or tenants in a building when a respondent's information differed from that of a fuel supplier
- Determining whether information reported by a fuel supplier covered more energy usage than that of the sample building alone
- Distinguishing between items inadvertently omitted by a respondent and items deliberately omitted because they were not applicable to the building in question
- Obtaining the account numbers for each building tenant to aid the energy suppliers in locating the requested data for the building.

Data-Collection Procedures

The 1983 NBECS sample consisted of 8,479 buildings, 6,773 from the 1979 NBECS sample and 1,706 new buildings. Of that sample, 8,018 buildings were eligible to be included in the survey, 6,561 drawn from the original sample and 1,457 drawn from the new-buildings sample (Table A1).

Table A1. Number and Percent Distribution of the 1983 NBECS Sample Buildings by Building Disposition

Building Disposition	Number of Buildings	Percent of all Buildings	Percent of Eligible Buildings	Percent of Interviewed Buildings
Total Sample				
Total	8,479	100.0	--	--
Not Eligible for Interview	461	5.4	--	--
Eligible for Interview	8,018	94.6	100.0	--
Interviewed	7,140	--	89.1	100.0
With Waiver	6,420	--	--	89.9
Waiver Not Required ^a	130	--	--	1.8
Without Waiver	590	--	--	8.3
Not Interviewed	878	--	10.9	--
Original Sample				
Total	6,773	100.0	--	--
Not Eligible for Interview	212	3.1	--	--
Eligible for Interview	6,561	96.9	100.0	--
Interviewed	5,845	--	89.2	100.0
With Waiver	5,278	--	--	90.3
Waiver Not Required ^a	117	--	--	2.0
Without Waiver	450	--	--	7.7
Not Interviewed	716	--	10.8	--
New Buildings Sample				
Total	1,706	100.0	--	--
Not Eligible for Interview	249	14.6	--	--
Eligible for Interview	1,457	85.4	100.0	--
Interviewed	1,295	--	88.9	100.0
With Waiver	1,142	--	--	88.2
Waiver Not Required ^a	13	--	--	1.0
Without Waiver	140	--	--	10.8
Not Interviewed	162	--	11.1	--

^a Buildings without energy supplied.

-- Data not applicable.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey.

The Survey of Buildings

Interviews were conducted from March through August 1983 by means of the survey contractor's Computer Assisted Telephone Interviewing (CATI) system. An interviewer telephoned each respondent, using the CATI system to proceed through the questionnaire, and the responses were recorded on computer files. For the buildings from the original sample, information from the previous NBECS was included in the CATI program so any changes that had occurred could be easily identified. Although the CATI procedure reduced initial coding and editing time by reducing interviewer skip errors, it was still necessary to call back some respondents. Some callbacks were necessary when a respondent did not know the answer to certain crucial items, such as square footage. Other callbacks were necessitated by problems with the CATI system itself: it was a new system and there were programming problems that became apparent only during the review of the final tape. Some of these errors resulted in representatives of buildings being recontacted and reinterviewed.

Respondents were asked about the building as a whole rather than about individual establishments located within the building. The questionnaires included requests for data on structural and operational features of the buildings; types of heating, cooling, and ventilation systems; fuels used for various purposes; conservation practices; and a description of the activities performed in the building. Respondents in buildings from the original sample were asked about changes in those features since the 1979 interview.

The interviews in the 1983 survey process were shorter on average than the 1979 personal interviews had been. Whereas the in-person interviews for the 1979 NBECS had lasted an average of 45 minutes, the average CATI interview lasted only 27 minutes for the original sample and 34 minutes for the new-buildings sample. A machine edit check of CATI data files monitored the reasonableness of responses, the appropriateness of "skip patterns," and the logical consistency of responses. Certain items in the questionnaire (such as the size of a building, the major activity in the building, and the names and addresses of fuel suppliers) were designated as crucial. A followup call was made if any of these key items was missing or required verification; during the call, both that information and any other missing data were obtained.

Minimizing Nonresponse for the Survey of Buildings

Before telephone interviews could be conducted, it was necessary to obtain telephone numbers for nonrespondents from the original sample and for the entire new-buildings sample. To obtain telephone numbers for the nonrespondents from the original sample, the survey contractor used directory assistance, criss-cross directories (listings by address), 1979 listing sheets for telephone numbers of neighboring buildings, regulatory agencies, post offices, fire departments, and tax-assessment offices. Telephone numbers for the new-buildings sample were obtained by contacting the contractors, architects, or owners recorded in the project records maintained by F.W. Dodge. When a telephone number was not obtainable by other means, field agents were sent to buildings. Overall, only 2 percent of the total eligible buildings were not interviewed because of inability to locate a telephone number.

Potential respondents for approximately 900 buildings either initially refused to be interviewed or else were not available during the initial interviewing phase. During July and August 1983, an effort to reduce the number of nonrespondents yielded eventual responses from approximately 33 percent of those who had initially refused.

Waiver Survey

The waiver survey was designed to obtain authorization from respondents to collect data on energy consumption and expenditures from their energy suppliers. At the conclusion of the building interview, each respondent was asked to whom a waiver should be sent. The percentages of waivers returned for the original sample were higher than those for the new-buildings sample (Table A1). A two-phase process--by mail and in person--was used to minimize nonresponse to this waiver survey. First, within at least 1 week (usually within 1 day) of the conclusion of the survey of buildings, a request package was mailed to the person identified as the authorizing person for each building. When a signed waiver was received, a letter thanking the respondent was mailed. If no signed waiver had been received in 2 weeks, a followup telephone call was made to determine whether the respondent had received the package. A second waiver request was mailed if necessary. This two-pronged effort yield 4,947 signed waivers, bringing the response rate to 71 percent for this survey by mail. Second, in October 1983, field agents were sent to buildings from which no signed waiver had been received. This phase collected 1,473 additional signed waivers, increasing the overall response rate to 92 percent for the 1983 NBECS (Table A2).

Table A2. Response to Request for Waivers Authorizing Collection of Energy Consumption and Expenditures Data from Buildings Energy Suppliers

Request for Waivers	Number of Sample Buildings	Percent of Total Eligible
Total Eligible for Waiver Survey	7,010	100
Total Signed Waivers	6,420	92
Obtained by Mail	4,947	71
Obtained by Field	1,473	21
Total Waivers Not Signed	590	8
Refused by Mail	235	3
Refused by Field	159	2
Returned from Field Without Signature	196	3

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey.

Survey of Energy Suppliers

The survey of energy suppliers was to provide data on the quantity and costs of energy consumed during 1983 in each building in the 1983 NBECS. Response was mandatory for the energy suppliers.

For the 7,140 buildings for which responses had been obtained in the survey of buildings, 15,475 forms were mailed to 1,714 suppliers of energy. The primary mailing was completed on February 8, 1984; there were minor followup

mailings during the next several months. The first responses were received in February 1984, and the last in December 1984. A set of edited data tapes with disaggregated data for buildings was delivered to EIA by the survey contractor in July 1985.

EIA extensively reviewed the data, and by means of appropriate statistical procedures, annualized the data and imputed for item nonresponse. During the annualization process, the 14-month billing period is adjusted to the 365 days between January 1 and December 31, 1983. Imputations also had to be made for buildings with less than a full year's data. These procedures are presented in detail in Appendix C: Data Quality--Technical Notes.

The first step for the energy-supplier survey was to create the list of suppliers to sampled buildings and their mailing addresses by using the building survey questionnaires and waivers. The buildings were grouped by suppliers so that all the forms could be aggregated together for one major mailing to each supplier, asking for information for all the sampled buildings in its area at one time. Some data requests were sent out after the initial mailing, as energy-supplier information became available from later-responding buildings.

In cases of discrepancy between the number of customers in a building as reported by the respondent from the building and as reported by the energy supplier, a followup telephone call was made to both the respondent and the supplier to resolve the differences. The problem of discrepancies in the number of customers reported came up in 3 percent of the cases overall. Discrepancies were more common among buildings with more customers. Among buildings with the energy supplier reporting just one customer, the respondent's report of the number of customers differed from the supplier's in only 1 percent of the buildings. Among buildings for which the energy supplier reported two or three customers, there were discrepancies for 25 percent of the buildings. But among buildings with the energy supplier reporting four or more customers, there were discrepancies for 46 percent of the buildings.

Overall, 37 percent of the discrepancies were resolved. Since the number of customers reported by the respondents was not used in any computations, it was not necessary to resolve the remaining discrepancies. However, the fact that the energy suppliers were correct in the vast majority (92 percent) of the cases that were resolved indicates that very few of the buildings sampled for the NBECS had occupants whose consumption and expenditures were not included in the consumption and expenditures reported for the buildings.

Response Rates. The overall response rate for the survey of energy suppliers was 77.5 percent (Table A3). For suppliers of electricity and natural gas the response rate was 91.0 percent--much higher than for suppliers of "other" energy sources (73.8 percent). It is likely that several factors contributed to the differences in rates of response for the two groups. One factor was the more intensive followup devoted to the large suppliers.

Table A3. Response Rates by Supplier

Type response	Electricity/natural gas suppliers ^a		"Other" suppliers		Total	
	Number	Percent	Number	Percent	Number	Percent
Total suppliers	312		1,402		1,714	
Responding ^b	284	91.0	843	73.8	1,127	77.5
Total Nonresponding	28	9.0	299	26.2	327	22.5
Refusal	13	4.2	28	2.5	41	2.8
Insufficient waivers	4	1.2	103	9.0	105	7.2
Unable to locate supplier or customer	11	3.6	98	8.6	109	7.5
Noncollectible	0	.0	70	6.1	72	5.0
Out-of-scope for survey	0		260		260	

^a A supplier was considered responding if one or more complete data forms was received.

^b Percent responding calculated as number responding divided by the sum of total suppliers minus out-of-scope cases.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey.

Of the 28 nonresponding suppliers of electricity and natural gas, 4 were never contacted for data, because they handled only one customer each and no waiver had been signed. Another 11 suppliers that handled only one customer each were unable to locate the customers in their records. In 13 cases the building was "self-supplied," and the building operator declined to participate in the supplier survey, which was not mandatory in such cases.

With respect to the "other" suppliers, the nonresponse category--"unable to locate customer/suppliers"--applied to 98 suppliers. About 24 percent (22) of these were returns from the Postal Service because the supplier could not

be located. The rest of the suppliers sent notification that the records for the particular customer for which data were requested could not be located or that they were still looking for the records at the end of the field period.

Another significant cause of nonresponse for the "other" energy suppliers was the problem of insufficient waivers (103 suppliers). Basically, this category consisted of suppliers with only one customer, from whom an authorization form was not obtained.

There were 70 "other" energy suppliers who did not keep consumption-data records for their customers. The records for these suppliers fell into the noncollectible-data category. Only 2.5 percent, or 28, of the "other" energy suppliers refused to participate in the survey.

There were 260 "other" energy suppliers that were considered out of scope. These were suppliers who did not service the building within the survey time period or who were suppliers of drinking water, argon gas, or other nonenergy products.

The type of energy supplier made a difference in the data-collection procedures. Although there were only 312 suppliers of electricity and natural gas, they accounted for 76 percent of the forms. These suppliers often kept better, more complete records and were better equipped to respond to a request for data. Suppliers of "other" fuels did not always keep records adequate for the survey's purposes. As shown in Table A4, little usable data could be collected from suppliers of (1) purchased chilled water, (2) purchased hot water, (3) coal, (4) wood, and (5) miscellaneous types of energy. No data for these suppliers are included in this report.

Table A4. Response Rates by Energy-Supplier Form

Energy Supplier Type	Total Forms Received	Usable Forms	Percent Usable	Unusable Forms ^a	Percent Unusable
Total All Suppliers	15,475	12,313	80	3,162	20
Electricity	7,022	6,380	91	642	9
Natural Gas	4,815	4,175	87	640	13
Fuel Oil	1,927	967	50	960	50
Purchased Steam	534	389	73	145	27
Propane	510	301	59	209	41
Miscellaneous ^b	667	101	15	566	85

^a Includes refusals, noncollectable information, energy not used during report period, energy source not used in the building.

^b Includes the suppliers of purchased chilled water, purchased hot water, coal, wood and other, not previously listed, sources. Data from these suppliers were not included in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey.

Minimizing Nonresponse in the Survey of Energy Suppliers. Procedures for minimizing nonresponse to the energy-supplier survey included many efforts. Experience with the previous NBECs supplier forms and energy-supplier comments were considered during the design of the 1983 NBECs data-collection form. Contacts with energy-supplier trade associations were made by EIA during the forms design and also prior to the actual data collection. All energy-supplier forms contained a toll-free number for respondents to call for assistance in completing the forms. EIA also accepted responses in any hard-copy form, as long as all the requested data were listed. Therefore, energy suppliers could provide copies of their own internal reports or computer tables instead of having to fill out the EIA forms. Finally, there were the actual techniques used during the survey processing to collect data from as many suppliers and for as many buildings as possible. These nonresponse conversion techniques varied by the type of energy supplied. Suppliers of electricity and/or natural gas were closely monitored by telephone callbacks and acknowledgment letters. Suppliers of other sources of energy were contacted mainly through mailings.

Suppliers of electricity and natural gas were closely monitored by followup telephone calls and acknowledgment letters. Within 2 to 3 weeks of the initial mailing, calls were made to 312 suppliers of electricity and natural gas to make sure the materials had been received, to answer any questions, and to obtain an estimated completion date for the response. If the forms were not returned within 2 weeks of the response date agreed upon, another call was made and a new completion date was set. Telephone calls were followed by letters confirming the new completion date. This process continued until the data were received. Approximately 160 suppliers received a second call and about 20 suppliers were contacted four times or more, but eventually all responded.

Unlike the suppliers of electricity and/or natural gas, suppliers of the "other" energy sources were not closely monitored by telephone contacts. Instead, followup letters were used, and when necessary, telephone retrievals to

collect the consumption and cost data were initiated. The response rates for the suppliers of "other" fuels was lower overall than for suppliers of electricity and natural gas (Table A5).

Table A5. Response Rates for Suppliers of the Other Sources of Energy

	Supplier		Forms	
	Number	Percent	Number	Percent
Total "Other" Suppliers	1,402	100	3,602	100
Total Responses	1,042	74	2,899	80
Received before followup	558	40	2,136	60
Received after followup	484	35	763	21
Out-of-Scope	70	5	158	4
Nonresponse	290	21	545	15

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey.

On May 23, 1984 (15 weeks after the first mailing), a followup letter was sent to suppliers of "other" fuels if they had not responded to the first mailing. Of the 1,402 suppliers of "other" fuels who received the original mailing, the followup package was mailed to 844 (60 percent). These suppliers provided energy to 1,466 out of the 3,602 buildings covered by suppliers of "other" fuels. Before followup calls commenced, replies were received from 207 suppliers of "other" fuels for 349 buildings, or about 25 percent of the cases. The telephone survey ended in July 1984. Table A6 summarizes the results of the followup efforts for these suppliers. Cases were categorized as out of scope if it was not possible to ascertain that the supplier and/or energy source was used in the building.

Table A6. Followup Results for Suppliers of the Other Sources of Energy

	Supplier		Forms	
	Number	Percent	Number	Percent
Total Followup	844	100	1,466	100
Total Complete	484	58	763	52
Received by mail before phone followup	207	25	349	24
Received after phone followup				
By mail	160	19	213	14
By phone	117	14	201	14
Out-of-Scope	70	8	158	11
Nonresponse	290	34	545	37

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey.

A special followup effort was made for suppliers of fuel oil. By September 1984, it had become apparent that the response rate of those suppliers was not as high as had been anticipated. Data forms had been returned for only 905 of the 1,434 buildings for which data were required--a response rate of 63 percent. Of the 529 buildings for which no data had been received, only 200 were included in the special followup; the criteria for inclusion were (1) the absence of a previous strong refusal from the supplier and (2) receipt at EIA of a signed waiver for the building.

On November 6, 1984, mailgrams and special followup letters were sent to the 158 suppliers of fuel oil (covering the 200 selected buildings) who had not responded to earlier requests. The mailgram reminded the suppliers that they were required to submit the data, and the letter contained the authorization forms for the buildings they supplied. Telephone calls were then made to these suppliers to obtain the information. Consumption data were obtained for 62 of the buildings, 97 were considered out of scope, and 41 were considered nonrespondents (in most cases because the supplier could not be located). After this special followup effort, the final response rate for suppliers of fuel oil had risen to 72 percent.

Appendix B

Sample Design

Primarily residential buildings were included in this survey if any commercial activity was performed in the building.





Sample Design

The 1983 Nonresidential Buildings Energy Consumption Survey (NBECS) design consisted of two complementary samples: the multistage area probability sample selected for the 1979 NBECS building survey and a sample of new buildings drawn from the 1979-to-1982 lists of new construction compiled by the F.W. Dodge Division, McGraw-Hill Information Systems Company.

Original Sample

A majority of the sample buildings were selected by use of multistage area probability methods. The first-stage sample for the 1979 NBECS involved the selection of primary sampling units (PSU's). The approximately 3,100 counties and independent cities of the contiguous United States and the District of Columbia were grouped into about 1,900 PSU's by a procedure similar to the one used by the Census Bureau for its 1970 Current Population Survey. These PSU's consisted of individual counties or groups of counties, including those designated as Standard Metropolitan Statistical Areas (SMSA). The 25 PSU's that had a 1970 population of more than 1.85 million were designated as self-representing; that is, they were chosen with certainty. The remaining nonself-representing PSU's were placed in strata on the basis of metropolitan status, Census region, rate of growth from 1960 to 1970, percentage of black population, and a measure of socioeconomic status. There were 54 PSU's selected from these strata. These nonself-representing PSU's, together with the 25 self-representing PSU's, comprised the first stage sample of 79 PSU's.

Within their respective strata, the nonself-representing PSU's were not given equal probabilities of selection into the sample. Rather, they were selected with probabilities proportionate to sizes of their 1970 populations. Probability proportionate to size (PPS) sampling is commonly used to take advantage of knowledge about the sample units (that is, their measures of size) to improve the reliability of estimates. For quantities positively correlated with these measures of size, estimates based on PPS sampling have lower variances than estimates based on equal-probability sampling. The 1970 population of a PSU was considered a useful measure of size because of its relationship with commercial activity and energy consumption.

For the second stage of sampling, each PSU was divided into second-stage sampling units corresponding to ZIP Codes or groups of adjacent ZIP Codes. Procedures were designed to handle ZIP Codes that overlapped county boundaries and/or special ZIP Codes that were assigned to large commercial establishments or Government agencies. (In what follows, we use "ZIP group" to refer to a ZIP Code or group of ZIP Codes.) ZIP groups were selected with probabilities proportionate to a measure of size reflecting their commercial activity. Each ZIP group was assigned a measure of size based jointly on summary data from the 1975 *County Business Patterns* (CBP) and on proprietary commercial data related to office machines. Within each ZIP group, the CBP data were used to derive counts of establishments by 2-digit Standard Industrial Classification (SIC) group, weighted according to employment size. The final measure of size assigned to a ZIP group was an integer equal to the number of segments into which the ZIP group would be divided if drawn into the sample. These segment sizes were assigned in such a way that segments would contain an average of 120 establishments based on the CBP tabulations. After the measures of size were assigned, a sample of about five ZIP groups was selected in each PSU, with probabilities proportionate to the number of segments in each ZIP group, giving a total second-stage sample of 405 ZIP groups.

The sample of third-stage units consisted of approximately 400 segments, usually with one segment selected from each of the sampled ZIP groups. The selection of the segments was made in such a way that 1 percent of all segments in the contiguous United States and the District of Columbia was included in the sample, each having an equal chance of being selected. In ZIP groups with measures of size six or more, the segments were geographically compact areas. It was feasible to define and sample area segments within these selected ZIP groups on the basis of previous completed field work. For ZIP groups with smaller measures of size (that is, segments), it was less costly to bypass defining

segments and directly list all buildings across the entire ZIP group. A count of potential segments would then still be available as a measure of size for these ZIP groups.

The fourth stage of sampling consisted of the selection of nonresidential buildings (excluding farm buildings). Buildings were selected from the sampled segment within ZIP groups of six or more segments. For smaller ZIP groups, buildings were selected from the list representing the entire ZIP group, but at a lower rate since these ZIP groups represented more than one potential segment. With a few exceptions, a nonresidential building was defined as a structure that was totally enclosed by walls, that extended from the foundation to the roof, and housed some type of nonresidential activity (see the "Glossary" for a complete definition of nonresidential building). The initial step in the fourth stage selection process was to conduct a field canvass to identify and list the addresses of all eligible nonresidential buildings within each sampled segment or ZIP group. As part of the listing procedure, the lister recorded very general preliminary descriptive information related to energy usage in a building, based on observation rather than inquiry. The information included the estimated square footage and apparent principal use. This information was used to categorize buildings for subsampling. About 75,000 buildings were listed from which approximately 5,800 buildings were selected for a personal interview. Subsampling fractions from the 1-percent sample of segments ranged from 1 in 1 for buildings of 50,000 or more square feet as assigned by the lister, to 1 in 20 for certain types of small buildings (less than 10,000 square feet). Thus, the fourth stage consisted of placing buildings into different strata according to their square footage and general usage, then using equal probability sampling within these strata. Strata containing large buildings were sampled more intensely than strata of small buildings. Although not technically PPS sampling, this stratified sampling used a measure of size (square footage) in a different way to increase reliability of estimates.

Because of the measures of size used at various stages in the sample design, probabilities of selection were higher for larger commercial activities and building sizes. Thus, the sample design was more efficient for estimates of square footage and energy consumption (which is correlated with square footage) and relatively less efficient for estimates of counts of buildings in different categories.

To insure adequate coverage of buildings that were significant energy users, the area probability sample of buildings within each PSU was supplemented by a sample from a list of "large" buildings. Large buildings were defined as: (1) those buildings with 250,000 or more square feet of enclosed floorspace in PSU's that are SMSA's and (2) buildings of 100,000 square feet or more in the remaining PSU's. The list of large buildings was compiled from existing lists of schools, hospitals, and Government-owned buildings, and also through inquiries with chambers of commerce and other local sources. Some of the large buildings listed were clusters of buildings, such as a university campus. About 3,200 buildings (or building clusters) were included on the large buildings list, and approximately 1,200 of them were included in the sample with probabilities of selection dependent on their sizes. In those cases in which the selected unit consisted of a cluster of buildings, the individual buildings were listed and subsampled. Large buildings sampled from the area sample list were checked against the large buildings list to identify duplicates and assign them appropriate selection probabilities.

A total of 549 sampled buildings were out-of-scope and, therefore, ineligible for interview. There were several reasons why buildings were designated as being ineligible for interview.

Duplication occurred when a building was selected into both the area and large building samples. In these cases adjustments were made to represent the building once.

Incorrect and multiple building listings were either deleted from the sample or subsampled.⁹ Structures that were demolished or that failed to meet the definition of a nonresidential building were deleted from the sample. Also deleted were buildings sampled from the large buildings list, but whose size did not meet the definition of large. Finally, any buildings that had had additions made to them since the 1979 NBECS were deleted from the original sample and were considered eligible for coverage under the complementary sample of new buildings if (1) the addition was at least 10,000 square feet, and (2) the addition at least doubled the size of the building.

New Buildings Sample

The sample drawn by the 1979 NBECS is referred to as the "original sample." For the 1983 NBECS, the original sample within each selected PSU was updated by selecting a stratified random sample of new construction records from the 1979-to-1982 data files of the F.W. Dodge Division, McGraw-Hill Information Systems Company. This

⁹Buildings covered by the area-sampling were listed by observation. Therefore, it was not possible to determine the exact scope of a building listing until the interviewing phase, when contact was made with a building owner/manager. The list of large buildings was obtained through telephone contacts and what was reported over the telephone to be one building frequently turned out to be a group of buildings.

sample of new construction is referred to as the "new buildings sample." Thus, the 1983 NBECS sample involved recontacted owners of buildings from the original sample, complemented by a new buildings sample.

Each Dodge file contained construction-project-specific information (see Glossary for the definition of project) on total square footage of the project, value of the project, month and year of construction startup, type of structure, and whether the project was new construction, or an alteration or addition to an existing structure. However, the Dodge files did not include projects costing less than \$25,000.¹⁰ Sampling from Dodge lists was performed within the PSU's selected for the original sample. The samples were drawn separately by the year of the Dodge file and at varying rates, depending on the project square footage and type of structure. The overall sampling fractions employed for the selection of the new buildings sample were approximately twice as large as the rates used to select the original 1979 building sample and ranged from 1 in 600 for buildings with less than 5,000 square feet to 1 in 1 for buildings exceeding 1 million square feet. This resulted in a sample of new construction that was approximately twice as large as would have been obtained had the 1979 sampling rates been used. New construction was oversampled to allow separate analysis of this building cohort.

Apartment buildings with five or more dwelling units comprised a special class of buildings, which were sampled separately from other building types. Apartment buildings were considered in-scope if part of the building was used for nonresidential purposes, but information on such use was not available in the Dodge file. With minor exceptions, these buildings were expected to be used solely for residential purposes and, therefore, were sampled at one-eighth the rates used for the other Dodge construction. If those selected for the sample were later found through telephone screening to have some commercial activity in the building (for example, retail or service establishments), they were considered within the scope of the study and were administered the indepth interview. This treatment of residential buildings in the 1983 NBECS was consistent with the definition of in-scope residential buildings used in the 1979 NBECS survey.

Prior to conducting the indepth telephone surveys, a subsample of project listings, coded by Dodge as being (1) nonbuildings, (2) alterations, or (3) additions, was reviewed to determine whether the projects from these categories could be omitted from the sample process without further screening to verify eligibility. Out of this review, records coded as nonbuildings were found to be structures such as bridges, highways, sewer treatment facilities, and similar out-of-scope structures. Thus, all records coded as nonbuildings were deleted from the sample without further screening. Alterations were also deleted from the sample since in none of the cases examined did the alterations involve a conversion of residential space to nonresidential space, although this possibility might still exist in the complete F.W. Dodge lists. The effect of omitting such conversions from the survey was trivial. Finally, additions were screened to determine whether an addition was more than 10,000 square feet and, if so, whether the addition had more than doubled the original size of the building. This determination assigned a probability of selection more closely reflecting the current size of the building, rather than the original size. Since additions of less than 10,000 square feet would have little effect on the probability of selection, these were deleted from the new buildings sample, and the buildings receiving these additions were considered to have had their chance for selection under the original sample. On the other hand, buildings with additions exceeding 10,000 square feet and which had more than doubled their original size were retained in the new buildings sample. These buildings were assigned probabilities of selection reflecting the size of the additions.

Application of the sampling rates yielded a total sample of 2,429 project records: 688 project records for 1979; 617 for 1980; 683 for 1981; and 441 for 1982. The sample for 1982 excluded new construction that was started after November 1982, since the listings were not available at the time of sampling. These rates exclude nonbuildings and alterations.

During the initial screening, it was determined that of the 2,429 sample project records, 1,461 contained at least one building that might be eligible, 850 did not contain an eligible building, and 118 were records for which eligibility could not be determined. Of these 118 records, 104 were records for which it was not possible to contact the building owner because F.W. Dodge could not supply any information about the project (Table B1). Because a project could contain more than one building, the 1,461 eligible projects represented 1,706 eligible buildings.

¹⁰This omission will affect estimates for very small buildings (that is, 5,000 square feet or less). The low percentage of small buildings of 1980 to 1983 vintage may be, in part, the result of a true size trend in the construction of commercial buildings and/or an underestimate of buildings costing less than \$25,000 to construct. Since consumption and expenditures data were only collected from buildings sampled in the building survey, the frame incompleteness could also affect these data.

Table B1. Number and Percent Distribution of Dodge Project Records by Eligibility Status as Determined During Initial Screening

Eligibility	Number	Percent of All Records
Total Records	2,429	100.0
Not Eligible for Interview	850	35.0
Possibly Eligible for Interview	1,461	60.1
Eligibility Not Determined	118	4.9

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey.

A special screening operation was used to deal with the possible overlap between the original sample buildings constructed in 1979 and that portion of the new buildings sample drawn from the 1979 Dodge list. The goal was to identify those buildings for which construction began in 1979, but was not completed in time to have been covered by the original sample. A building was likely to have been field-listed for the 1979 NBECS if construction was at least 25 to 50 percent complete. The larger the building, the more time that was required for completion. Using this information and data from the Bureau of the Census's *Construction Reports*, a rule was developed for assigning buildings to either the original sample frame or the new building sample frame. This approximate "bounding" rule took into account the square footage of the building and the approximate construction startup date. For example, buildings of less than 10,000 square feet selected from the 1979 Dodge file were retained in the new building sample only if the startup date was July 1979 or later. On the other hand, all buildings with more than 1 million square feet were retained in the new building sample if the building had been started any time during 1979, because there was little chance that these buildings could have been sufficiently completed for inclusion in the original sample.

Appendix C

Data Quality --Technical Notes

Restaurants are included in the food sales and service buildings activity in this report. This category also includes carry-outs, fast food establishments, and supermarkets.





Data Quality -- Technical Notes

Introduction

This appendix contains five technical notes on the 1983 Nonresidential Buildings Energy Consumption Survey (NBECS). Note 1 deals with the ways that data are summarized in this report. The other four notes concern the accuracy of the NBECS estimates.

Notes 2 and 3 present in detail the adjustments that were made to the data to handle nonresponse bias. Because the NBECS was conducted in two parts, nonsampling errors or biases could have occurred in both. The first part of the NBECS (as detailed in Appendix A) consisted of questioning owners and managers of buildings to ascertain the characteristics of commercial buildings. The primary goal of the NBECS, however, was to produce estimates of (a) the energy consumed by commercial buildings in 1983 and (b) the amounts expended for that energy. Therefore, the second part of the NBECS gathered data on consumption and expenditures from the suppliers who furnished energy to the buildings sampled in the survey of buildings and their characteristics. Representatives of those buildings signed waivers permitting their suppliers to release data.

The two major types of nonresponse bias--unit nonresponse and item nonresponse--could affect NBECS estimates. "Unit nonresponse" refers to any eligible sample building for which no information was obtained. Usually those cases were caused by a representative's refusing to cooperate or being unavailable, or by an energy supplier's being unable to provide billing records for a sampled building. "Item nonresponse" means that the representative, or the energy supplier, being questioned could not respond to a particular questionnaire item (usually due to lack of knowledge). Note 2 describes the procedures used to handle nonresponse in the survey of buildings, and Note 3 describes the procedures used for the survey of suppliers.

Note 4 deals with sampling error--the random variability that arises when a sample of buildings, rather than the entire stock of buildings, is surveyed. If the survey (which is based on a sample of buildings) were to be conducted several times in any year, each fielding would yield different statistics--since each one would have sampled different buildings. Because probability sampling was used for the NBECS, given the single sample of buildings, estimates of sampling error could be computed for the survey statistics.

In Note 5, the estimates from this NBECS report on consumption and expenditures are compared to those from the 1983 report on characteristics of buildings and to those from the 1979 report on consumption and expenditures.

Note 1. Indices of Energy Usage: Individual Buildings Versus Aggregates

The main summary tables in the text give totals for number of buildings, square footage, energy consumed, and expenditures. Also shown in the tables are several indices of consumption and expenditures. These indices are ratio estimates, that is, ratios of pairs of totals. For example, dividing total consumption for a group of buildings by total square footage for the group gives the ratio estimate of consumption per square foot. Ratio estimates are analogous to familiar indices such as per capita income; they are useful for summarizing the whole population of buildings, as well as for studying overall consumption and expenditures.

It is important to distinguish between the ratio estimate (ratio of totals) which appears in the data tables, and the mean of individual buildings' ratios, which is not given in the tables. Mean consumption per square foot, for example, is computed by taking the ratio of consumption to square footage for each building in the population, and then averaging the individual ratios. It is important also to distinguish between the mean and a third type of statistic, the median. (By definition, half the individual values in the population are smaller than the median, and half are larger.) Median consumption per square foot, for example, is found by taking the median of the same set of individual ratios used to compute the mean consumption per square foot. These three types of statistics, the ratio of totals, the mean (or mean ratio) and the median (or median ratio), each provide a different kind of data summary. The main data tables provide only the first of the three.

To understand the relationship between the different types of statistics and the population they summarize, it is useful to consider the distributions of indices for individual buildings, across the whole population of interest. For many of the indices summarized in this report, a relatively small number of very large values make both the ratio of totals and the mean considerably larger than most of the individual values. For such indices, which have highly skewed distributions, most of the individual values are closer to the median than to the mean.

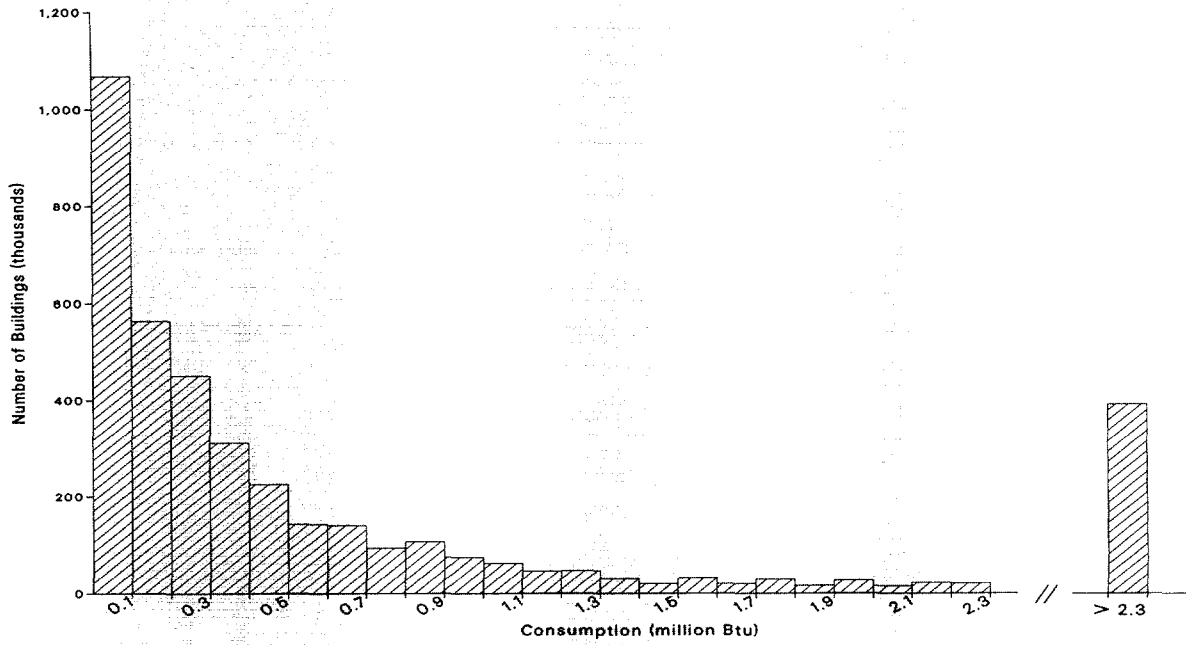
For example, for the Nation as a whole, total consumption of major fuels by building has a highly skewed distribution, as illustrated by the frequency histogram (Figure C1). The bar on the right of the histogram shows that in 1983 10 percent of the commercial buildings in the United States consumed more than 2.3 billion Btu. Even without this 10 percent of extreme values, however, the histogram is still quite skewed. The median consumption for a building was 294 million Btu, but 10 percent of the buildings consumed eight times that much.

Much of the skewness in energy consumption in buildings comes from the skewness in the sizes of buildings (Figure C2). The median size for commercial buildings was 4,100 square feet; 10 percent of the buildings (indicated by the bar on the right of the histogram) contained at least 26,000 square feet--more than six times the median.

The distribution of consumption per square foot was somewhat less skewed than consumption per building (Figure C3). Furthermore, for this ratio, the values for individual buildings were less spread out around the mean than was the case for consumption or square footage alone. The median consumption per square foot was 72,000 Btu. For 10 percent of the buildings, the consumption rate was at least 300,000 Btu per square foot--four times the median.

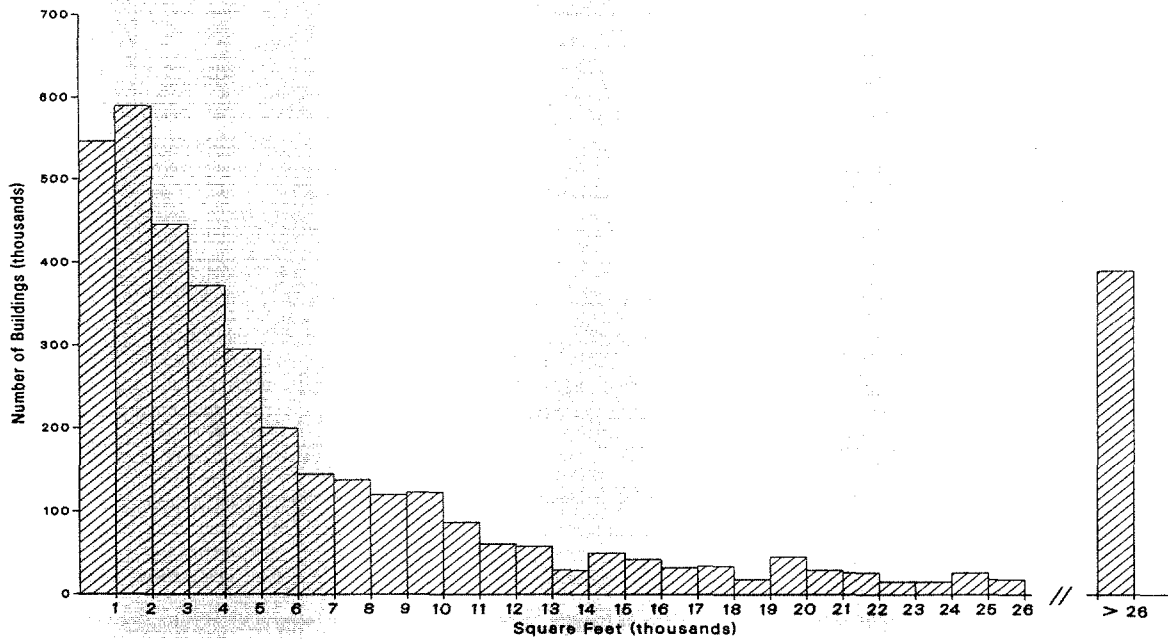
The skewness of the major indices used in this report is reflected in a comparison of the three types of summary statistics described above (Table C1). The statistics shown are national estimates for the sum of the five major fuels as well as for each fuel separately. For the indices of square footage per building, consumption per building, and expenditures per building, the ratio of totals is close to the mean; the median is considerably smaller (with one exception). For consumption per square foot and expenditures per square foot, however, the ratio of totals is close to the median ratio but the mean ratio is larger. For consumption per employee, although the ratio of totals, the mean ratio, and the median ratio differ greatly (by as much as a factor of 12), there is no consistent pattern in their relationships. For the cost variable (expenditures per million Btu), the three indices are similar for natural gas, fuel oil, and purchased steam; but for electricity and for all major fuels combined, the mean ratio is larger than the median or the ratio of totals. These differences (along with Figures C1 through C3) emphasize that although the ratio estimates do give the overall rates of consumption and of expenditures for a particular group, they may not represent a "typical" building.

Figure C1. Major Fuel Consumption per Building



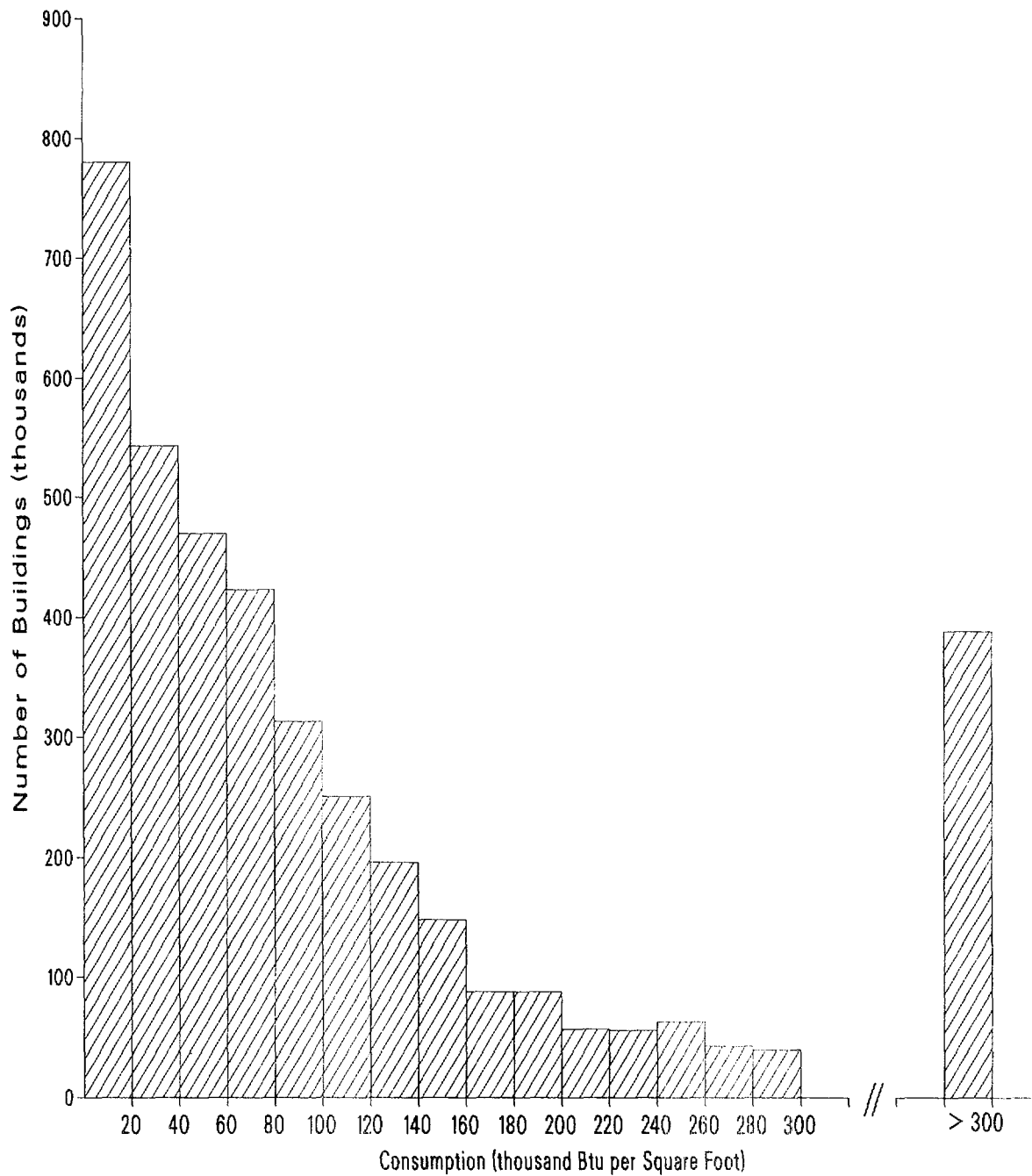
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey.

Figure C2. Square Footage per Building



Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey.

Figure C3. Major Fuel Consumption per Square Foot



Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey.

Table C1. Comparison of Ratio Estimate, Mean, and Median for Consumption and Expenditures by Major Fuel, 1983

Major Fuel	Square Feet per Building (thousand square feet)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)
All Major Fuels							
ratio of totals	13.6	1,364	100	66	15.7	1.16	11.50
mean ratio	13.6	1,360	210	109	15.6	2.69	19.08
median ratio	4.1	294	72	442	3.6	.88	13.03
Electricity							
ratio of totals	13.6	594	44	29	11.0	.81	18.58
mean ratio	13.6	591	104	388	11.0	2.05	43.61
median ratio	4.1	95	24	157	21.9	.54	22.78
Natural Gas							
ratio of totals	16.1	994	62	42	5.5	.34	5.52
mean ratio	16.0	955	147	92	5.3	.85	7.07
median ratio	5.0	224	51	33	1.4	.30	6.00
Fuel Oil							
ratio of totals	19.0	659	35	22	4.4	.23	6.69
mean ratio	21.0	557	64	61	3.7	.48	6.07
median ratio	5.1	130	32	20	1.0	.24	7.53
Propane							
ratio of totals	10.9	150	14	9	1.4	.13	9.38
mean ratio	11.6	139	50	19	1.3	.49	9.80
median ratio	3.5	63	20	11	.6	.19	9.87
Purchased Steam							
ratio of totals	77.5	5,028	65	36	45.8	.59	9.12
mean ratio	76.2	4,856	74	147	44.3	.71	8.91
median ratio	29.2	1,235	52	55	13.4	.48	9.10

Note: See Glossary for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Note 2. Nonresponse Adjustments for Characteristics of Buildings

Unit Nonresponse

In the 1983 NBECS, which gathered data on the characteristics of commercial buildings, some 11 percent of eligible buildings were unit nonrespondents, both in the original-buildings sample and in the new-buildings sample. This rate was slightly higher than the 8-percent nonresponse for the 1979 survey. The increase may be attributable to the fact that in 1983 the data on characteristics of buildings were collected by telephone, whereas in 1979 those data had been collected by personal interview. Still, the nonresponse rate for the 1983 survey is low in relation to many other surveys of its kind.

Weight adjustment was the method used to reduce unit-nonresponse bias in the survey statistics. The NBECS sample was designed so that survey responses could be used to estimate characteristics of the entire stock of nonresidential buildings in the contiguous United States. The method of estimation was to calculate basic sampling weights (base weights) that related the sampled buildings to the entire stock of nonresidential buildings. In statistical terms, a base weight is the reciprocal of the probability of selecting a building into the sample. A base weight can be understood as the number of actual buildings represented by a sampled building: a sampled building that has a base weight of 1,000 represents itself and 999 similar (but unsampled) buildings in the total stock of buildings. To reduce the bias for unit nonresponse in the survey statistics, the base weights of respondent buildings were adjusted upward, so that the respondent buildings would represent not only unsampled buildings but also nonrespondent buildings. The base weights of respondent buildings were multiplied by the adjustment factor A, defined as

$$A = \frac{W}{R}, \quad (1)$$

where W is the sum of the base weights over all buildings selected for the sample, and R is the corresponding sum over all respondent buildings. Respondent weights remained nonzero after weight adjustment. Nonrespondent weights were set to zero, because they were accounted for by the upward adjustment of respondent weights.

Unit nonrespondents tended to fall into certain categories. For example, nonresponse tended to be higher in the Northeast Census region than in the North Central region.¹¹ Thus, to reduce nonresponse bias as much as possible, adjustment factors were computed independently within subgroups created by sorting according to type of building, size of building, Census region, and metropolitan location. Additional (but less important) sorting characteristics were: heating fuels used, heating and cooling degree-day categories, age of building, number of workers, and percentage of floorspace heated and cooled. Because no data on these additional sorting characteristics were available for the new-buildings sample, those characteristics could not be used in forming weight-adjustment classes for these buildings.

The more characteristics used when sorting, the more detailed the subgroups and the lower the nonresponse bias. Unfortunately, however, this sorting also created higher weight-adjustment factors, tending to increase the standard errors for the survey statistics. The weight-adjustment factors were calculated by using as many sorting characteristics as possible while still maintaining an adjustment factor smaller than some prespecified value. Preliminary analyses of various sets of adjusted weights showed that the relative standard errors of estimates did not increase across a range of maximum allowable adjustment factors from 2 to 4. Therefore, adjustment factors as high as 4 were allowed, so that more detailed weight-adjustment subgroups could be used. But even with such a high allowable adjustment factor, only 2 percent of the adjustment factors calculated this way were higher than 2. The number of sorting characteristics that could be used varied from one weight-adjustment subgroup to the next, depending on where the constraint came into play for a given subgroup.

Since the original-buildings sample and the new-buildings sample represented nonoverlapping portions of the total stock of nonresidential buildings, separate weight adjustments for unit nonresponse were performed on each sample.

Item Nonresponse

Nonresponses to several items in otherwise completed questionnaires were treated by a technique known as hot-deck imputation.¹² In hot-decking, when a certain response is missing for a given building, another building, called a "donor," is 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. What characteristics were used to define "similar" depended on the nature of the item to be imputed. The most frequently used characteristics were: type of building, square-footage category, year-built category, and Census region. Other characteristics (such as type of heating fuel and presence of furnace or boilers) were used for specific items. The procedures used for the 1983 NBECS were identical to, or modifications of, the procedures that had been used for item imputation in the 1979 NBECS.

Three sets of imputation procedures were required to adjust the characteristics of NBECS buildings in 1983 to account for item nonresponse. The first was for double-respondent buildings in the original sample; the second, for original-sample buildings that responded only in 1983; and the third, for buildings in the new-buildings sample. In each of these three groups of buildings, different information was available for matching receivers with appropriate donors. Therefore three separate sets of imputation procedures were developed.

In the case of original-sample buildings that responded in both 1979 and 1983, hot-decking was used to impute for missing items. These hot-decking procedures, incorporating NBECS information from 1979, made donors of buildings that were similar to the nonrespondents, whenever both the donor and the receiver had the same 1979 value for a given missing item.

In the case of original-sample buildings that responded in 1983 only, the hot-deck procedures for item imputation were identical to those that had been used for hot-decking in 1979; they are described in the 1979 reports (Energy Information Administration 1981, March 1983, December 1983).

¹¹Detailed response rates are provided in the 1983 report on the characteristics of commercial buildings, Table B1 (Energy Information Administration 1985, p. 147).

¹²Item-nonresponse percentages for characteristics of buildings are given in Table B2 of the 1983 report on characteristics of commercial buildings (Energy Information Administration 1985, pp. 151-152).

In the case of the new-buildings sample, the hot-deck procedures for item imputation were also very similar to those that had been used for hot-decking in 1979. However, those procedures were modified to make use of the information from the Dodge construction-project slips in categorizing donor and receiver buildings. Information from Dodge construction slips was used in developing the imputation cells to use in the hot-deck imputation for the number of floors and square footage.

Note 3. Annual Consumption and Expenditures

To assure that 1983 consumption would be completely accounted for, the data requested from suppliers were bills that covered the period from December 1982 to January 1984. These bills formed the basis for the estimates, published in this report, of energy consumed annually and expenditures for it. This Note describes the procedures that were used to convert the bills into annual estimates ("annualization") and to impute for item and unit nonresponse.

The energy sources covered by the NBECS energy-supplier survey can be divided into two broad types: continuous-delivery fuels and discrete-delivery fuels. Differences in the type of delivery required differing annualization procedures.

The major continuous-delivery fuels in the NBECS were electricity, natural gas, and purchased steam. Continuous-delivery fuels are transmitted from the suppliers to the building as needed for immediate use; ordinarily such fuels are not stored. Consumption of these fuels is usually measured by meters or gauges attached to the transmission medium (wires or pipes). Billing for continuous-delivery fuels is done on the basis of reading gauges or meters, usually at regular intervals. The amounts on a bill show the actual amount of fuel consumed since the last meter reading, as well as how much that consumption has cost.

Fuel oil and propane were the major discrete-delivery fuels in the NBECS.¹³ Discrete-delivery fuels are delivered in bulk to a building, then stored there and consumed as needed. Since the quantities of these fuels are measured when they are delivered, the billing data collected in the fuel-supplier survey show deliveries of the energy source that were made on a particular date. Bills for discrete-delivery fuels are based on how much was delivered; but that amount may not equal the amount consumed since the previous delivery. If the total standing inventory is essentially the same at the end of the year as it was at the beginning, consumption for a given building should be roughly equal to deliveries for a period as long as a year. Therefore, throughout this report, calendar-year deliveries of discrete fuels were used as a surrogate for calendar-year consumption.

Producing annual estimates for consumption and expenditures required three sets of procedures: (1) determining which bills represented the consumption and expenditures of sampled buildings during 1983; (2) imputing for items missing from the bills; and (3) imputing for missing sets of bills.

Determining 1983 Consumption and Expenditures for Sampled Buildings

Ideally, the data for each continuous-delivery fuel used in each sampled building would have been in the form of complete records for consecutive billing periods¹⁴ either totally or partially contained in calendar year 1983, covering exactly the energy consumed within each sampled building. The data for each discrete-delivery fuel would have been in the form of complete data records for all deliveries from December 1982 through January 1984. For both types of fuel, the delivered fuel would have been used entirely within the sampled building.

But the actual data were rarely in a directly usable form. There were three major problems in determining which bills represented 1983 consumption in a sampled building.

1. The bills may have included some energy consumed outside the sampled building. The data could have covered energy consumed in other buildings; energy consumed for outside lighting, signs, and security equipment; or energy consumed in activities affiliated with (but not carried on inside) the sampled building.

¹³Data for other discrete-delivery fuels (such as coal and wood) were obtained for too few buildings to allow national estimates of consumption or expenditures to be made.

¹⁴A billing period is the time period between two adjacent estimates or meter readings for purposes of billing a customer. A meter-reading date or billing date marks the end of a billing period. The next billing period begins on the following day.

2. When several sampled buildings in an energy-supplier's service area did not grant a waiver allowing data on consumption and expenditures to be collected from that supplier, the supplier was asked to supply aggregate data for all such buildings. The aggregation procedure was done to protect the confidentiality of the buildings that did not grant waivers, while still collecting combined data on their consumption and expenditures.

3. Most of the cases of complete reporting of 1983 data for continuous-delivery fuels included billing periods that overlapped into 1982 and 1984. To handle this difficulty, prorating procedures had to be developed to exclude whatever part of consumption and expenditures for December 1982 and January 1984 was included in the full set of bills.

Adjusting for Coverage of Multiple Buildings. To obtain annualized estimates of consumption and expenditures for a sampled building whenever the data provided by the energy supplier covered more than that building, some form of disaggregation had to be used. There were two ways that a bill could have covered more than one building. One way was that data for a sampled building were included with data from nonsampled buildings. The other way was that data from two or more sampled buildings were added together. Since the amounts of information about the other included buildings differed, different procedures were used to disaggregate the consumption and expenditures for each sampled building.

In some cases, sampled buildings were included with nonsampled buildings. To disaggregate the bills in such cases, more information was needed. Therefore, the energy suppliers were asked on the energy-supplier survey questionnaire whether the data included buildings other than the sampled building. If so, the energy suppliers were also asked the approximate square footage of the other buildings. If an energy supplier was able to provide information on the square footage of other included buildings, then the data on consumption and expenditures were adjusted in proportion to the square footage of the sampled building. The reported consumption and expenditures were multiplied by the ratio of the square footage of the sampled building to the square footage of all the buildings included in the bill. If the energy supplier was not able to estimate the square footage of the other included buildings, then the data on consumption and expenditures had to be treated as missing. (See the section "Imputing for Completely Missing Consumption and Expenditures," in this Note.)

In the case of groups of sampled buildings for which data from energy suppliers were aggregated (because waivers were not obtained for those buildings), a different procedure was used to allocate consumption and expenditures to individual buildings. For these buildings, all the information collected in the survey on characteristics of buildings was available--not just the energy-suppliers' estimates of square footage. To make the best use of the available data, a two-stage procedure was used. First, a value was imputed for each building in the aggregate, by means of the regression equations for completely missing data. Then the aggregate total was allocated among the individual buildings in proportion to the imputed values.

Adjusting for Data from Before and After 1983. One of the main reasons that the NBECS requested data from energy suppliers for the period from December 1982 through January 1984 was to make certain that 1983 consumption would be completely accounted for in cases of complete response. But unless a billing period happened to end on December 31, 1982, or December 31, 1983, consumption as reported by the energy suppliers ran over from the desired period of calendar 1983--back into 1982 and forward into 1984. For these cases, procedures had to be devised to trim away the excess data. At this point it was important to distinguish between continuous-delivery and discrete-delivery sources of energy.

For continuous-delivery fuels, consumption and expenditures for a billing period extending into 1984 were adjusted by splitting the overlap into two subperiods, one running from the beginning date through December 31, the other from January 1 through the last billing (or meter-reading) date. Consumption and expenditures were prorated according to the number of days in each subperiod. The consumption and expenditures for the subperiod that fell in 1983 were included in the total expenditures and consumption for 1983. An analogous procedure was used for a billing period extending into 1982. It may not be correct to assume that continuous-delivery fuels were consumed at a constant rate throughout the billing period for any particular building. However, the procedure should yield approximately unbiased overall estimates.

Data on discrete-delivery fuels were not influenced by whether billing periods extended before or after 1983. For those fuels, all the deliveries during 1983 were accumulated. The ending dates on the bills were used to determine which ones were for deliveries during 1983. Since there was not necessarily any connection at all between billing dates and consumption (unlike the case of continuous-delivery fuels), no attempt was made to prorate bills.

Imputing for Missing Items or Bills

In the ideal case, all sets of bills from a given energy-supplier for a given building and fuel would have been complete, and all the key items (dates, amounts consumed or delivered, and expenditures) would have been furnished on all the bills. After the adjustments for overcoverage had been made, the amounts consumed (or delivered) and the corresponding expenditures could simply be summed, and annualization would be complete for that building and that energy source.

However, in many cases some or all of the items required for annualization were missing. This section describes the methods used to impute for three items: (1) missing dates, (2) partially missing consumption, and (3) partially missing expenditures. Cases in which either all bills were missing, or consumption or expenditures were missing from all bills, are dealt with in the section "Imputing for Completely Missing Consumption and Expenditures."

Imputing for Missing Dates. Missing dates were a problem only for continuous-delivery fuels. Missing dates did not matter for fuel oil or propane, as long as all deliveries made in 1983 could be identified.

For continuous-delivery fuels, virtually all missing meter-reading dates or billing dates were of either of two types. The first type of omission occurred for the first record in each set of bills. Since the billing date (or meter-reading date) was used to define the end of one billing period and the beginning of the next, the beginning date of the first (chronological) billing period was never available; there was no previous billing date to define it. Other billing (or meter-reading) dates that were incomplete usually included the month and the year but not the day. For each case of this second type, the billing periods affected were either bounded (surrounded by billing periods with known beginning and ending dates), or unbounded (either at the beginning or end of the set of billing periods).

Any set of consecutive bounded billing periods with missing dates was assigned billing dates that would make all billing periods in the set have as close to the same number of days as possible. Unbounded billing periods were assigned beginning and/or ending dates as needed so that the number of days in each unbounded period was the same as the average number of days in billing periods of known length.

In some cases, the month and the year were present but the day was missing for the beginning and ending dates of all billing periods on a record. These cases were imputed by assigning the number 16 to each beginning date and the number 15 to each ending date.

Partially Missing Consumption: Continuous-Delivery Fuels. For many buildings, data were lacking on consumption and/or expenditures in all or part(s) of 1983. The procedures used for imputation in such cases varied by type of energy source (continuous-delivery or discrete-delivery).

For continuous-delivery fuels, the number of reported days of consumption was at least as large as the number of reported days of expenditures--for almost all sets of bills. The major problem was to find methods of imputing for missing consumption. Once consumption was imputed, expenditures were imputed from the actual and imputed consumption data.

For consumption of continuous-delivery fuels, the imputation method varied according to the amount of reported data available. The number of days in each billing period for which data on 1983 consumption were available was calculated and summed over all billing periods. If the consumption data were complete (available for 365 days), it was unnecessary to impute consumption. But if the data were incomplete, the sets of bills were examined to determine whether the energy supplier had reported consumption data for periods in 1982 or 1984 that corresponded to part or all of the periods of missing data in 1983. If data on consumption were available for corresponding periods in the adjacent year, those data were transferred to 1983. If data from 1982 or 1984 consumption overlapped into periods of known consumption in 1983, those data were removed by the prorating operation described in the previous section. If the periods of transferred consumption had corresponding data on expenditures, those data were transferred as well.

If the number of days was 30 or less, even after making transfers, then the consumption was treated as being completely missing. The remaining cases were split into two subgroups: (1) cases whose periods of reported or transferred consumption covered 331 days or more in 1983, and (2) cases whose periods of reported or transferred consumption covered 31 to 330 days in 1983. For each subgroup, a separate procedure was devised to impute consumption. Table C2 shows the number of cases that had complete data and the number that fell into each imputation group for the three continuous-delivery energy sources.

Table C2. Days of Reported (or Transferred) 1983 Consumption Data for Electricity, Natural Gas, and Purchased Steam

Number of Days of Consumption Data	Electricity		Natural Gas		Purchased Steam	
	Number of Buildings	Percent	Number of Buildings	Percent	Number of Buildings	Percent
All Buildings	6,181	100.0	4,065	100.0	477	100.0
365 Days	4,731	76.5	3,293	81.0	308	64.6
331 to 364 Days	107	1.7	32	.8	3	.6
31 to 330 Days	362	5.9	116	2.9	7	1.5
30 or Fewer Days	981	15.9	624	15.4	159	33.3

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

There were two procedures for imputing partially missing data on the consumption of continuous-delivery fuels. The method used depended on the number of days for which data were available.

1. Imputing when data for at least 331 days were available. If a period of missing consumption was bounded by periods for which reported or transferred consumption was available, the average consumption per day was computed for the two enclosing periods. The result was multiplied by the number of days in the period of missing consumption, producing an estimate for the period. If the period of missing consumption was not bounded, the average consumption per day was computed for the adjacent billing period, then multiplied by the number of days of missing data, to produce an estimate of consumption.

2. Imputing when data for 31 to 330 days were available. The set of cases that had 331 days or more of reported consumption served as a pool of potential donor records for these imputations. Imputations for buildings with 331 to 364 days of reported consumption were completed first, so that each potential donor record had reported or imputed consumption for the entire period from January 1 through December 31, 1983. For cases of 31 to 330 reported days of consumption, a donor was randomly selected from the subset of buildings in the same climate zone, in the same building activity category, and in the same end-use category for heating and air conditioning as the receiver (the building needing imputation).

Once a donor case had been selected, the consumption of the donor was calculated for the period corresponding to the period for which data were reported for the receiver. Data on the donor were prorated as necessary. The imputed total annual consumption for the receiver was then estimated as

$$R(t) = \frac{D(t)}{D(r)}R(r), \tag{2}$$

where R(t) was the estimated total consumption for the receiver, R(r) was the (incomplete) reported consumption for the receiver, D(t) was the total consumption for the donor, and D(r) was the consumption for the donor during the period for which the receiver did report data.

Partially Missing Expenditures: Continuous-Delivery Fuels. Imputations for expenditures were performed after all imputations for partially missing consumption had been made, because (1) consumption data were usually more complete than expenditures data and (2) with a value for consumption, the expenditures could be estimated without a great deal of difficulty.¹⁵

The imputation procedure used for missing data on expenditures for continuous-delivery fuels was determined by the number of days of reported data that were available (Table C3).

¹⁵The cases in which expenditures were reported in more periods than was consumption had either partially missing consumption or completely missing consumption. If partially missing, the consumption was regressed on the corresponding expenditures for the set of complete bills from a given building, and the resulting regression equation was then used to impute for the periods of missing consumption. If the consumption was completely missing, then the inverse of the regression developed for completely missing expenditures was used (regressing annual consumption on annual expenditures across buildings).

Table C3. Days of Reported (or Transferred) 1983 Expenditures Data for Electricity, Natural Gas, and Purchased Steam

Number of Days of Expenditures Data	Electricity		Natural Gas		Purchased Steam	
	Number of Buildings	Percent	Number of Buildings	Percent	Number of Buildings	Percent
All Buildings	6,181	100.0	4,065	100.0	477	100.0
365 Days	4,011	64.9	3,055	75.2	272	57.0
31 to 364 Days	1,017	16.4	323	7.9	19	3.9
30 or Fewer Days	1,153	18.7	687	16.9	186	39.0

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

If 30 or fewer days of expenditures were reported, the expenditures were treated as being completely missing. If 31 to 364 days were reported, the expenditures were imputed on the basis of costs estimated from the complete bills within the set of bills for a given building.

If the expenditures were missing from either the beginning or the end of the year, the cost (expenditures divided by consumption) was calculated for the nearest adjacent billing period for which both expenditures and consumption had been reported. Then this cost was multiplied by the reported (or imputed) consumption in the period for which expenditures were missing. This computation gave the imputed expenditures.

If the data on expenditures were missing from a period other than beginning or end of the year, the average cost in the two periods bounding the period was calculated. Then this average cost was multiplied by the reported (or imputed) consumption, yielding the estimated expenditures.

Partially Missing Data: Discrete-Delivery Fuels. For discrete-delivery sources of energy, the billing dates are not linked to the time of consumption. Thus, for those energy sources, the annualized data represent the total deliveries of fuel during the year. Furthermore, unlike bills for continuous-delivery energy, discrete-delivery energy bills tend to be irregularly spaced. Gaps between bills could represent either missing data or periods during which no deliveries were required. The completeness of a set of bills was determined by referring to suppliers' reports. If a supplier stated that a set of bills was complete for the year, the set was treated as complete. If no such statement was forthcoming, the set was treated as missing, even if a partial set of bills was available. Tables C4 and C5 show the numbers of sampled buildings according to the completeness of the reported discrete delivery data.

Table C4. Amount of Reported (or Transferred) 1983 Consumption Data for Fuel Oil and Propane

Amount of Consumption Data	Fuel Oil		Propane	
	Number of Buildings	Percent	Number of Buildings	Percent
All Buildings	1,060	100.0	324	100.0
Complete	687	64.8	221	68.2
Partial	3	.3	1	.3
Missing	370	34.9	102	31.5

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table C5. Amount of Reported (or Transferred) 1983 Expenditures Data for Fuel Oil and Propane

Amount of Expenditures Data	Fuel Oil		Propane	
	Number of Buildings	Percent	Number of Buildings	Percent
All Buildings	1,060	100.0	324	100.0
Complete	671	63.3	217	67.0
Missing	389	36.7	107	33.0

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

A building rarely had more than one supplier for a continuous-delivery fuel, such as electricity. But a building often would have multiple suppliers for discrete-delivery fuels, such as fuel oil. If data were missing for at least one of several suppliers, these buildings were treated as if no data were available—even though the suppliers that did respond might have reported all their 1983 deliveries.

Imputations for both deliveries and expenditures made use of the observed cost(s). There were two cases to distinguish in making imputations: data might be missing from the beginning or end of the year, or they might be missing from some other part of the year. If data were missing from either the beginning or the end of the set of bills, the cost (expenditures divided by the amount delivered) was calculated in the adjacent period. If the missing data were the amount delivered, the imputed amount was obtained by dividing this cost into the expenditures reported for the period with missing data. If the missing data were the expenditures, the expenditures were imputed by multiplying this cost by the quantity delivered.

If, however, the data were missing from some bill other than the first or the last of the year, the cost was calculated in the two adjacent periods. Designating the cost in the earlier period (on date *i*) "cost(*i*)" and the cost on the trailing period (on date *j*) "cost(*j*)," an average cost for the missing billing date, "cost(*x*)," was interpolated in the following way:

$$\text{cost}(x) = \text{cost}(i) + (\text{cost}(j) - \text{cost}(i)) \frac{\text{number of days between } i \text{ and } x}{\text{number of days between } i \text{ and } j} \quad (3)$$

If expenditures were missing, then the imputed expenditures were equal to cost(*x*) times the quantity delivered on date *x*. For missing deliveries, the reported expenditures were divided by cost(*x*) to obtain the imputed amount delivered.

Imputing for Completely Missing Consumption and Expenditures

In a significant fraction of cases, the energy supplier did not provide the data on consumption or expenditures for some or all billing periods or deliveries in 1983. There were varying reasons for the lack of data. Sometimes an energy supplier refused to provide data; sometimes billing records had been archived, lost, or destroyed; and sometimes the respondent from a building being surveyed refused to sign the waiver.

There were also cases in which the energy supplier provided data but there were problems with them. For example, data concerning the building might be combined with that of nonsampled buildings (so that they could not be disaggregated); or the data on consumption and/or expenditures might be so incomplete that they had to be treated as missing.

The general analytical approach to the problem of imputing annual consumption or expenditures was to annualize the complete or partial sets of bills first, and then to use those annualized bills in regression equations to develop imputed values for the data that were totally missing. The regression approach to imputation was chosen because data from the survey on the characteristics of buildings were already available for all of the buildings lacking energy-supplier data. The first step was to estimate the missing consumption on the basis of characteristics of buildings. After the consumption had been imputed, missing expenditures were estimated on the basis of the reported or imputed consumption.

Completely Missing Consumption. Each of the five major fuels examined in this report was imputed separately, although the overall methodology was similar for each. Therefore, this section will describe the imputation for consumption in general terms, referring to individual fuels only where necessary.

The data used to specify regression equations and to estimate the regression parameters used for imputing consumption had to meet several criteria. First, only cases with essentially complete consumption data were used. For continuous-delivery fuels, "essentially complete data" included buildings with 331 to 365 days of reported consumption; for discrete-delivery fuels, only buildings with completely reported deliveries were included. Second, any cases with data that were reported on forms with nonsampled buildings (cases that had therefore been disaggregated in proportion to square footage) were eliminated. Finally, any buildings with imputed values for characteristics used as predictors in the regression equations (such as square footage or number of employees) were also eliminated.

The equations had to meet certain criteria. For imputation purposes, the equations had to predict the consumption of buildings adequately in relation to their structural characteristics. Simplicity and ease of estimation were also important considerations.

The first step in developing regression equations was to examine the distributions of the dependent variable, consumption. The distributions were found to be highly skewed. For example, annual consumption of electricity ranged from several kilowatthours (kWh) to several hundred million kWh. The skewness of these distributions suggested that a transformation of the dependent variable would be useful. The logarithmic (log) transformation, square-root transformation, and several other power transformations for consumption of electricity and natural gas were evaluated by means of Box-Cox transformations (Draper and Smith 1981), in conjunction with some preliminary consumption regression functions. The results of these evaluations showed that the log transformation of consumption was most appropriate.

With a functional specification for the dependent variable determined, the next consideration was the potential regressor variables. Just as the consumption variable was highly skewed, so too were some of the potential regressor variables. Square footage, for instance, varied from less than a hundred square feet to more than a million. Transformations of independent variables were evaluated by simple regressions of the log of consumption on various transformations of each potential quantitative variable. Plots of residuals versus predicted values from these simple regressions were also examined. As a result of these analyses, several key potential regressor variables--such as the number of employees, square footage, and heated square footage--were also transformed to the log scale.

As the development of the regression equations proceeded, it became apparent that the principal activity within the building was an important determinant of consumption. Therefore, for electricity and natural gas, separate equations were developed for each of the 11 principal categories of activity within a building. For fuel oil, propane, and purchased steam, the sizes of the samples were too small to permit regression equations to be fit by principal activity within the building. A total of 25 equations were developed--one for each of the 11 principal activities within a building for electricity and for natural gas, and one each for fuel oil, propane, and steam.

The equations developed for the log of consumption were fit by means of ordinary least squares. Although examining the residuals helped to isolate some reporting errors, the process generally showed approximately normally distributed, homoscedastic residuals. However, the goal was to impute consumption, not the log of consumption. As an estimate of consumption, the back-transformed log prediction is a biased one.

If the log of consumption has a normal distribution with mean M and variance V , the expected value of consumption is $\exp(M + V/2)$, not simply $\exp(M)$. If the predicted value from the log regressions, m , is used as an estimate for M , and the mean square error, v , is used as an estimate for V , then

$$\exp(M + V/2) = \exp(M) \times \exp(V/2). \quad (4)$$

Since $\exp(V/2)$ is greater than one, the biased estimator, $\exp(M)$, underestimates consumption (except in the case where a perfect linear relationship exists in the log regressions so that V is zero).

Although the theoretical result shows that the back-transformed logs are biased, it also suggests two methods of correcting the bias. The consumption values could be imputed in one of two ways:

1. theoretically--using the expected value of the log-normal distribution to let the predicted consumption equal $\exp(m + v/2)$, where m is the estimated value in logs and v is the mean square error from the log regression; or
2. empirically--relying on the linear form of the expectation to specify the functional relationship

$$\text{consumption} = b \times \exp(m), \quad (5)$$

where m is the predicted value from the log regression and b is a regression coefficient.

If the consumption actually followed the log-normal distribution, and if the data were otherwise "well behaved," the coefficient, b , should equal $\exp(v/2)$, and the two methods would yield identical results.

However, in a test of the two methods by means of the 25 imputation equations, the theoretical estimator, $\exp(m + v/2)$, almost always overestimated the consumption--sometimes by substantial amounts--whereas the empirical estimator showed very little bias and was more accurate. The overestimates obtained by means of the theoretical estimator can be attributed to two factors: (1) a distribution of residuals with heavier tails than the normal distribution and (2) contamination by outliers. Both of these situations would cause larger values for the mean square error than would be obtained from a set of residuals from a pure normal distribution. Accordingly, the consumption values were calculated using parameter values estimated from two regressions, (1) an initial regression of log consumption on structural characteristics, and (2) a bias-correction regression. The bias-correction regression was estimated by weighted least squares, using as weights the reciprocal of the deviation of the actual value from the back-transformed predicted value (from the log regression).

Completely Missing Expenditures. In the case of imputations for expenditures, each of the five major fuels presented in this report was also treated separately, although with a similar overall methodology. Like the section dealing with consumption, this section will describe the imputation of expenditures in general terms, referring to individual fuels only where necessary.

The rate schedules of energy suppliers are usually structured so that the cost per unit of energy decreases as consumption increases. The rate schedule is usually a step function in which the definition of steps and rates varies from one supplier to the next. Unfortunately, both the identity of the energy suppliers and the relevant rate schedules were unknown factors. Therefore, a statistical procedure was needed to relate the expenditures to the consumption for imputation purposes.

The data used to specify the form and to estimate the parameters of the regression equations used for imputation had to meet two criteria. First, only cases with "essentially complete data" on consumption and expenditures were used. For continuous-delivery fuels, "essentially complete data" included buildings with 331 to 365 days of reported data for both consumption and expenditures; for discrete-delivery fuels, only buildings with completely reported deliveries and expenditures were included. Second, any cases in which data were reported on forms with nonsampled buildings (cases that had therefore been disaggregated in proportion to square footage) were also eliminated.

As a first step, expenditures were plotted against consumption. Since both distributions were highly skewed, the log of expenditures was also plotted against the log of consumption. The latter set of plots disclosed a basically linear relationship between the log of expenditures and the log of consumption. The only noticeable departure from linearity was found at the low values of consumption of electricity and natural gas. There the log of expenditures seemed to be unrelated to the log of the consumption. This cutoff seemed to be caused by the connect charges for these two fuels--charges that dominated the total expenditures for low values of consumption. The breakpoint occurred at approximately 1,000 kWh for electricity and at approximately 10,000 cubic feet for natural gas. Therefore, buildings with annual consumption below those values were eliminated from the regressions described below.

The approximately linear relationship observed between the log of expenditures and the log of consumption suggested an equation of the form

$$\log(\text{expenditures}) = a + b \times \log(\text{consumption}) \quad (6)$$

for consumption above the cutoff. Transformed back from the log scale, this equation becomes

$$\text{expenditures} = a \times \text{consumption}^b, \quad (7)$$

which is a plausible relationship. If b equals 1, the parameter a can be interpreted as the rate per unit of consumption. If b is less than 1, then the equation describes a situation in which the rate per unit of consumption declines with increasing consumption.

The above equation was tested as a description of expenditures for electricity and natural gas overall, and also within each Primary Sampling Unit (PSU). Since it is a fairly compact geographic unit, the PSU served as a surrogate for a supplier's territory. The estimates were significantly improved when the model was fit by PSU. Therefore, the parameters, a and b , were estimated separately within each PSU for expenditures of electricity and natural gas. The size of the NBECS sample was insufficient to support within-PSU estimation for fuel oil, propane, and purchased steam, however. For these three fuels, the two parameters were estimated within a Census region.

As for consumption, the equations for the log of expenditures were fit using ordinary least squares. However, the transformation bias was negligible for the expenditures regressions, since the R-square was generally high--often exceeding .990. In preference to introducing another estimation step, the imputed value for missing expenditures was calculated by simply using the estimated values for a and b from the log regression.

If the reported or imputed value of electricity consumption for a building with missing expenditures was less than 1,000 kWh, the expenditures were calculated as though the consumption were 1,000 kWh (the breakpoint identified in the plots of the log of expenditures versus the log of consumption). The same procedure was followed for natural gas, using a cutoff of 10,000 cubic feet for consumption. No cutoff on consumption was used for fuel oil, propane, or purchased steam.

Note 4. Sampling Error

One component of total survey error that can be estimated is sampling error. Sampling error occurs because the different samples that could be drawn would each produce different values for the survey statistics. The magnitude of the sampling error is measured by the variance, which is the expected squared difference between (1) the estimate based on the sample and (2) the true value in the target population.

For some types of surveys, a convenient algebraic formula for computing variances can be obtained. However, the NBECS used a list-supplemented, multistage area sample design of such complexity (see Appendix B: "Sample Design") that it is virtually impossible to construct an exact algebraic expression for estimating variances. Instead, the method used to estimate sampling variances for this survey was balanced half-sample replication (National Center for Health Statistics 1966, 1969). This numerical method involves pairing primary sampling units (PSU's) in strata so that differences between the members of each pair can be used to build an estimate of sampling variance. The strata containing the 79 PSU's were collapsed to 37 strata in order to achieve this pairing of PSU's. Nineteen of these strata consisted of non-self-representing PSU's belonging to the same Census regions, with one or more PSU's constituting each member of a pair. The remaining 18 strata were each composed of one self-representing PSU or more; that is, they consisted of large metropolitan areas that came into the sample with certainty. In each of the latter strata, all of the PSU's were treated as a composite PSU, while the segments within the composite PSU were segregated into two groups representing the two members of a pair. There was no between-PSU component of variance for self-representing PSU's.

Half-sample replication involved repeatedly drawing pair members from the 37 strata. Each replication is called a "half-sample" because only one member of the pair within each of the 37 strata is selected. The sampling weights of buildings in any selected member are adjusted upward so that they represent not only themselves but all buildings in the stratum. In this way, each half-sample can produce unbiased survey statistics based on roughly one-half of the data. Using different combinations of members from the 37 pairs, it is possible to produce a total of 137 billion unique half-samples. Although desirable for good variance estimation, a large number of half-samples would be computationally infeasible. However, the method of balanced half-sample replication (National Center for Health Statistics 1966) allows a small number of half-samples (approximately equal to the number of strata) to produce estimates of variance that are identical to estimates based on all possible unique half-samples for linear survey statistics. With this balancing method, each half-sample is constructed by using an orthogonal matrix adapted from Plackett and Burman (1946) to control the selection of pair members from strata. Thus, for the NBECS, 40 balanced half-samples were used in variance estimation.

The variances are estimated from the half-sample statistic in the following way. Let X' be a survey estimate of characteristic X for a certain category of buildings (for example, total consumption of natural gas in the West Census region). Then, the estimated variance of X' is given by

$$S^2_{X'} = (1/40) \sum_{i=1}^{40} (X'_i - X')^2, \quad (8)$$

where X'_i is the i th half-sample estimate of X . The standard error of X' is given by:

$$S_{X'} = \sqrt{S^2_{X'}}. \quad (9)$$

The relative standard error (percent) of X' is given by:

$$RSE(X') = (S_{X'} / X') \times 100. \quad (10)$$

Effects of Missing Data on Variance Estimation

As discussed in Note 3, missing data on consumption and expenditures were imputed to minimize the nonresponse bias in the survey statistics. When imputations are required, the variance of a survey statistic increases because of an additional component of variance due to error in the imputations themselves. Balanced half-sample replication estimates of variance account for this component due to imputations, but only if the imputations are performed within "pair-members."

Recall, from Note 3, that when fewer than 31 days of consumption were reported for a building, multiple linear regression was used to impute for the missing consumption. These regression models could not be fit independently within pair-members (due to data limitations) but were fit using any applicable data across all sampled buildings. That is, the regression procedures "crossed" the boundaries between respective pair-members. Thus, the component of error due to the regression imputation could not be accounted for by balanced half-sample replication as it was applied. More important, regression imputations that crossed boundaries between pair-members introduced an artificial homogeneity in the data. That artificial homogeneity caused variances to be underestimated. Thus, it was decided to exclude from variance computations any buildings with consumption imputed by regression.

Approximately 15 percent of sample buildings using electricity or natural gas have consumption imputed for by regression. Regression was used to impute consumption for 35 percent of sample buildings using fuel oil, 32 percent using propane, and 33 percent using steam. Of course, the percentage of buildings that were excluded from variance calculations varied from one survey statistic to the next, since these statistics represented different subgroups.

When a survey statistic involved only a single type of fuel, it was a simple matter to exclude buildings from variance calculations if the consumption of that fuel had been imputed by regression. However, many survey statistics were composed of the aggregate consumption of the five major fuels. For these statistics, it was decided to exclude a building from variance estimation only if more than 50 percent of the total consumption in the building (in Btu) was from fuels that required regression imputation. This procedure was a compromise between the extremes of excluding a building with any regression-imputed consumption (thereby excluding any actual consumption also), and retaining all buildings in the variance calculations (thereby understating the variances because the regression imputations crossed pair-member boundaries). Overall, approximately 18 percent of sample buildings had more than 50 percent of their consumption imputed by regression. Again, the actual percentage of buildings excluded from variance calculations varied from one survey statistic to the next, depending on the subgroup involved.

Generalized Variances

For every estimate in this report, a relative standard error (RSE) was computed by the methods described above. Space limitations prevent publishing the complete set of RSE's with this document.¹⁶ Instead, a generalized variance technique is provided, by which the reader can compute an approximate RSE for each of the estimates in the detailed tables. For an estimate in the *i*th row and *j*th column of a particular table, the approximation $RSEA(i,j)$ for the original $RSE(i,j)$ is given by the simple formula

$$RSEA(i,j) = R(i) C(j), \quad (11)$$

where $R(i)$ is the RSE row factor given in the last column of row *i*, and $C(j)$ is the RSE column factor given at the top of column *j*.

The use of the row and column RSE factors is illustrated in Figure C4, for a portion of the first page of Table 5. Using the third row of the table, labeled "Natural Gas," and fourth column, labeled "Total Amount Consumed," gives an estimate of 4.084 quadrillion Btu for the total energy consumed in buildings using natural gas. The RSE row factor is $R(3) = 5.90$. The RSE column factor is $C(4) = 1.262$. The approximate RSE for the estimate is therefore

$$RSEA(3,4) = (5.90)(1.262) = 7.45 \text{ percent.} \quad (12)$$

This value for the RSE can be used to construct confidence intervals and to perform hypothesis tests, as described below. However, because the generalized variance procedure gives only approximate RSE's, such confidence intervals and statistical tests must also be regarded as only approximate. For the example above, the original RSE determined by the half-sample method is actually 7.26, not 7.45. The question of how well the RSE's computed from the row and column factors can generally be expected to approximate the original RSE's is discussed below.

Derivation of Row and Column Factors. The row and column factors are determined from a two-factor analysis of the table of RSE's, on the basis of the model

$$\log RSEA(i,j) = m + a(i) + b(j). \quad (13)$$

The least-squares estimates for this model are given (Cochran and Cox 1957) by

¹⁶The full set of RSE's will be included in *Nonresidential Buildings Energy Consumption Survey: Commercial Buildings Consumption and Expenditures, 1983: A Supplemental Reference* which will be available from the National Technical Information Service.

Figure C4. Use of RSE Row and Column Factors

Building Characteristics	All Buildings Using One or More Major Fuel		Square Feet per Building (thousand square feet)	Total Amount Consumed (quadrillion Btu)	Energy Consumed per Building (million Btu)	Energy Consumed per Square Foot (thousand Btu)	Energy Consumed per Employee (million Btu)	Total Expenditures (million dollars)	Expenditures per Building (thousand dollars)	Expenditures per Square Foot (dollars)	Expenditures per Million Btu (dollars)	RSE Row Factor	
	Number of Buildings (thousands)	Square Feet (millions)											
	RSE Column Factor:	1.031	1.183	0.875	1.262	1.119	0.950	1.053	1.274	1.113	0.934	0.501	
All Buildings	3,774	51,280	13.6	5.150	1,364	100	66	59,242	15.7	1.16	11.50	4.97	1
Fuel Used Alone or In Combination*													
Electricity	3,764	51,146	13.6	5.145	1,367	101	66	59,217	15.7	1.16	11.51	4.96	2
Natural Gas	2,239	36,088	16.1	4.084	1,824	113	76	43,109	19.3	1.19	10.56	5.90	3 ←
Fuel Oil	538	10,205	19.0	1.105	2,055	108	67	12,657	23.5	1.24	11.46	8.07	4
Propane	250	2,721	10.9	.255	1,019	94	61	3,190	12.7	1.17	12.50	16.01	5
Purchased Steam	59	4,538	77.5	.668	11,411	147	81	7,612	130.0	1.68	11.40	13.33	6
Other	204	3,320	16.2	.313	1,532	94	63	3,604	17.6	1.09	11.51	13.14	7
Year Constructed													
1900 or Before	279	2,884	10.3	.194	696	67	52	2,149	7.7	.75	11.07	10.14	8
1901 to 1920	369	5,228	14.2	.354	958	68	62	3,918	10.6	.75	11.08	10.68	9
1921 to 1945	685	8,269	12.1	.846	1,235	102	77	9,355	13.7	1.13	11.05	8.84	10
1946 to 1960	883	9,434	10.7	.938	1,063	99	67	10,406	11.8	1.10	11.09	8.62	11
1961 to 1970	700	9,873	14.1	1.099	1,570	111	70	12,713	18.2	1.29	11.57	6.35	12
1971 to 1973	207	3,411	16.5	.366	1,769	107	59	4,742	22.9	1.39	12.96	9.33	13
1974 to 1979	517	6,550	12.7	.861	1,667	131	67	10,004	19.4	1.53	11.62	8.93	14
1980 to 1983	135	5,631	41.7	.491	3,639	87	60	5,954	44.1	1.06	12.12	16.80	15

RSEA (3,4) = (5.90)(1.262) = 7.45

Approximate 95% Confidence Interval = 4.084 ± (1.96)(.0745)(4.084)

= 4.084 ± .596

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

$$m = \overline{(\log RSE)} \quad (14)$$

$$a(i) = \overline{(\log RSE)}_i - \overline{(\log RSE)} \quad (15)$$

$$b(j) = \overline{(\log RSE)}_j - \overline{(\log RSE)} \quad (16)$$

where $\overline{(\log RSE)}$ is the mean of $\log RSE(i,j)$ over all rows i and columns j , $\overline{(\log RSE)}_i$ is the mean over all columns j for a particular row i , and $\overline{(\log RSE)}_j$ is the mean over all rows i for a particular column j . The row and column RSE factors are then computed as

$$R(i) = \text{antilog}(m + a(i)) = \text{antilog}(\overline{(\log RSE)}_i) \quad (17)$$

$$C(j) = \text{antilog } b(j) = \text{antilog}(\overline{(\log RSE)}_j - \overline{(\log RSE)}) \quad (18)$$

The RSE row factor, $R(i)$, is thus the geometric mean of the RSE's in row i , and the RSE column factor, $C(j)$, is an adjustment factor with geometric mean equal to 1.0.

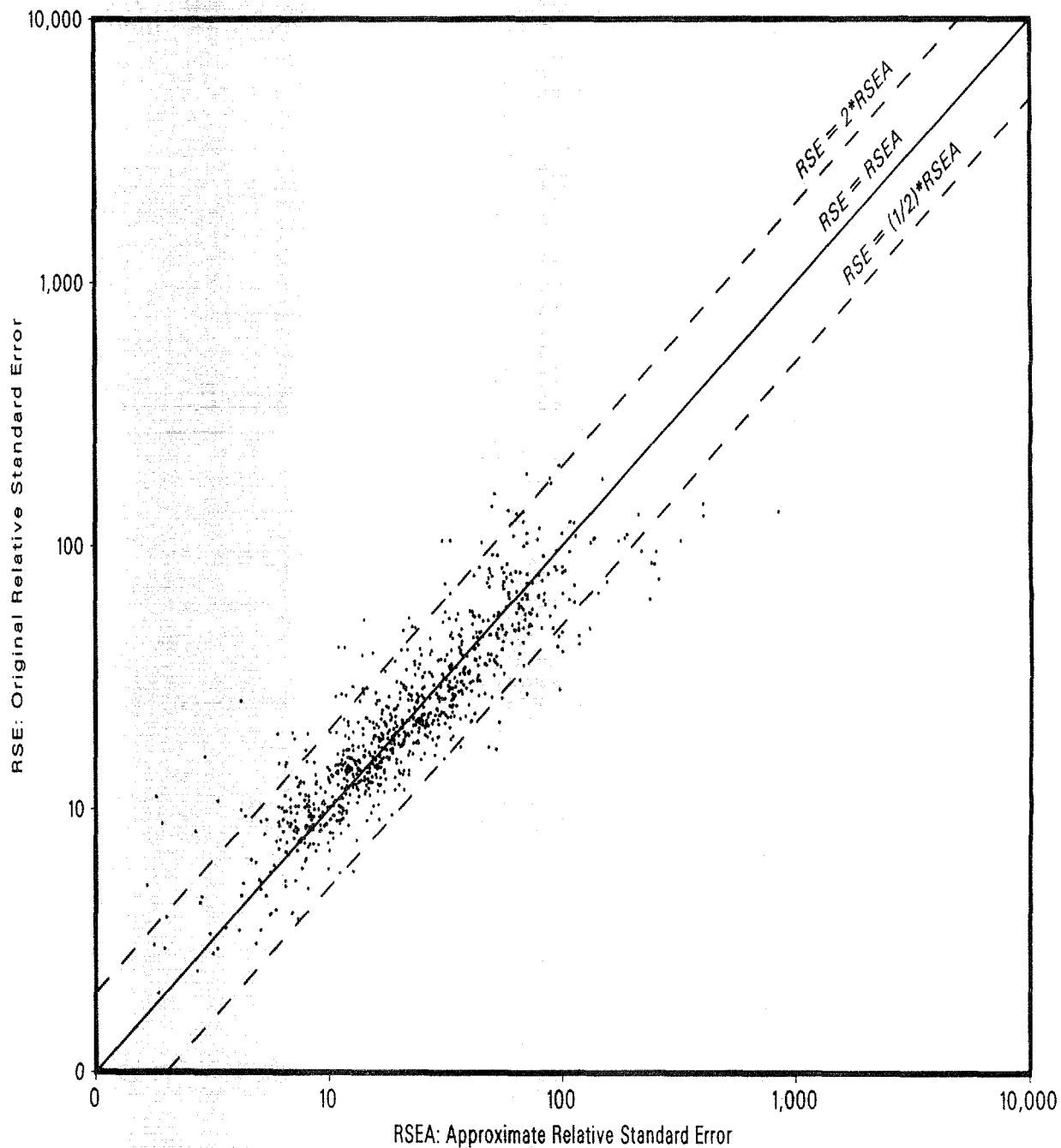
For a few table cells, there was no basis for computing an RSE, because the estimate was based entirely on regression-imputed values, which were excluded from the RSE calculations. Thus, some of the tables had a few missing values for the RSE's. In such cases, the formulas given above for computing row and column factors still apply, but only after appropriate estimates have been substituted for the missing values. The procedure used to compute these estimates is described in Cochran and Cox (1957, p. 110).

Accuracy of the RSE Approximations. Figure C5 shows a plot of the original RSE (calculated by the half-sample method described above), versus the approximation RSEA (determined from the row and column factors) for Tables 5 through 26. Each point in the plot corresponds to a cell in one of these tables. The figure shows that while the approximate value is a good indicator of the original value, there is often considerable disparity between the two. One measure of the accuracy of the approximation is the root mean square, along a table column, of the difference between the base-10 logarithms of the approximate and the original RSE's. For most of the table columns, this root-mean-square difference was between 0.10 and 0.20, although values as low as 0.07 and as high as 0.38 did occur. Since $\text{antilog}(0.20) = 1.58$, a difference in $\log RSE$'s of 0.20 corresponds to a 58-percent error in the RSE approximation--that is, a 58-percent difference between the approximate and the original RSE. For each column of Tables 5 through 26, the analogous percentage error was calculated by taking the antilog of the root-mean-square difference in $\log RSE$ (Table C6). In most cases, this percentage error is between 20 and 60. The error in the RSE approximation tends to be higher for the estimates of Square Feet per Building, Consumption per Employee, and Expenditures per Building, and for Tables 17, 18, and 19 (fuel oil, propane, and steam consumption by Census region). The approximation performs best for the Consumption and Expenditures estimates.

For most table columns, there are a number of cells for which the RSE approximation differs from the original RSE by a factor of two or more (Table C7). These are points that fall outside the dotted lines of Figure C5. The fraction of cases with such large discrepancies is less than 10 percent for most columns, and in some cases zero. For some table columns, though, these large errors in the RSE approximation occur at much higher rates. The columns indicated in Table C6 as having high overall percentage errors tend also to have a high proportion of cells with errors of more than a factor of two in RSEA.

The row and column RSE factors are determined separately for each table. Therefore a cell that appears in more than one table may have different approximate RSE's given by the different sets of RSE factors. For example, total consumption of natural gas in all commercial buildings (2.227 quadrillion Btu) is given both in the first row, fifth column of Table 8, and in the first row, fourth column of Table 11. From Table 8, the row and column factors for this estimate give $RSEA = 10.09 \times 0.841 = 8.5$. From Table 11, the approximation is $RSEA = 6.39 \times 1.306 = 8.4$. Both these numbers are useful approximations to the original RSE, which is 8.0.

Figure C5. Original Versus Approximate RSE



Note: The figure shows the original versus the approximate RSE for a randomly selected 2% of the table cells in Tables 5-26.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1983 Nonresidential Buildings Energy Consumption Survey.

Table C6. Percent Difference between Original and Approximate RSE, by Table Column.

a: tables 5,6,7,10-26

Table	Number of Rows	Number of Buildings	Square Feet	Square Feet per Buildings	Total Amount Consumed	Energy Consumed per Building	Energy Consumed per Square Feet	Energy Consumed per Employee	Total Expenditures	Expenditures per Building	Expenditures per Square Foot	Expenditures per Million Btu
5	82	33.5	29.3	68.4	21.3	18.8	29.4	46.8	17.7	22.4	24.8	33.9
6	312	40.4	37.4	80.4	36.3	38.6	49.5	52.5	33.1	43.4	46.5	51.0
7	781	42.6	35.7	91.4	32.0	48.5	43.9	57.2	31.2	53.7	42.9	61.4
10	115	40.0	40.0	80.8	28.9	35.4	35.9	45.6	25.5	38.4	27.4	32.5
11	112	26.7	40.0	87.2	29.0	52.1	27.8	36.4	27.8	48.0	30.4	35.3
12	100	40.8	37.2	89.6	30.1	40.3	31.6	53.1	31.4	40.2	34.6	56.3
13	90	32.0	43.9	103.2	39.1	49.8	39.1	56.1	41.1	47.7	42.6	53.6
14	88	40.6	36.3	99.0	29.0	46.1	36.8	69.7	33.3	47.5	43.6	39.8
15	444	44.3	46.1	87.6	34.4	50.8	49.2	65.1	35.3	51.2	52.5	73.4
16	432	36.4	43.8	92.5	35.4	54.2	42.6	49.7	42.5	43.6	44.2	69.9
17	288	54.1	51.7	155.4	41.1	65.5	60.2	87.2	42.9	61.9	60.0	90.8
18	172	39.0	65.6	183.1	53.8	99.7	63.7	76.6	52.8	83.7	65.4	102.0
19	168	60.0	66.6	129.2	49.4	92.5	72.1	117.2	53.0	98.5	63.1	112.4
20	116	37.2	40.3	67.2	25.3	35.4	42.5	51.6	24.7	38.9	33.0	40.3
21	124	39.4	41.1	66.2	27.6	38.8	39.1	54.4	25.8	46.1	32.1	38.6
22	107	26.4	25.9	54.1	20.2	23.0	22.0	64.6	19.3	22.1	23.2	34.4
23	113	25.6	27.3	69.4	22.6	30.2	29.9	31.0	21.4	26.7	31.0	30.8
24	113	32.4	28.5	79.0	30.9	43.3	26.4	48.8	30.7	42.6	28.4	59.8
25	72	33.8	40.0	134.7	50.7	72.3	59.0	69.4	51.4	63.6	60.4	82.7
26	73	38.2	44.4	97.5	39.2	56.7	34.7	56.4	42.3	59.9	39.0	45.9

b: tables 8,9

Table	Number of Rows	Number of Buildings	Square Feet	Total Consumption					
				Major Fuel	Electricity	Natural Gas	Fuel Oil	Propane	Purchased Steam
8	82	29.4	30.6	20.1	28.1	26.2	47.2	41.7	59.5
9	82	27.8	30.1	19.2	22.2	26.7	47.9	39.1	62.6

Note: The percent difference is computed as $100 \times \text{antilog}(\text{root-mean-square}(\log RSE - \log RSEA))$.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Table C7. Percent of Table Cells with Original and Approximate RSE Differing by a Factor of Two or More, by Table Column.

a: tables 5,6,7,10-26

Table	Number of Rows	Number of Buildings	Square Feet	Square Feet per Buildings	Total Amount Consumed	Energy Consumed per Building	Energy Consumed per Square Feet	Energy Consumed per Employee	Total Expenditures	Expenditures per Building	Expenditures per Square Foot	Expenditures per Million Btu
5	82	3.7	0.0	9.8	0.0	0.0	0.0	2.4	0.0	0.0	0.0	2.4
6	312	4.6	3.9	17.0	3.3	4.6	6.2	8.2	2.3	5.6	6.9	10.1
7	781	5.3	3.8	20.4	2.1	6.2	6.6	10.6	2.3	7.8	5.8	9.5
10	115	4.3	5.2	13.9	1.7	1.7	3.5	3.5	.9	.9	.0	3.5
11	112	.0	6.3	14.3	2.7	3.6	1.8	3.6	2.7	3.6	2.7	5.4
12	100	5.0	4.0	20.0	2.0	7.1	2.0	9.1	2.0	7.1	1.0	14.1
13	90	3.3	4.4	24.4	3.4	6.7	6.7	10.1	2.2	5.6	6.7	11.2
14	88	5.7	1.1	26.1	1.1	4.6	4.6	13.8	3.4	8.0	9.2	4.6
15	444	6.3	6.3	17.6	3.2	7.7	9.3	10.9	3.5	6.3	7.9	18.8
16	432	3.6	5.7	18.6	3.6	6.4	5.0	7.7	3.1	5.5	5.3	17.7
17	288	9.7	10.1	34.9	4.4	14.2	11.6	18.2	4.4	12.0	12.4	24.4
18	172	3.1	16.6	40.5	10.1	23.9	17.6	18.9	11.3	19.5	18.2	35.2
19	168	14.7	9.8	36.8	11.3	28.9	10.7	25.3	11.3	30.2	9.4	35.2
20	116	2.6	2.6	11.2	.9	2.6	7.8	2.6	.9	4.3	3.4	6.9
21	124	2.4	3.2	11.3	1.6	3.2	6.5	6.5	.8	5.6	2.4	6.5
22	107	.0	.9	9.3	.9	.9	.0	1.9	.9	.9	.0	2.8
23	113	.9	.9	8.8	.0	1.8	.9	2.7	.0	1.8	2.7	1.8
24	113	1.8	.0	17.7	3.5	6.2	.9	6.2	1.8	6.2	1.8	15.9
25	72	2.8	5.6	30.6	6.9	15.3	16.7	22.5	5.6	13.9	12.5	20.8
27	73	5.5	5.5	24.7	4.2	11.1	4.2	12.5	6.9	11.1	5.6	5.6

b: tables 8,9

Table	Number of Rows	Number of Buildings	Square Feet	Total Consumption					
				Major Fuel	Electricity	Natural Gas	Fuel Oil	Propane	Purchased Steam
8	82	0.0	1.2	0	1.2	0	8.5	7.4	11.1
9	82	1.2	1.2	0	.0	0	7.3	4.9	12.3

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Estimating Confidence Intervals

A 95-percent confidence interval is an interval around an 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. For purposes of this report, estimates are assumed to be approximately normally distributed. Thus, an interval of 1.96 standard errors on each side of the estimate closely corresponds to a 95-percent confidence interval. For example, Table 10 shows that total electricity consumption in commercial buildings for 1983 was estimated at 656 billion kWh, with an approximate RSE of

$$R(1) \times C(5) = 5.93 \times 1.411 = 8.4 \text{ percent.} \tag{19}$$

The 95-percent confidence interval requires the computation of 1.96 times the standard error, or

$$1.96 \times 0.084 \times 656 = 108. \tag{20}$$

According to the notation used throughout this report, the 95-percent

confidence interval would then be expressed as 656 (± 108) billion kWh.¹⁷ That is, we can be 95 percent certain that the electricity consumption of commercial buildings in 1983 was between 548 (= 656 - 108) and 764 (= 656 + 108)

¹⁷In the text of this report, confidence intervals are computed using the original RSE determined by the half-sample method rather than the approximation given by the row and column factors.

billion kWh. The confidence interval, or the half-width in parenthesis, 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, the true value can be determined only within a fairly broad range.

The tables in this report contain estimates of total consumption and total expenditures. However, the reader may wish to calculate either percentages (such as the percentage of total fuel-oil consumption that occurred in the Northeast) or ratios not published in the tables (such as consumption per square foot in buildings constructed before 1960). The following two sections present methods for approximating RSE's for percentages and ratios.

Percentages. A percentage statistic is $P' = N' / D' \times 100$, where N' is the numerator estimate and D' is the denominator estimate. N' is "contained" in D' , or is a subset of D' (that is, N' is D' restricted by some additional characteristics). The following approximation formula (Shimizu 1981) can be used to obtain an estimate of sampling error:

$$RSE(P') \doteq \sqrt{[RSE(N')]^2 - [RSE(D')]^2} . \quad (21)$$

For example, of 2.227 quadrillion Btu of natural gas consumed nationwide, 1.044 quadrillion were consumed in the North Central Census region (Table 8). The approximate RSE's for these survey statistics are 8.5 percent (calculated above) and $13.98 \times .841 = 11.8$ percent respectively.

The percentage of natural gas consumption that occurred in the North Central Census region is $1.044 / 2.227 \times 100 = 46.9$ percent, with the following RSE:

$$RSE(P') \doteq \sqrt{(11.8)^2 - (8.5)^2} = 8.2 \text{ percent} . \quad (22)$$

The confidence interval half-width is therefore

$$1.96 \times .082 \times 46.9 \text{ percent} = 7.5 \text{ percent} . \quad (23)$$

The 95-percent confidence interval for P is expressed as 46.9 (± 7.5).

The formula given above for the RSE of a percent is an approximation based on a Taylor series expansion. This approximation assumes simple random sampling. The consequences of its use for complex multistage surveys, as opposed to simple random samples, have been investigated (Shimizu 1981). For the statistics investigated, the approximate formula became inaccurate for small sample sizes, high percentage values, or low resultant RSE values. Therefore, approximate RSE's derived from NBECS percentage statistics should be used with care. In certain cases, use of this formula may lead to taking the square root of a negative number. This can occur when the estimated RSE of the numerator is smaller than the estimated RSE of the denominator. In this case, an alternative (yet conservative) approach is to use the estimated RSE of the denominator as the RSE of the percentage.

Ratios. For a percentage statistic, the population represented by the numerator is a subset of that represented by the denominator. This is not necessarily the case for a ratio estimate. A ratio estimate is simply one estimate divided by another. Ratio estimates abound in the tables of this report. For example, quantities denoted in column headings of the tables as "Energy Consumed per Building" and "Energy Consumed per Square Foot" were derived by calculating a ratio. To estimate the "Energy Consumed per Building" for Office buildings, an estimate of the total energy consumed by office buildings was divided by an estimate of the total number of office buildings. The same procedure was used for "Energy Consumed per Square Foot," except that the denominator was formed by the estimated total square footage.

The reader may wish to construct ratio estimates that do not appear in this report. If X' and Y' are two survey statistics from the report tables and $R' = X' / Y'$ is their ratio, an approximate RSE can be computed in the following way:

$$RSE(R') \doteq \sqrt{[RSE(X')]^2 + [RSE(Y')]^2} . \quad (24)$$

For example, the average price of electricity in the Northeast was 26.15 dollars per million Btu, with an approximate RSE of $8.21 \times .398 = 3.3$ percent (Table 10). The price in the West was 15.30 dollars per million Btu, with an approximate RSE of $21.21 \times .398 = 8.4$ percent. The ratio of these estimates shows that the price in the Northeast was 1.7 times higher than in the West ($26.18 / 15.29 = 1.7$). The RSE of this ratio is calculated in the following way:

$$RSE(N' / D') = \sqrt{(3.3)^2 + (8.4)^2} = 9.0 \text{ percent} . \quad (25)$$

The half-width for the 95-percent confidence interval is thus

$$1.96 \times .090 \times 1.7 = 0.30, \quad (26)$$

so that the confidence interval for the ratio is 1.7 (± 0.3). As was true for the $RSE(P')$ formula, the formula for the RSE of a ratio is only an approximation based on Taylor series expansion. How much error is caused by using it depends on the correlation between X' and Y'

Statistical Tests of Hypotheses

The previous sections showed how RSE's and confidence intervals can be used as a measure of reliability of the individual survey statistics presented in or computed from the tables in this report. This section examines how RSE's can be used to test statistically the validity of statements or "null hypotheses" about consumption of energy and expenditures for energy in commercial buildings. Two examples of null hypotheses are the following:

1. "The total consumption of fuel oil was the same in metropolitan and nonmetropolitan areas."
2. "There were no differences among Census regions in consumption of natural gas per square foot for buildings that consumed natural gas."

These hypotheses can be expressed as differences between certain population parameters X and Y , which are estimated by the survey statistics X' and Y' . To test the significance of the difference between the estimates X' and Y' , the following "test statistic" is calculated:

$$Z_{X', Y'} = \frac{(X' - Y')100}{\sqrt{[X' RSE(X')]^2 + [Y' RSE(Y')]^2}} \quad (27)$$

By appeal to the Central Limit Theorem, $Z_{X', Y'}$ is assumed to be approximately normally distributed, with mean zero and variance 1. The null hypothesis that there is no difference between the population parameters X and Y is rejected if the absolute value of $Z_{X', Y'}$ is greater than some critical value G . In this report (as is commonly done), G is set at 1.96 so that the probability of incorrectly detecting a significant difference is 0.05. That is, if X and Y are in fact equal in the population, then out of 100 hypothesis tests using 100 independent estimates, X' and Y' , 5 tests (on average) will erroneously detect a significant difference. It is impossible to know for certain whether X and Y are actually different in a particular case. However, the method of testing provides that if there is no difference in the population, then for 95 percent of the samples drawn, the test on the sample statistics X' and Y' will correctly indicate no difference.

As an illustration, consider the first null hypothesis stated above. Estimates from Table 12 for the consumption of fuel oil were 0.244 quadrillion Btu in metropolitan areas and 0.110 quadrillion Btu in nonmetropolitan areas. The approximate RSE's are (respectively) $14.65 \times 1.302 = 19.1$ percent, and $15.39 \times 1.302 = 20.0$ percent. The test statistic is calculated in the following way:

$$Z_{(X', Y')} = \frac{(0.244 - 0.110)100}{\sqrt{[(0.244)(19.1)]^2 + [(0.110)(20.0)]^2}} = 2.60. \quad (28)$$

Since 2.60 is greater than 1.96, we reject the hypothesis that there was no difference between metropolitan and nonmetropolitan areas in total consumption of fuel oil. The conclusion is that there was, in fact, a significant difference between the two totals.

The second hypothesis can be broken down into a "family" of all possible pairwise comparisons of Census regions. The number of possible pairwise comparisons among the four Census regions is the combinatorial

$$\frac{4!}{2!(4-2)!} = 6. \quad (29)$$

For each of the six hypothesis tests performed alone as described above, the probability of erroneously detecting a difference when none exists is 0.05. When all six tests are performed, though, the overall probability that one or more of the tests will erroneously detect a difference is greater than 0.05, since the error probabilities accumulate.

A multiple-comparisons technique based on the Bonferroni inequality (Miller 1966) allows for the simultaneous testing of two or more hypotheses, while still maintaining an overall probability of error no greater than 0.05. The technique calls for dividing the desired overall error probability of 0.05 by the number of hypotheses to be simultaneously tested. In the above example, $0.05/6 = 0.0083$, which yields a critical value of $G = 2.64$ from tables of the cumulative standard normal distribution. If the absolute value of the test statistic $Z_{X,Y}$ for any pairwise comparison exceeds G , then a significant difference has been detected for that pair.

Below are the statistics for testing each possible pairwise comparison between Census regions of natural-gas consumption per square foot in buildings that used natural gas. The test statistics were computed using the estimates and RSE factors in Table 11.

	Northeast	North Central	South	West
Northeast	--	--	--	--
North Central	5.03	--	--	--
South	1.80	-1.45	--	--
West	1.83	-1.09	0.19	--

Only for the North Central by Northeast comparison does the absolute value of the test statistic exceed the overall critical value of $G = 2.64$. Therefore, the natural-gas consumption of 77,000 Btu per square foot in the North Central region was significantly different from 39,000 Btu per square foot for the Northeast, in buildings that used natural gas. For any other pair of regions, there is no statistically significant difference in consumption ratios for natural gas. Failure to find a significant difference does not, however, imply that consumption per square foot is the same in (for example) the South as in the North Central region. Rather the estimated difference between these two regions is too small to be sure that it is not due simply to chance.

Again, it must be stressed that the formula for calculating the test statistic $Z_{X,Y}$ for a hypothesis test is approximate, with an error determined by the correlation between the two estimates being compared. Also, the Bonferroni approach to simultaneous tests is conservative in that the overall probability of erroneously detecting significant differences when none exist will be at most 0.05 and in most cases less than 0.05.

Note 5. Comparison with Other NBECS Estimates

The counts of buildings shown in this report for the major fuels used differ somewhat from those given in the first 1983 NBECS report (Energy Information Administration 1985). The estimates in the first report were based solely on the initial reports from the owner or manager of a building. The present report makes use of information from the energy suppliers as to what fuels were actually supplied in 1983. Where discrepancies were found between the initial report and the energy supplier's reports, followup telephone calls were made to resolve the differences. In some cases the initial report was found to be erroneous (for example, gasoline reported as "fuel oil," propane reported as "natural gas"). In other cases, the building may not have been supplied with the energy source during 1983, although that form of energy might have been used in the building.

Table C8 presents the counts of buildings supplied with major fuels in the first 1983 NBECS report and in this one. The largest discrepancy is in the number of buildings supplied by fuel oil. This discrepancy is largely accounted for by buildings that did not have deliveries during 1983.

Table C8. Estimated Number of Buildings Using Major Fuels, as Reported in the NBECS Building and Supplier Surveys, 1983

Major Fuel	Building Survey	Supplier Survey
Electricity	3,783,000	3,764,000
Natural Gas	2,314,000	2,239,000
Fuel Oil	633,000	538,000
Propane	260,000	250,000
Purchased Steam	60,000	59,000

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

Analysts using this publication may wish to compare the 1983 estimates of consumption and expenditures with the corresponding estimates for 1979 (Energy Information Administration March 1983, December 1983). An error was discovered in the procedure used to assign "mixed-use buildings" (buildings in which no single activity had 75 percent of the floorspace devoted to it) for the 1979 survey. This error, as explained in the previous report from the 1983 NBECS (Energy Information Administration 1985), came to light only after the 1979 reports had been published. Therefore, consumption and expenditures for 1979 by building activity were reallocated on the basis of the revised building activity categories (Table C9).

Table C9. Consumption and Expenditures for Commercial Buildings, 1979, Based on Revised Building Classification

Revised 1979 Building Classification	Number of Buildings (thousands)	Square Feet (millions)	Total Consumption (quadrillion Btu)						Total Expenditures					
			Major Fuels	Electricity	Natural Gas	Fuel Oil	Propane	Steam	Major Fuels	Electricity	Natural Gas	Fuel Oil	Propane	Steam
Commercial Buildings	3,853	46,671	5.352	2.013	2.308	0.775	0.052	0.204	36,191	25,247	6,208	3,181	268	1,287
Assembly	469	5,354	.443	.136	.216	.063	.007	.020	2,810	1,812	563	277	41	117
Educational	168	5,975	.515	.164	.214	.107	.002	.027	3,084	1,951	551	403	10	169
Food sales/service	384	1,815	.363	.182	.151	.016	.009	.005	2,876	2,265	459	78	47	27
Health care	55	1,960	.471	.129	.222	.097	.001	.022	2,402	1,346	574	370	4	109
Lodging	107	2,099	.282	.120	.115	.020	.002	.024	1,936	1,392	291	81	13	158
Mercantile	1,179	10,106	.935	.372	.434	.108	.013	.007	6,699	4,844	1,266	481	67	41
Office	544	7,363	.904	.449	.282	.112	.003	.058	7,761	6,124	755	464	13	405
Other	166	2,133	.467	.160	.239	.060	.001	.013	2,685	1,741	639	226	5	74
Residential	272	2,765	.226	.041	.099	.079	.003	.003	1,333	662	293	341	16	20
Vacant	122	1,143	.093	.036	.034	.015	.002	.006	669	455	106	61	8	39
Warehouse	387	5,959	.654	.226	.306	.097	.009	.017	3,936	2,654	709	401	45	128

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1983 Nonresidential Buildings Energy Consumption Survey.

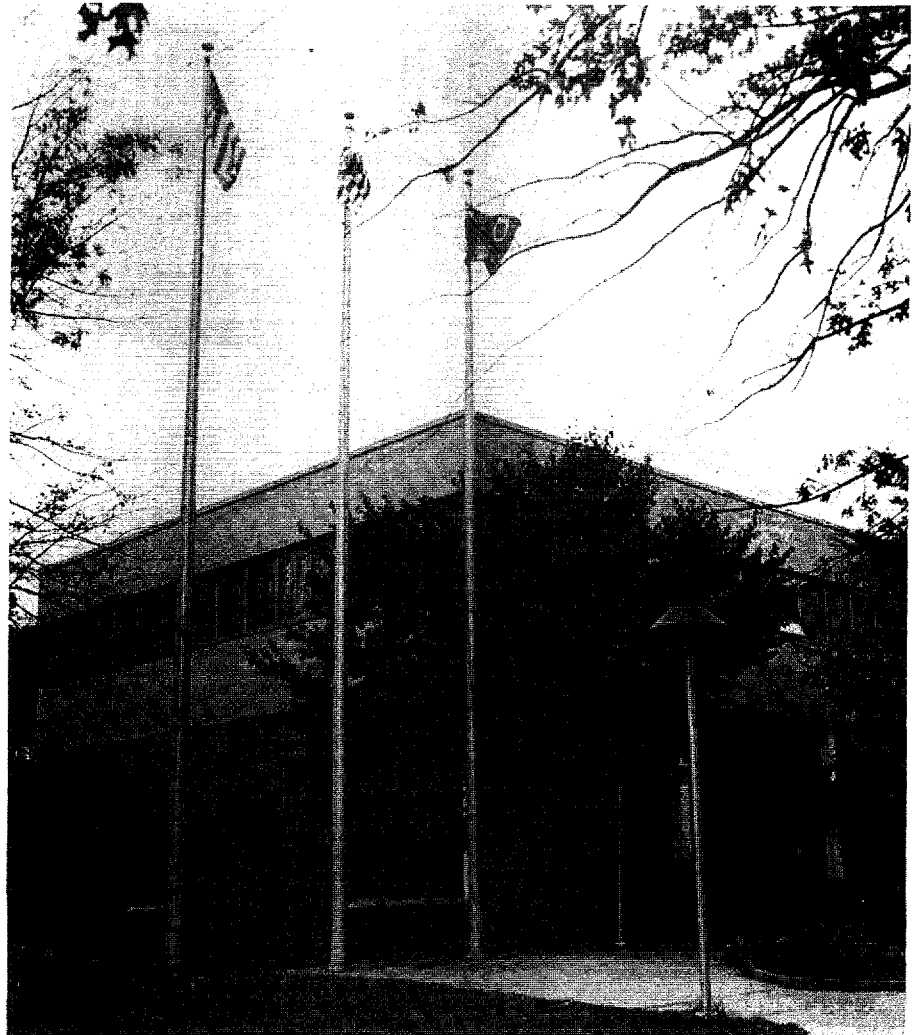
References

- Cochran, W. G., and Cox, G. M. 1957. *Experimental Design* (2d ed.), New York: John Wiley & Sons, Inc.
- Draper, N. R., and Smith, H. 1981. *Applied Regression Analysis* (2d ed.), New York: John Wiley & Sons, Inc.
- Energy Information Administration. March 1981. *Nonresidential Buildings Energy Consumption Survey: Building Characteristics*. DOE/EIA-0246. Washington, D.C.
- Energy Information Administration. March 1983. *Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures. Part 1: Natural Gas and Electricity*. DOE/EIA-0318/1. Washington, D.C.
- Energy Information Administration. December 1983. *Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures, Part 2: Steam, Fuel Oil, LPG, and All Fuels*. DOE/EIA-318(79)/2. Washington, D.C.
- Energy Information Administration. July 1985. *Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings 1983*. DOE/EIA-0246(83). Washington, D.C.
- Miller, R. G. 1966. *Simultaneous Statistical Inference* New York: McGraw-Hill Book Co.
- National Center for Health Statistics. April 1966. "Replication: An Approach to the Analysis of Data from Complex Surveys." *Vital and Health Statistics*. Public Health Service Publication No. 79-1269, Series 2/No. 14, Washington, D.C.
- National Center for Health Statistics. January 1969. "Pseudoreplication: Further Evaluation and Application of the Balanced Half-Sample Technique." *Vital and Health Statistics* Public Health Service Publication No. 73-1270, Series 2/No. 31, Washington, D.C.
- Plackett, R. L. and Burman, J. P. 1946. "The Design of Optimum Multifactorial Experiments," *Biometrika* 33, pp. 305-325.
- Shimizu, I. M. 1981. "Accuracy of Difference Method for Approximating Sampling Errors for Proportion Estimates From a Complex Sample," *Proceedings of the American Statistical Association, Survey Research Methods Section 1981*, pp. 204-208.

Appendix D

Types of Buildings

Preschools, colleges or universities as well as other buildings housing academic or technical instruction are included in the education building category.





Appendix D

Types of Buildings

Buildings were classified according to principal activity, which was the primary business, commerce, or function carried on within each building. Buildings used for more than one of the activities described below were assigned to the activity occupying the most floorspace at the time of the interview. Thus, a building assigned to a particular principal activity category may have housed other activities in a portion of its space or at some time during the year.

Buildings from the original sample that were reinterviewed in 1983 were asked for the 1983 building activities only if the respondent answered "yes" when asked if the activity had changed since 1979. (See the telephone questionnaire for the update sample in Appendix E for the exact wording of this question sequence.) Since the respondent was not told what building activity had been coded for the building in the 1979 NBECS, the 1979 designation may in some cases have been erroneously carried forward in 1983. For example, an office building with over 50 percent of its floorspace unoccupied at the time of the 1979 interview would have been classified as "vacant" in the 1979 NBECS; if the building was mostly occupied in 1983, it should have been reclassified as "office." Not knowing that the building had originally been coded as "vacant," however, the 1983 respondent might have indicated no change in activity type, resulting in an occupied office building's being incorrectly classified as "vacant" in 1983.

Each of the principal activity categories, indicated in boldface, is described below. Lists of specific types of buildings included in each category are presented for clarification, but are not intended to be exhaustive.

Assembly signifies large buildings used for the gathering of 50 or more people for social, recreational, or religious activities. Included in this category are the following types of buildings:

Entertainment Building:

- Archive/art gallery/exhibit hall/library/museum
- Coliseum/arena (enclosed)
- Concert hall
- Observatory/planetarium
- Nightclub
- Radio/TV station or studio
- Theater/movie house/cinema
- Other

Recreational Facility:

- Amusement arcade
- Bowling alley
- Gymnasium/YMCA or YWCA/indoor racket sports, recreation center/athletic facility
- Indoor pool
- Poolroom
- Skating rink (ice skating or roller skating)
- Other

Religious Assembly:

- Chapel
- Church
- Mosque
- Synagogue
- Other

Social/Public/Civic Assembly (fixed seating):

- Assembly hall

- Auditorium
- Convention hall
- Lecture hall
- Lodge hall
- Meeting hall
- Student union
- Town hall
- Other

Other Enclosed Assembly Building:

- Armory
- Passenger terminal
- Other

Nonenclosed or Partial Structure:

- Grandstand
- Stadium
- Other

Education refers to buildings that house academic or technical instruction. This category includes the following:

Schools:

- Preschool
- Elementary
- Junior high
- Senior high
- College or university
- School for the mentally retarded (see Health Care)
- Vocational school

Excluded are the following specific types of buildings on school campuses:

- Administration (see Office)
- Auditorium (see Assembly)
- Dormitory (see Lodging)
- Gymnasium (see Assembly)
- Infirmary (see Health Care)
- Library (see Assembly)
- Museum (see Assembly)
- Stadium (see Assembly)
- Student union (see Assembly)

Food Sales and Service includes buildings such as the following:

Prepared-Meal Services:

- Cafeteria

Carryout service:

- Caterer
- Fast-food establishment
- Pizza parlor
- Sandwich shop
- Other

Full-Service Restaurant:

- Bar
- Bar and grill--limited menu
- Coffee shop--limited menu
- Diner--limited menu
- Full-menu-service establishment
- Other

Retail Food Sales:

- Farmer's market, fruit/vegetable market
- Meat/seafood store
- Retail bakery
- Specialty food store
- Supermarket
- Other

Health Care covers diagnostic and treatment facilities for both inpatients and outpatients. Inpatient facilities treat the mentally or physically ill. Buildings for overnight care are also in this grouping. This type of building includes the following:

Medical-Care Hospital:

- Chronic disease
- Ear, eye, nose, and throat
- General medical and surgical
- Maternity
- Medical infirmary (connected with an institution)
- Orthopedic
- Tuberculosis/other respiratory disease
- Other

Mental Facility:

- Mental retardation
- Psychiatric

Rehabilitation Facility:

- Alcoholism
- Narcotics/drug addiction
- Physical therapy
- Other

Veterinary Facility:

- Hospital for animals
- Kennel

Outpatient Care (overlaps with some of the above):

- Dental clinic
- Medical clinic:
 - Abortion/birth control
 - Ear, eye, nose, and throat
 - General
 - Mental-health/psychiatric clinic
 - Veterinary clinic

Lodging refers to buildings that offer multiple accommodations for short-term or long-term residents. The following types are included:

Short-Term Residence:

- Convention hotel
- Hotel
- Inn
- Motel
- Shelter home
- Tourist home
- Other

Long-Term Residence:

- Boarding house
- Convent/monastery
- Dormitory/sorority/fraternity

Home for the aged, nursing home
Orphanage
Other

Mercantile Sales and Personal Services means buildings housing sales and displays of goods or services (excluding food). The category includes the following:

Automotive Sales and Service:

Automobile dealers
Gasoline stations
Motor-vehicle repair/service

Retail Sales (Single Establishment):

Building materials, garden supply, hardware stores
Department stores, apparel stores
Drugstores
Furniture, home-furnishings and home-equipment stores
Multiretail establishments
Other retail stores

Services (Except Food):

Laundry/dry cleaner/car wash
Multiservice establishment
Personal services
Post office
Other services

Shopping Mall

Strip Shopping Center

Wholesale Goods (except food)

Office means buildings used for general office space, professional offices, and administrative office. The category includes the following:

Data Processing:

Computer center
Other data processing

Financial Office Building:

Bank
Brokerage firm
Insurance
Real estate
Securities
Other

Professional Office Building:

Administration of an institution
Consulting
Corporate
Engineering
Law
Management
Medical
Mixed professional
Other

Residential describes buildings that serve as living quarters and have individual cooking/kitchen facilities. The following are included:

Multifamily:

- High-rise apartments
- Low-rise ("garden") apartments

Single-Family:

- Detached
- Duplex
- Quadriplex
- Town house/row house
- Triplex

Mobile Homes (excluded from the NBECS)

Warehouse and Storage describes buildings used to store goods, manufactured products, merchandise, or raw materials. The category includes the following:

- Agricultural
- Refrigerated Storage
- Warehouse, nonrefrigerated
- Other

Vacant designates buildings in which most of the floorspace was not being used at the time of the survey. A vacant building may contain occupants who are using portions of floorspace.

Other covers buildings that do not fit into any of the previously named categories. This category includes the following:

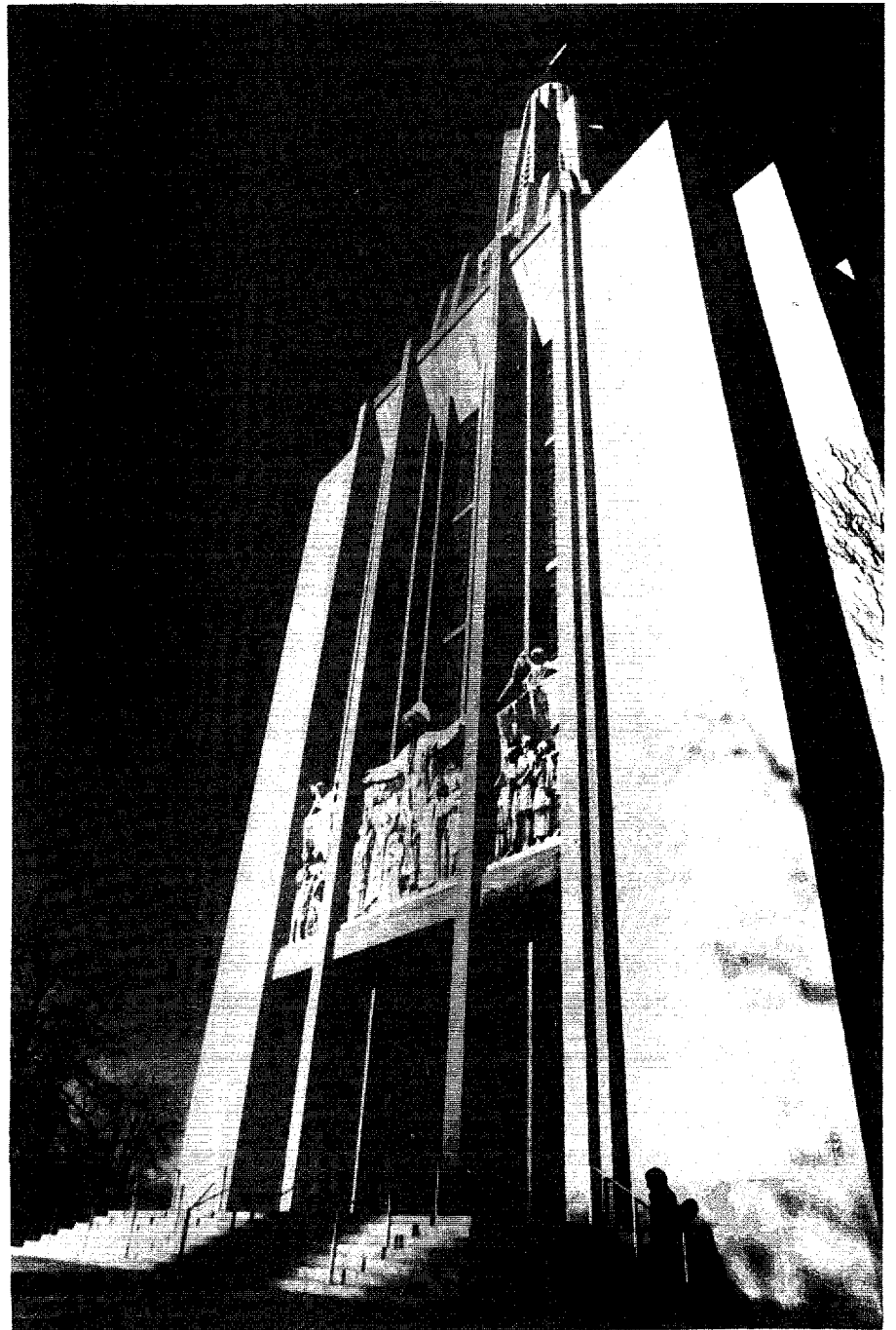
- Crematorium
- Hangar
- Laboratory (with equipment for experimental testing or analysis):
 - Agricultural
 - Mechanical/Electrical
 - Medical/Dental
 - Other
- Parking Garage
- Public Order and Safety:
 - Courthouse
 - Fire station
 - Jail/prison
 - Penitentiary
 - Police station
 - Reformatory
 - Sheriff's office
 - Other
- Telephone Exchange



Appendix E

Survey Forms

All large buildings, like this church, used for the gathering of 50 or more people for social, recreational or religious activities, are included in assembly buildings.





Questionnaire 1

EIA No.: 788-A

EIA No.: 788-A

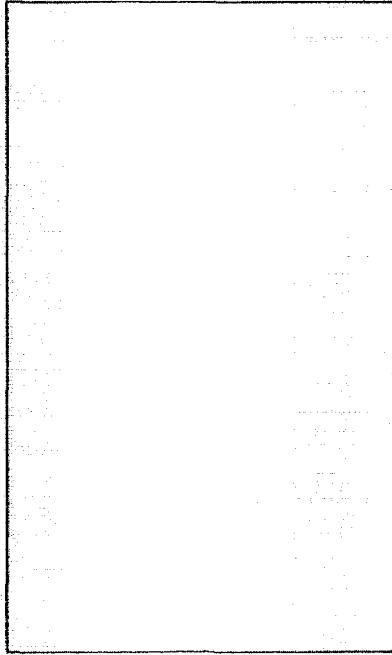
TELEPHONE QUESTIONNAIRE

UPDATE SAMPLE

Hello, is this ()

Is this number located at: (READ ADDRESS OF BUILDING IDENTIFIED IN LABEL TO RESPONDENT).

YES 1 (INTRO. B)
NO 2 (INTRO. A)



INTRODUCTION A

I'm _____ from Westat, Inc., a private research firm located in the Washington, D.C. area. We are conducting a study for the Department of Energy about energy consumption in nonresidential buildings. In 1979, the building at (ADDRESS FROM LABEL) was part of this study.

We would like to update the information about that building. Do you know the name of any of the current occupants of that building?

YES 1
NO 2 (THANK R AND TERMINATE INTERVIEW)

NAME OF CURRENT OCCUPANT: _____

PHONE NO. () _____

CONTACT CURRENT OCCUPANT, VERIFY ADDRESS AND CONTINUE WITH INTRODUCTION B.

INTRODUCTION B

I'm _____ from Westat, Inc., a private research firm located in the Washington, D.C. area. We are conducting a study for the Department of Energy about energy consumption in nonresidential buildings. May I speak with the building manager or a person knowledgeable about the types of energy coming into the building? May I have that person's name, title and phone number?

NAME: _____ PHONE NO. () _____

TITLE: _____

CONTACT RESPONDENT NAMED ABOVE AND CONTINUE WITH INTRODUCTION C.

INTRODUCTION C

Hello, I'm _____ from Westat, Inc., a private research organization located in the Washington, D.C. area. We are conducting a study for the Department of Energy about energy consumption in nonresidential buildings. In 1979 your building participated in a similar study. The purpose of my telephone call today is to update that information. Although your participation in this study is voluntary, we do hope you will cooperate and participate in this important study of energy use.

The questions in this survey relate to: (READ NAME AND ADDRESS OF BUILDING IDENTIFIED IN LABEL TO THE RESPONDENT.)

- 1. According to our records, the total space enclosed within the exterior walls of this building is (SQUARE FEET) square feet. If there are any indoor parking facilities, basements, hallways, lobbies, stairways or elevator shafts in this building, they should be included in the estimate. Is this figure of (SQUARE FEET) square feet for the entire building at (ADDRESS) correct?

YES 1 (BOX 2)
NO 2 (Q.2)
DON'T KNOW 8 (BOX 1)

ASK TO SPEAK WITH SOMEONE WHO IS KNOWLEDGEABLE ABOUT THE SIZE OF THE BUILDING AND START INTERVIEW OVER WITH INTRODUCTION C.
NAME: _____ PHONE NO. () _____
TITLE: _____
BOX 1

IS THE SQUARE FOOTAGE SHOWN ON LABEL A RANGE?
YES 1 (Q.4)
NO 2 (Q.5)
BOX 2

2. Approximately what is the current square footage of all the space enclosed within the walls of the building at (ADDRESS)? Please include any indoor parking facilities, basements, hallways, lobbies, stairways and elevator shafts.

SQUARE FEET
DON'T KNOW 9999998

BOX 3
IS THE SQUARE FOOTAGE REPORTED IN QUESTION 2 WITHIN 10 PERCENT OF THE SQUARE FOOTAGE REPORTED IN 1979?
YES 1 (Q.5)
NO 2 (Q.3)

3. Can the discrepancy be explained by any additions or alterations that have been made to this building since January 1, 1980?

YES 1 (Q.6)
NO 2 (BOX 4)

BOX 4
IN ORDER TO DETERMINE IF YOU AND THE R ARE TALKING ABOUT THE SAME BUILDING, REVIEW THE SCOPE OF THE BUILDING AS DEFINED IN THE 1979 SURVEY WITH R BY USING THE LISTING MESSAGE ON THE LABEL AND THE LISTING SHEETS.
ARE YOU TALKING ABOUT THE SAME BUILDING?
YES 1 (Q.5)
NO 2 (CLARIFY SCOPE OF BUILDING FOR THE R AND START OVER WITH Q.1)

4. Approximately, what is the square footage of the building at (ADDRESS)?

SQUARE FEET
DON'T KNOW 9999998

5. (Though additions or alterations cannot explain the discrepancy in the square footage), have any additions or substantial alterations been made to the building since January 1, 1980?

YES 1 (Q.6)
NO 2 (Q.7)

6. Approximately, how many square feet have been (added to/subtracted from) the building since January 1, 1980?

SQUARE FEET
DON'T KNOW 9999998

7A. The next few questions are about insulation and other energy-saving measures.

First of all, is there any roof or ceiling insulation on top of this building, that is, above the roof deck and below the waterproofing materials?

YES 1
NO 2
DON'T KNOW 0

7B. Is there any insulation in the exterior walls, that is, in the outside walls of the building?

YES 1
NO 2
DON'T KNOW 0

7C. Since January 1, 1980, has any:

Weather stripping or caulking been added to the building? 1 2 8
Insulation been added to the roof? 1 2 8
Insulation been added to the walls? 1 2 8
Tinted, reflective, insulated or thermal pane type of glass been added to the building? 1 2 8

7D. Are you considering adding insulation to this building?

YES 1 (Q.7E)
NO 2 (Q.8)
DON'T KNOW 0 (Q.8)

7E. Are you considering adding insulation:

YES NO DK
In the walls? 1 2 8
In the floor? 1 2 8
In the ceiling? 1 2 8
In partitions? 1 2 8
In the roof? 1 2 8
On the ducts? 1 2 8
On the pipes? 1 2 8
Anywhere else? 1 2 8

9. I'm going to read you a list of activities that may take place within a building. As I read each one, please tell me whether or not the activity occupies any space in the building:

The purpose of the next few questions is to inquire about the kinds of activities that occur within the building.

By "activities" we mean what the building is used for. For example, space in a building may be used for office work, retail stores, as residential living quarters, for manufacturing, warehousing, laundering, classroom activities, or any number of other purposes. Many buildings contain a combination of activities.

8. Since January 1, 1980 have there been any changes in the types of activities that take place in this building; that is, have there been any changes in the purposes for which this building is used?

- YES. 1 (Q.9)
- NO. 2 (Q.10)
- DON'T KNOW 8 (Q.9)

Is any space within the building used for:	NO	YES	Approximately what percentage of space does this activity occupy?
Agricultural purposes such as a greenhouse, nursery, or to house livestock or produce	1	2	%
Assembly, such as a gymnasium, stadium, museum, church, auditorium, theater, club or funeral home	1	2	%
Education, that is for classroom instruction	1	2	%
Food sales or service, such as a grocery store, bakery or restaurant	1	2	%
In-patient health services, such as hospitals or convalescent homes. (This includes veterinarian hospitals and kennels as well.)	1	2	%
Out-patient health services and clinics other than regular doctor's offices	1	2	%
Industrial processing or manufacturing	1	2	%
Laboratory work, such as experimental testing or analysis	1	2	%
Retail or wholesale sales (except food) or personal services such as a beauty shop or dry cleaner	1	2	%
Office activities of any kind such as banking, administrative offices, computer centers, medical or law offices	1	2	%
Public order and safety, such as a police or fire station, jail or penitentiary	1	2	%
Hotel, motel or other long- or short-term accommodations for several persons, such as an orphanage, boarding house, convent, home for the aged or dormitory	1	2	%
Residential purposes	1	2	%
Warehousing or storage	1	2	%
Any other activity such as parking (SPECIFY)	1	2	%
Is any space within this building vacant?	1	2	%
TOTAL			%

IF TOTAL DOES NOT EQUAL 100%, REVIEW Q.9 WITH R.

10. About how many hours each day is the building "in operation"? By "in operation" we mean the usual number of hours each day the building is used for any activity (we just discussed). Let's start with: (READ DAYS)

Monday
 Tuesday
 Wednesday
 Thursday
 Friday
 Saturday
 Sunday

11. Is the building occupied by one organization, company, or agency or more than one?

ONE 1
 MORE THAN ONE 2

12. Is any part of the building occupied by an agency of the federal, state, or local government?

YES 1
 NO 2

13. Is the building owned by an agency of the federal, state, or local government?

YES 1
 NO 2

14. Including people who are self-employed, volunteer workers, and people who work for pay, approximately how many people work in the building? (IF THE NUMBER VARIES THROUGHOUT THE YEAR, ASK FOR THE NUMBER THAT OCCURS MOST OF THE TIME.)

NUMBER OR RANGE (Q.16)
 DON'T KNOW 99998 (Q.15)

15. I'm going to read you a list of categories. Please tell me which category in your best estimate applies to the number of people who work in the building?

Less than 10 01
 10 - 19 02
 20 - 49 03
 50 - 99 04
 100 - 249 05
 250 - 499 06
 500 - 999 07
 1,000 - 2,499 08
 2,500 - 4,999 09
 5,000 or more 10
 DON'T KNOW 98

16. In 1979, it was reported that _____% of the space in this building was heated. Since then, has there been a change in the percentage of space within the building that is heated?

YES, A CHANGE. 1 (Q.17)
 NO CHANGE, 1979 STILL CORRECT. 2 (Q.18)
 NO CHANGE, BUT 1979 PERCENTAGE INCORRECT. 3 (Q.17)

17. Approximately, what percentage of the square feet in the building is now heated?

PERCENTAGE HEATED: _____ %
 DON'T KNOW 998

IF "ZERO" PERCENT HEATED, SKIP TO Q.36; OTHERWISE, CONTINUE.

18. Is any of the heat in the building provided by a system that uses furnaces or boilers?

YES 1 (Q.19)
 NO 2 (Q.20)
 DON'T KNOW 8 (Q.20)

19. Are the furnaces or boilers located within the building or outside the building?

WITHIN THE BUILDING. 1
 OUTSIDE THE BUILDING 2
 DON'T KNOW 8

20. Is any of the heat in the building provided by a type of unit in which ducts or pipes are not used to distribute heat? These might be called self-contained units since they both generate the heat and deliver it directly to the area served either by radiation, natural air circulation or fans within the unit.

YES 1
 NO 2
 DON'T KNOW 8

21. Is any of the heat in the building provided by any other type of system?

YES 1 (Q.22)
 NO 2 (BOX 5)
 DON'T KNOW 8 (BOX 5)

22. Would you describe that system for me?

23. How think of the system that distributes heat in the building. Is the heat distributed by a forced air system that uses fans?

- YES. 1 (Q.25)
- NO 2 (Q.25)
- DON'T KNOW 8 (Q.25)

BOX 5
 IF ALL HEAT IS SUPPLIED BY SELF-CONTAINED UNITS (Q.20), SKIP TO Q.25!
 OTHERWISE, CONTINUE.

24. Do the fans blow the heated air through the building through ducts?

- YES. 1
- NO 2
- DON'T KNOW 8

25. Is (any) heat distributed from any type of baseboard?

- YES. 1 (Q.26)
- NO 2 (Q.27)
- DON'T KNOW 8 (Q.27)

26. Are the baseboards electric or do they use hot water or steam?

- ELECTRIC 1
- HOT WATER. 2
- STEAM. 3
- DON'T KNOW 8

27. Is (any of) the heat distributed by radiators or convectors?

- YES. 1
- NO 2
- DON'T KNOW 8

28. Are there (any) heating panels in the walls, floor, or ceiling?

- YES. 1
- NO 2
- DON'T KNOW 8

29. Is heat distributed in any other way?

- YES. 1 (Q.30)
- NO 2 (Q.31)
- DON'T KNOW 8 (Q.31)

30. Please describe that system:

31. Are there any boilers in the building?

- YES. 1 (Q.31A)
- NO 2 (Q.34)

31A. How many boilers are there?

NUMBER

32. Which fuels or energy sources are used to fire the boilers?

- Electricity. 01
- Natural gas. 02
- Fuel oil 03
- Coal 06
- Propane. 07
- Other [SPECIFY] _____ 11

33. Since January 1, 1980, have any boilers been installed in the building?

- YES. 1 (Q.33A)
- NO 2 (Q.34)

34. How many boilers have been installed since January 1, 1980?

NUMBER OF BOILERS: _____

DON'T KNOW 28

34B. Which fuels or energy sources are used to fire the new boiler(s)? (CIRCLE ALL THAT APPLY.)

- Electricity. 31
- Natural gas. 32
- Fuel oil 03
- Coal 06
- Propane. 07
- Other [SPECIFY] _____ 1

34. Other than maintenance personnel, do employees in the building have control over the heating system that is, are they able to turn it on or off or to set the temperature in their area?

- YES. 1
- NO 2

35. As part of the building's standard operating procedure, is there a reduction in the heat produced by the heating system during the hours when the building is not in full use?
 YES. 1
 NO 2

36. In 1979, it was reported that _____% of the space in this building was air conditioned for cooling purposes. Since then, has there been a change in the percentage of space within the building that is air conditioned for cooling purposes?
 YES, A CHANGE. 1 (Q.37)
 NO CHANGE, 1979 STILL CORRECT. 2 (Q.38)
 NO CHANGE, BUT 1979 PERCENTAGE INCURRED. 3 (Q.37)

37. Approximately what percentage of the square feet in this building is now air conditioned for cooling purposes?
 PERCENTAGE AIR CONDITIONED: _____%
 DON'T KNOW 998

IF "ZERO" PERCENT AIR CONDITIONED, SKIP TO QUESTION 42.

38. Is any of the air conditioning in the building supplied by:

	YES	NO	DK
Window units?	1	2	8
Wall units?	1	2	8
Central system?	1 (Q.39)	2 (Q.41)	8 (Q.41)

39. There are two types of central systems. The first type of central system is built for use in many buildings, while the second is designed and specifically built for a particular building. Which type of central system is in use in this building?
 SYSTEM BUILT FOR MANY BUILDINGS. 1
 SYSTEM BUILT FOR JUST THIS BUILDING. 2
 DON'T KNOW 8

40. Other than maintenance personnel, do employees in the building have control over the central air conditioning system; that is, can they turn it on or off or set the temperature in their area?
 YES. 1
 NO 2
 DON'T KNOW 8

41. As part of the building's standard operating procedure, is there a reduction in the cooling produced by the air conditioning system during the hours when the building is not in full use?
 YES. 1
 NO 2

42. Has any space in the building been vacant or unoccupied for at least 3 months in the past 12 months?
 YES. 1 (Q.43)
 NO 2 (Q.45)

43. Approximately what percentage of the square feet has been vacant or unoccupied for at least 3 months during the past 12 months?
 PERCENTAGE VACANT: _____%
 DON'T KNOW 998

44. During that time, was there a reduction in the amount of heat and/or cooling supplied to the vacant or unoccupied area?
 YES. 1
 NO 2

45. Is there a regular maintenance program for the heating and/or air conditioning systems; that is, is the equipment checked at least once a year even if there are no apparent problems?
 YES. 1
 NO 2
 DON'T KNOW 8

46. The next question asks about special systems that only a few buildings have at the present time. Does this building have:

	YES	NO	DK
a. A heating or cooling system monitored and/or controlled by a computerized building automation system?	1	2	8
b. Active solar heating (use of solar panels)?	1	2	8
c. Passive solar heating (no solar panels)?	1	2	8
d. Wind generation of energy?	1	2	8
e. Geothermal energy (underground natural heat)?	1	2	8
f. Well water cooling?	1	2	8
g. Waste incineration to produce energy?	1	2	8
h. Cogeneration (heating or cooling plants which also generate electricity for use in the building)?	1	2	8
i. Any other special system? (PLEASE DESCRIBE) _____	1	2	8

47. In the past year has a professional come to this building to perform an energy audit?

YES. 1 (Q.49)
NO. 2 (Q.48)
DON'T KNOW 8 (Q.48)

48. As far as you know, do any of the companies who supply this building with energy, have a program available in which they send a professional to perform an inspection and offer advice on ways to save energy?

YES. 1
NO. 2 (Q.51)
DON'T KNOW 8

49. Has the professional a private contractor, a representative from an electric or gas company, or someone else?

Private contractor 1
Electric or gas company representative . 2
Someone else (PLEASE SPECIFY) _____ 3
DON'T KNOW 8

50. Were any new conservation measures taken in this building in response to the findings of the audit?

YES. 1
NO. 2
DON'T KNOW 8

51. In the 1979 survey, it was reported that (FUEL FROM LIST BELOW) was brought into this building. Is (FUEL FROM LIST BELOW) still being used?

YES NO DK
1 2 8
1 2 8
1 2 8
1 2 8
1 2 8
1 2 8
1 2 8

52. Are there any other fuels or sources of energy being used in this building?

YES. 1 (Q.53)
NO. 2 (Q.54)

53. What are the additional fuels or energy sources now being used in this building?

Electricity. 01
Natural gas. 02
Fuel oil/kerosene. 03
Purchased steam. 04
Purchased chilled water. 05
Coal 06
Propane. 07
Purchased hot water. 08
Wood 09
Solar. 10
Other (PLEASE DESCRIBE) _____ 11

54. Let's see, I have recorded that (READ LIST OF FUELS BEING USED FROM Q.51 AND Q.53) are being brought into this building. Is this a complete and accurate list?

YES. 1 (Q.55)
NO. 2 (BOX 6)

BOX 6
ADD ADDITIONAL FUELS TO QUESTION 53.

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55. Which fuel or energy source, if any, is used for:

a. Water heating (other than space heating)?

ENERGY SOURCE(S)
NONE 00

b. Manufacturing or any other type of industrial activity?

ENERGY SOURCE(S)
NONE 00

c. Cooking?

ENERGY SOURCE(S)
NONE 00

d. Heating?

ENERGY SOURCE(S)
NONE 00

e. Air conditioning for cooling?

ENERGY SOURCE(S)
NONE 00

56. Do you have the capacity to generate electricity?

YES 1
NO 2 (Q.58A)
DON'T KNOW 8 (Q.58A)

57. Which fuel or energy source is used to generate electricity?

ENERGY SOURCE(S)

58A. Since July 1, 1982, has

_____ been used to supply _____ ?

YES 1 (BOX 7)
NO 2 (Q.58B)

58B. May I have the name and address of the company that has supplied _____ since July 1, 1982?

NAME _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____

BOX 7
IF MORE THAN ONE TENANT IN Q.11, ASK Q.58C;
OTHERWISE, SKIP TO Q.58F.

58C. Is there just one bill from _____ for _____ or
are tenants billed separately?

ONE BILL 1 (Q.58F)
MORE THAN ONE BILL 2 (Q.58D)

58D. How many separate bills are there?

_____ BILLS

IF 2 OR 3 TENANTS, ASK Q.58E; OTHERWISE, SKIP TO Q.58F.

As I mentioned, the purpose of this study is to correlate building characteristics with energy consumption and expenditures. This information can only be obtained by going directly to energy suppliers. In order for the energy company to release this information to Westat, we need to have an authorization form from you, or some other representative of your company.

I would like to send you this form, ask you to complete it, and return it to us in a postage paid envelope that will be enclosed. Once you receive the form and have had a chance to read it, we will be happy to answer any questions you may have.

Should the authorization form be sent directly to you or to someone else?

RESPONDENT (VERIFY ADDRESS). 1
SOMEONE ELSE (PLEASE SPECIFY). 2

NAME: _____
TITLE: _____
ADDRESS: _____
CITY, STATE, ZIP: _____
PHONE NUMBER: _____

This completes the interview. Thank you very much for your time and help.

Questionnaire 2

EIA No.: 788-B

EIA No.: 788-B

1979 NONRESPONSE SCREENING QUESTIONS

Hello, is this () ?

I'm _____ from Westat, Inc., a private research firm. We are conducting a study for the Department of Energy about energy consumption in non-residential buildings. May I speak with the building manager or a person knowledgeable about the types of energy coming into the building. May I have his or her name, title and where I might locate that person.

NAME: _____

TITLE: _____

LOCATION: _____ Phone () _____

Hello, I'm _____ from Westat, Inc., a social science research organization. We are conducting a study for the Department of Energy about energy consumption in non-residential buildings. Although your participation in this survey is voluntary, we do hope you will cooperate and participate in this important study of energy use.

IF ASKED ABOUT CONFIDENTIALITY, READ:

Any information we collect which will permit identification of respondents or their buildings will be confidential and used only for statistical purposes. Data that can be identified with individual respondents will not be disclosed or released to anyone (including the Department of Energy) for any other purpose, except as required by law.

IF "400" SEGMENT (SPECIAL LIST) OR A SHOPPING CENTER/MALL (FROM LISTING SHEETS) START WITH Q.1.

FROM INFORMATION ON LISTING SHEET, CHECK ONE BOX AND FOLLOW INSTRUCTION.

BUILDING IS FREE-STANDING, START WITH Q.1.

BUILDING IS ATTACHED ON ONE SIDE, START WITH A.

BUILDING IS ATTACHED ON TWO SIDES, START WITH B.

A. Enter line number of sampled building from Listing Sheet.

B. Enter line number of sampled building from Listing Sheet.

LINE NUMBER

LINE NUMBER

First of all I need to be able to distinguish, or separate, one building from another.

First of all I need to be able to distinguish one building from another.

N1. Is the building at (ADDRESS(ES) FROM LISTING SHEET), and the building at (ADDRESS(ES) FROM QUESTIONNAIRE) owned by the same person or persons?

N3. Is the building at (ADDRESS(ES) FROM LINE ABOVE ON LISTING SHEET), and the building at (ADDRESS(ES) FROM QUESTIONNAIRE) owned by the same person or persons?

YES 1

NO 2

YES 1
NO 2

OR

DON'T KNOW. 8

DON'T KNOW. 8

DEFINITION: CONSIDER EACH SEPARATELY OWNED BUILDING AS A SEPARATE BUILDING.

- IF THE BUILDING IDENTIFIED ON THE LABEL TURNS OUT TO BE TWO OR MORE SEPARATE BUILDINGS AS DEFINED ABOVE, OBTAIN AN INTERVIEW FOR EACH BUILDING.

N7

DEFINITION: CONSIDER EACH SEPARATELY OWNED BUILDING AS A SEPARATE BUILDING.

- IF THE BUILDING IDENTIFIED ON THE LABEL TURNS OUT TO BE TWO OR MORE SEPARATE BUILDINGS AS DEFINED ABOVE, OBTAIN AN INTERVIEW FOR EACH BUILDING.

N5

N2. Are there permanent walls that extend from the ground level to the top story of the building at (ADDRESS(ES) FROM LISTING SHEET) which totally separate it from the building at (ADDRESS(ES) FROM QUESTIONNAIRE)?

N4. Are there permanent walls that extend from the ground level to the top story of the building at (ADDRESS(ES) FROM LISTING SHEET) which totally separate it from the building at (ADDRESS(ES) FROM QUESTIONNAIRE)?

YES 1

NO 2

YES 1
NO 2

DEFINITION: CONSIDER EACH BUILDING SEPARATED BY A PERMANENT WALL AS A SEPARATE BUILDING.

- IF THE BUILDING IDENTIFIED ON THE LABEL TURNS OUT TO BE TWO OR MORE SEPARATE BUILDINGS AS DEFINED ABOVE, OBTAIN AN INTERVIEW FOR EACH BUILDING.

N7

DEFINITION: CONSIDER CONNECTED BUILDINGS AS ONE BUILDING.

- OBTAIN INTERVIEW AND INCLUDE ALL PARTS THAT ARE TO BE CONSIDERED AS "ONE" BUILDING.

N7

DEFINITION: CONSIDER EACH BUILDING SEPARATED BY A PERMANENT WALL AS A SEPARATE BUILDING.

- IF THE BUILDING IDENTIFIED ON THE LABEL TURNS OUT TO BE TWO OR MORE SEPARATE BUILDINGS AS DEFINED ABOVE, OBTAIN AN INTERVIEW FOR EACH BUILDING.

N5

DEFINITION: CONSIDER CONNECTED BUILDINGS AS ONE BUILDING.

- OBTAIN INTERVIEW AND INCLUDE ALL PARTS THAT ARE TO BE CONSIDERED AS "ONE" BUILDING.

N5

THE PROGRAM WILL AUTOMATICALLY GENERATE A NEW CASE IF NEEDED.

N5. Is the building at (ADDRESSES) FROM LINE BELOW ON LISTING SHEET, and the building at (ADDRESSES) FROM QUESTIONNAIRE owned by the same person or persons?

YES 1

OR

DON'T KNOW 8

NO 2

N7

- DEFINITION: CONSIDER EACH SEPARATELY OWNED BUILDING AS A SEPARATE BUILDING.
- IF THE BUILDING IDENTIFIED ON THE LABEL TURNS OUT TO BE TWO OR MORE SEPARATE BUILDINGS AS DEFINED ABOVE, OBTAIN AN INTERVIEW FOR EACH BUILDING.

N6. Are there permanent walls that extend from the ground level to the top story of the building at (ADDRESSES) FROM LINE BELOW ON LISTING SHEET which totally separate it from the building at (ADDRESSES) FROM QUESTIONNAIRE?

YES 1

N7

- DEFINITION: CONSIDER EACH BUILDING SEPARATED BY A PERMANENT WALL AS A SEPARATE BUILDING.
- IF THE BUILDING IDENTIFIED ON THE LABEL TURNS OUT TO BE TWO OR MORE SEPARATE BUILDINGS AS DEFINED ABOVE, OBTAIN AN INTERVIEW FOR EACH BUILDING.

NO 2

N7

- CONSIDER CONNECTED BUILDINGS AS ONE BUILDING.
- OBTAIN INTERVIEW AND INCLUDE ALL PARTS THAT ARE TO BE CONSIDERED AS "ONE" BUILDING.

THE PROGRAM WILL AUTOMATICALLY GENERATE A NEW CASE IF NEEDED.

N7. What is the building's ZIP Code?

ZIP CODE

N8. Is there any establishment in this building that receives its mail through any other ZIP Code? YES 1 (N9) NO 2 (Q-1) DON'T KNOW 8 (Q-1)

N9. Does this establishment that has a different ZIP Code occupy 75% or more of the space in this building?

YES 1 (N10) NO 2 (Q-1) DON'T KNOW 8 (N10)

N10. What is the name of that establishment?

NAME

N11. What is the ZIP Code for (MENTION NAME OF ESTABLISHMENT)?

ZIP CODE

EIA No.: 788-B

EIA No.: 788-B

DODGE SAMPLE SCREENING QUESTIONS

- IF ADDITION START WITH S1.
- IF NEW CONSTRUCTION START WITH S3.

S1. According to our records an addition of over 10,000 square feet has been made to this building since 1979. Did this addition double the building's square footage or not?

Yes 1 (S2)
No 2 (ELIMINATE FROM SAMPLE)

S2. Is the construction on the addition approaching completion, by that I mean does the new addition have at least four walls and a roof at this time?

Yes 1 (Q1)
No 2 (ELIMINATE FROM SAMPLE)

S3. Is the construction of the building completed at this time?

Yes 1 (Q1)
No 2 (S4)

S4. Does the building have at least four walls and a roof?

Yes 1 (Q1)
No 2 (ELIMINATE FROM SAMPLE)

1. What is the approximate square footage of all the space enclosed within the exterior walls of this building? Please include any indoor parking facilities, basements, hallways, lobbies, stairways and elevator shafts in your estimate.

_____ (Q.3)
SQUARE FEET

DON'T KNOW 8 (Q.2)

2. I'm going to read you a list of categories. Please tell me which category in your estimate comes closest to describing the building's total square footage?

- 1,000 or less 01
- 1,001 to 5,000 02
- 5,001 to 10,000 03
- 10,001 to 25,000 04
- 25,001 to 50,000 05
- 50,001 to 100,000 06
- 100,001 to 200,000 07
- 200,001 to 500,000 08
- 500,001 to 1 million 09
- Over 1 million 10

3. How many floors are in the tallest section of the building? Please include any floors that may be used as a parking garage, basement, as well as any other floors below ground level.

_____ NUMBER OF FLOORS

4. When was the major or largest portion of the building constructed?

_____ YEAR (Q6A)

DON'T KNOW 8 (Q5)

7A. The next few questions are about insulation and other energy-saving measures.

First of all, is there any roof or ceiling insulation on top of this building, that is, above the roof deck and below the waterproofing materials?

YES 1
NO 2
DON'T KNOW 8

7B. Is there any insulation in the exterior walls, that is, in the outside walls of the building?

YES 1
NO 2
DON'T KNOW 8

7C. Since January 1, 1980, has any:

Weather stripping or caulking been added to the building? 1 2 8

Insulation been added to the roof? 1 2 8

Insulation been added to the walls? 1 2 8

lited, reflective, insulated or thermal pane type of glass been added to the building? 1 2 8

8A. Are you considering adding insulation to this building?

YES 1 (488)
NO 2 (09)
DON'T KNOW 8 (09)

8B. Are you considering adding insulation:

In the walls? 1 2 8
In the floor? 1 2 8
In the ceiling? 1 2 8
In partitions? 1 2 8
In the roof? 1 2 8
On the ducts? 1 2 8
On the pipes? 1 2 8
Anywhere else? 1 2 8

5. I'm going to read you a list of categories of years. Which category in your estimation best applies to the year the largest portion of the building was constructed?

Before 1900 01
1901 - 1920 02
1921 - 1945 03
1946 - 1960 04
1961 - 1970 05
1971 - 1973 06
1974 - 1979 07
1980 to present 08
DON'T KNOW 98

6A. Thinking of the amount of glass on the exterior surface of the building, would you estimate that the glass covers 50 percent or more of the exterior surface?

Yes 1 (6C)
No 2 (6B)

6B. Would you estimate that the glass covers 25 percent or more of the exterior surface of the building?

Yes 1 (6D)
No 2 (6D)

6C. Would you estimate that the glass covers 75 percent or more of the exterior surface of the building?

Yes 1
No 2

6D. Is any of the exterior glass considered to be tinted, reflective, insulated, or thermal pane type of glass?

Yes 1
No 2

9. The purpose of the next few questions is to inquire about the kinds of activities that occur within the building.

By "activities" we mean what the building is used for. For example, space in a building may be used for office work, retail stores, as residential living quarters, for manufacturing, warehousing, laundering, classroom activities, or any number of other purposes. Many buildings contain a combination of activities.

I'm going to read you a list of activities that may take place within a building. As I read each one, please tell me whether or not the activity occupies any space in the building:

Is any space within the building used for:	NO	YES	Approximately what percentage of space does this activity occupy?
Agricultural purposes such as a greenhouse, nursery, or to house livestock or produce	1	2	%
Assembly, such as a gymnasium, stadium, museum, church, auditorium, theater, club or funeral home	1	2	%
Education; that is, for classroom instruction	1	2	%
Food sales or service, such as a grocery store, bakery or restaurant	1	2	%
In-patient health services, such as hospitals or convalescent homes. (This includes veterinarian hospitals and kennels as well.)	1	2	%
Out-patient health services and clinics other than regular doctor's offices	1	2	%
Industrial processing or manufacturing	1	2	%
Laboratory work, such as experimental testing or analysis	1	2	%
Retail or wholesale sales (except food) or personal services such as a beauty shop or dry cleaner	1	2	%
Office activities of any kind such as banking, administrative offices, computer centers, medical or law offices	1	2	%
Public order and safety, such as a police or fire station, jail or penitentiary	1	2	%
Hotel, motel or other long- or short-term accommodations for several persons, such as an orphanage, boarding house, convent, home for the aged or dormitory	1	2	%
Residential purposes	1	2	%
Warehousing or storage	1	2	%
Any other activity such as parking (SPECIFY)	1	2	%
Is any space within this building vacant?	1	2	%

TOTAL %

IF THIS OFFICE AND EQUAL ROOM, REVIEW G-5 WITH R.

10. About how many hours each day is the building "in operation"? By "in operation" we mean the usual number of hours each day the building is used for any activity (we just discussed). Let's start with: (READ DAYS)

Monday
 Tuesday
 Wednesday
 Thursday
 Friday
 Saturday
 Sunday

11. Is the building occupied by one organization, company, or agency or more than one?

ONE 1
 MORE THAN ONE 2

12. Is any part of the building occupied by an agency of the federal, state, or local government?

YES 1
 NO 2

13. Is the building owned by an agency of the federal, state, or local government?

YES 1
 NO 2

14. Including people who are self-employed, volunteer workers, and people who work for pay, approximately how many people work in the building? (IF THE NUMBER VARIES THROUGHOUT THE YEAR, ASK FOR THE NUMBER THAT OCCURS MOST OF THE TIME.)

NUMBER OR RANGE _____ (Q.16)
 DON'T KNOW 99998 (Q.15)

15. I'm going to read you a list of categories. Please tell me which category in your best estimate applies to the number of people who work in the building?

Less than 10 01
 10 - 19 02
 20 - 49 03
 50 - 99 04
 100 - 249 05
 250 - 499 06
 500 - 999 07
 1,000 - 2,499 08
 2,500 - 4,999 09
 5,000 or more 10
 DON'T KNOW 98

16. Approximately, what percentage of the square feet in the building is now heated?

PERCENTAGE HEATED: _____ %
 DON'T KNOW 998

IF "ZERO" PERCENT HEATED, SKIP TO Q.37; OTHERWISE, CONTINUE.

17. Is any of the heat in the building provided by a system that uses furnaces or boilers?

YES 1 (Q18)
 NO 2 (Q19)
 DON'T KNOW 8 (Q19)

18. Are the furnaces or boilers located within the building or outside the building?

WITHIN THE BUILDING 1
 OUTSIDE THE BUILDING 2
 DON'T KNOW 8

19. Is any of the heat in the building provided by a type of unit in which ducts or pipes are not used to distribute heat? These might be called self-contained units since they both generate the heat and deliver it directly to the area served either by radiation, natural air circulation or fans within the unit.

YES 1
 NO 2
 DON'T KNOW 8

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20. Is any of the heat in the building provided by any other type of system?

YES 1 (Q21)
 NO 2 (BOX 5)
 DON'T KNOW 8 (BOX 5)

21. Would you describe that system for me?

BOX 5

IF ALL HEAT IS SUPPLIED BY SELF-CONTAINED UNITS (Q.19), SKIP TO Q.24;
 OTHERWISE, CONTINUE.

22. Now think of the system that distributes heat in the building. Is the heat distributed by a forced air system that uses fans?

YES 1 (Q23)
 NO 2 (Q24)
 DON'T KNOW 8 (Q24)

23. Do the fans blow the heated air through the building through ducts?

YES 1
 NO 2
 DON'T KNOW 8

24. Is (any) heat distributed from any type of baseboard?

YES 1 (Q25)
 NO 2 (Q26)
 DON'T KNOW 8 (Q26)

25. Are the baseboards electric or do they use hot water or steam?

ELECTRIC 1
 HOT WATER 2
 STEAM 3
 DON'T KNOW 8

26. Is (any of) the heat distributed by radiators or convectors?

YES 1
 NO 2
 DON'T KNOW 8

27. Are there (any) heating panels in the walls, floor, or ceiling?

YES 1
 NO 2
 DON'T KNOW 8

28. Is heat distributed in any other way?

YES 1 (Q29)
 NO 2 (Q30)
 DON'T KNOW 8 (Q30)

29. Please describe that system:

30. Are there any boilers in the building?

YES 1 (Q31)
 NO 2 (Q35)

31. How many boilers are there?

NUMBER

32. Which fuels or energy sources are used to fire the boilers? (Circle all that apply)

Electricity 01
 Natural gas 02
 Fuel oil 03
 Coal 06
 Propane 07
 Other [SPECIFY] _____ 11

33-34 OMITTED

38. Is any of the air conditioning in the building supplied by:

	YES	NO	DK
Window units?	1	2	8
Hall units?	1	2	8
Central system?	1 (0-39)	2 (0-41)	8 (0-41)

39. There are two types of central systems. The first type of central system is built for use in many buildings, while the second is designed and specially built for a particular building. Which type of central system is in use in this building?

SYSTEM BUILT FOR MANY BUILDINGS. 1
 SYSTEM BUILT FOR JUST THIS BUILDING. 2
 DON'T KNOW 8

40. Other than maintenance personnel, do employees in the building have control over the central air conditioning system; that is, can they turn it on or off or set the temperature in their area?

YES. 1
 NO 2
 DON'T KNOW 8

41. As part of the building's standard operating procedure, is there a reduction in the cooling produced by the air conditioning system during the hours when the building is not in full use?

YES. 1
 NO 2
 DON'T KNOW 8

42. Has any space in the building been vacant or unoccupied for at least 3 months in the past 12 months?

YES. 1 (0.43)
 NO 2 (0.45)

43. Approximately what percentage of the square feet has been vacant or unoccupied for at least 3 months during the past 12 months?

PERCENTAGE VACANT: _____ %
 DON'T KNOW 998

35. Other than maintenance personnel, do employees in the building have control over the heating system; that is, are they able to turn it on or off or set the temperature in their area?

YES.	1
NO	2

36. As part of the building's standard operating procedure, is there a reduction in the heat produced by the heating system during the hours when the building is not in full use?

YES.	1
NO	2

37. Approximately what percentage of the square feet in this building is now air conditioned for cooling purposes?

PERCENTAGE AIR CONDITIONED: _____ %
 DON'T KNOW 998

IF "ZERO" PERCENT AIR CONDITIONED, SKIP TO QUESTION 42.

44. During that time, was there a reduction in the amount of heat and/or cooling supplied to the vacant or unoccupied area?

YES. 1
NO 2

45. Is there a regular maintenance program for the heating and/or air conditioning systems; that is, is the equipment checked at least once a year even if there are no apparent problems?

YES. 1
NO 2
DON'T KNOW 8

46. The next question asks about special systems that only a few buildings have at the present time. Does this building have:

	YES	NO	DK
a. Heating or cooling system monitored and/or controlled by a computerized building automation system?	1	2	8
b. Active solar heating (use of solar panels)?	1	2	8
c. Passive solar heating (no solar panels)?	1	2	8
d. Wind generation of energy?	1	2	8
e. Geothermal energy (underground natural heat)?	1	2	8
f. Well water cooling?	1	2	8
g. Waste incineration to produce energy?	1	2	8
h. Cogeneration (heating or cooling plants which also generate electricity for use in the building)?	1	2	8
i. Any other special system? (PLEASE DESCRIBE) _____	1	2	8

47. In the past year has a professional come to this building to perform an energy audit?

YES. 1 (Q.49)
NO 2 (Q.48)
DON'T KNOW 8 (Q.48)

48. As far as you know, do any of the companies who supply this building with energy, have a program available in which they send a professional to perform an inspection and offer advice on ways to save energy?

YES. 1
NO 2 (Q.51)
DON'T KNOW 8

49. Was the professional a private contractor, a representative from an electric or gas company, or someone else?

Private contractor 1
Electric or gas company representative . 2
Someone else (PLEASE SPECIFY) _____ 3
DON'T KNOW 8

50. Were any new conservation measures taken in this building in response to the findings of the audit?

YES. 1
NO 2
DON'T KNOW 8

51. Which fuels or energy sources are now being used in this building?

- Electricity. 01
- Natural gas. 02
- Fuel oil/kerosene. 03
- Purchased steam. 04
- Purchased chilled water. 05
- Coal 06
- Propane. 07
- Purchased hot water. 08
- Wood 09
- Solar. 10
- Other (PLEASE DESCRIBE) _____ 11

IF FUEL OIL MENTIONED:

51A. In how many tanks is the fuel oil or kerosene stored?

NUMBER OF TANKS (Q51D)
Not stored in tank. (Q51B)

51B. In what kind of container is the kerosene or fuel oil stored?

CONTAINER TYPE

51C. Approximately how many gallons do these containers hold?

GALLONS

51D. Approximately how many gallons does the tank hold? (Storage capacity of tank #1)

GALLONS

Approximately how many gallons does the tank hold? (Storage capacity of tank #2)

GALLONS

ASK FOR EACH TANK IN Q51A

52. Which fuel or energy source, if any, is used for:

a. Water heating (other than space heating)?

ENERGY SOURCE(S)
NONE 00

b. Manufacturing or any other type of industrial activity?

ENERGY SOURCE(S)
NONE 00

c. Cooking?

ENERGY SOURCE(S)
NONE 00

d. Heating?

ENERGY SOURCE(S)
NONE 00

e. Air conditioning for cooling?

ENERGY SOURCE(S)
NONE 00

53. Do you have the capacity to generate electricity?

YES 1
NO 2 (Q.55)
DON'T KNOW 8 (Q.55)

54. Which fuel or energy source is used to generate electricity?

ENERGY SOURCE(S)

ASK FOR EACH SUPPLIER OF EACH ENERGY SOURCE

55. May I have the name and address of the company that has supplied (ENERGY SOURCE) since July 1, 1982?

NAME _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____

56. Is there just one bill from (SUPPLIER) for (ENERGY SOURCE) or are tenants billed separately?

ONE BILL 1 (Q.59)
MORE THAN ONE BILL 2 (Q.57)

57. How many separate bills are there?

_____ BILLS

IF 2 OR 3 TENANTS, ASK Q.56; OTHERWISE, SKIP TO Q.59.

58. Please tell me the name of each company, organization, or agency who received a bill from _____ for the building's use of _____ since July 1, 1982:

1. _____
2. _____
3. _____

59. (Do/Does) the bill(s) cover:

Just this building 1
More than this building. 2

60. What do the bills cover?

If OTHER BUILDINGS ARE COVERED: What is the approximate square footage of the other buildings that are served by

_____ Square footage



UNITED STATES DEPARTMENT OF ENERGY

EIA No.: 788-A
EIA No.: 788-B

EIA No.: 788-B

STUDY OF ENERGY CONSUMPTION IN NONRESIDENTIAL BUILDINGS. AUTHORIZATION FORM

As I mentioned, the purpose of this study is to correlate building characteristics with energy consumption and expenditures. This information can only be obtained by going directly to energy suppliers. In order for the energy company to release this information to Westat, we need to have an authorization form from you, or some other representative of your company.

I would like to send you this form, ask you to complete it, and return it to us in a postage paid envelope that will be enclosed. Once you receive the form and have had a chance to read it, we will be happy to answer any questions you may have.

Should the authorization form be sent directly to you or to someone else?

RESPONDENT (VERIFY ADDRESS) 1
SOMEONE ELSE (PLEASE SPECIFY) 2

NAME: _____
TITLE: _____
ADDRESS: _____
CITY, STATE, ZIP: _____
PHONE NUMBER: _____

This completes the interview. Thank you very much for your time and help.

I hereby give permission to Westat, Inc. to obtain energy consumption information for confidential use in connection with their survey for the U.S. Department of Energy.

This authorization covers the total amount of fuels and the total price charged for the fuels consumed during the 20 month period of July 1, 1982 to February 28, 1984 by the building/establishment identified below.

Companies are authorized to provide this information by monthly periods or by delivery date, whichever is applicable. A photocopy of this authorization may be accepted with the same authority as the original.

[Empty box for building/establishment identification]

Please print name of authorizing person _____
Signature of authorizing person _____
Title _____
Employed by _____ Phone _____
Address (if different than above) _____
City _____ State _____ Zip _____

*** ENERGY SUPPLIERS ***

Account Number	Account Number	Account Number
Account Number	Account Number	Account Number
Account Number	Account Number	Account Number

Please record account numbers in the space provided above.

EIA-788C (12/82)



U.S. DEPARTMENT OF ENERGY NONRESIDENTIAL BUILDINGS ENERGY CONSUMPTION SURVEY

Consumption data are to be provided for the building described above.

A copy of the authorization form signed by the building owner/manager is stapled inside.

Data may be submitted directly on the reporting form inside this folder, or in any other format, such as computer print-out, which provides the same information and is convenient for your company.

Additional instructions for completing the form are on the back cover of this folder.

**IF YOU HAVE ANY QUESTIONS, PLEASE CALL
TOLL FREE TO: DONNA MORRIS, 800-638-8985.**

Participation is mandatory as authorized by the Federal Energy Administration Act of 1974 (PL 93-275, as amended) and the Emergency Energy Conservation Act of 1979 (PL 96-102).

Any information we collect which will permit identification of respondents or their buildings will be confidential and used only for statistical purposes. Data that can be identified with individual respondents will not be disclosed or released to anyone (including the Department of Energy) for any purpose.

INSTRUCTIONS

PURPOSE OF THIS FORM

The purpose of this reporting form is to obtain aggregate consumption information for the building identified on the label on the front cover of this folder. The aggregate to be reported is the sum of the individual amount consumed by all separately billed customers in the building during the period from December 1, 1982 through January 31, 1984. The aggregate should include former customers who were in the building during the reporting period as well as all residential customers.

DEFINITION OF "CUSTOMER"

The term "customer" refers to a company, office, person, agency, etc., to which a bill for utility usage in the building is sent. It includes all separately billed tenants or occupants of the building, regardless of whether the bills are sent to the building address or to some other address. It also includes any separate bill sent to the building management or owners for the costs of utility usage for the building as a whole (hallways, lobbies, areas used for storage or maintenance operations, outside lighting, etc.).

ITEM 2

Your answers to item 2 should indicate whether the consumption information reported in item 1 represents less than total consumption in the building for which information is requested on this form. Items 2a and 2b report the total number of separately billed customers who occupied the building between December 1, 1982 and January 31, 1984. Item 2a should show the customers who are currently in the building; item 2b should show customers who were in the building at some time after December 1, 1982 but who are no longer in the building. Item 2c should show the number of customers whose consumption is included in the totals in item 1. Item 2c will equal the sum of 2a and 2b if consumption for all customers is included in item 1; 2c will be less than the sum of 2a and 2b if consumption for any customer is excluded from item 1.

ITEM 3

Your answer to item 3 should indicate whether the consumption information reported in item 1 represents more than total consumption for the building for which information is requested on this form. Place a check mark in the YES box if the bills from which you obtain the information for item 1 reflect substantial consumption in buildings other than the selected one and you are unable to report separately for the selected building. If the bills reflect consumption only in the selected building, check the NO box. (Also check the NO box if the figures include outside lighting or minor "out" buildings such as a shed or a barn.)

AGGREGATE ELECTRICITY USAGE

1. In the table below, please report aggregate electricity consumption in this building during the period from December 1, 1982, through January 31, 1984.

Time Period	CONSUMPTION PERIOD		IF CUSTOMERS ARE ON THE SAME BILLING CYCLE	IF CUSTOMERS ARE ON DIFFERENT BILLING CYCLES, RECORD BILLING MONTH	CONSUMPTION DATA		TOTAL DOLLAR AMOUNT*
	Beginning Date	Ending Date			AGGREGATE kWh USED	kWh Aggregate A-Actual E-Some or All Estimated (Circle One)	
1						A E	
2						A E	
3						A E	
4						A E	
5						A E	
6						A E	
7						A E	
8						A E	
9						A E	
10						A E	
11						A E	
12						A E	
13						A E	
14						A E	

*TOTAL DOLLAR AMOUNT should include:

- State and local taxes.
- Fuel adjustment charges
- System charges (minimum bill or base charge), and
- Demand charges.

*TOTAL DOLLAR AMOUNT should exclude:

- Merchandise.
- Repair charges.
- Service charges (hookup or disconnect fees, late payment fees, etc.), and
- Any other charges not specifically requested.

IF ANY OF THE CUSTOMERS IN THIS BUILDING ARE ON A BUDGETED BILLING CYCLE, DO NOT REPORT FIGURES FROM THE BUDGETED BILL. INSTEAD, PLEASE REPORT THE TOTAL DOLLAR AMOUNT FOR THE COST OF ACTUAL CONSUMPTION DURING EACH CONSUMPTION PERIOD.

ELECTRICITY USAGE

1. In the table below, please report electricity consumption in this building during the period from December 1, 1982, through January 31, 1984.

Time Period	CONSUMPTION PERIOD		BILLING A-Actual E-Estimated (Circle One)	Number of kWh Used	kWh Demand (if not applicable, check box: <input type="checkbox"/>)	TOTAL DOLLAR AMOUNT*
	Beginning Date	Ending Date				
1			A E			
2			A E			
3			A E			
4			A E			
5			A E			
6			A E			
7			A E			
8			A E			
9			A E			
10			A E			
11			A E			
12			A E			
13			A E			
14			A E			

*TOTAL DOLLAR AMOUNT should include:

- State and local taxes.
- Fuel adjustment charges
- System charges (minimum bill or base charge), and
- Demand charges.

*TOTAL DOLLAR AMOUNT should exclude:

- Merchandise.
- Repair charges.
- Service charges (hookup or disconnect fees, late payment fees, etc.), and
- Any other charges not specifically requested.

IF THE CUSTOMER IN THIS BUILDING IS ON A BUDGETED BILLING CYCLE, DO NOT REPORT FIGURES FROM THE BUDGETED BILL. INSTEAD, PLEASE REPORT THE TOTAL DOLLAR AMOUNT FOR THE COST OF ACTUAL CONSUMPTION DURING EACH CONSUMPTION PERIOD.

2a. According to your records, how many customers do you currently supply in this building? a. _____

2b. During the period from 12/1/82 through 1/31/84, how many additional customers did you supply who are no longer in the building? b. _____

2c. How many of the customers in "a" and "b" are included in the consumption information reported above? PLEASE REPORT SEPARATELY FOR CURRENT CUSTOMERS ("a") AND FORMER CUSTOMERS ("b"). a. _____ b. _____

YES NO

3. Does the information in Item 1 above include consumption in any building(s) other than the building shown on the label on the cover of this folder (CHECK ONE BOX.)

4. How many electricity meters are used to monitor consumption in this building? # OF METERS _____

5. Form completed by: _____ NAME _____ TELEPHONE _____ DATE _____

AGGREGATE UTILITY GAS USAGE

1. In the table below, please report aggregate electricity consumption in this building during the period from December 1, 1982, through January 31, 1984.

Time Period	CONSUMPTION PERIOD		IF CUSTOMERS ARE ON THE SAME BILLING CYCLE	IF CUSTOMERS ARE ON DIFFERENT BILLING CYCLES, RECORD MONTH	CONSUMPTION DATA		TOTAL DOLLAR AMOUNT
	Beginning Date	Ending Date			QUANTITY USED Expressed in:	QUANTITY USED (Circle One)	
1					<input type="checkbox"/> Therms <input type="checkbox"/> 100 cu. ft. <input type="checkbox"/> 1000 cu. ft. <input type="checkbox"/> Other (SPECIFY)	(Circle One) A-All actual E-All or some estimated	
2						A E	
3						A E	
4						A E	
5						A E	
6						A E	
7						A E	
8						A E	
9						A E	
10						A E	
11						A E	
12						A E	
13						A E	
14						A E	

*TOTAL DOLLAR AMOUNT should include:

- State and local taxes,
- Fuel adjustment charges
- System charges (minimum bill or base charge), and
- Demand charges.

*TOTAL DOLLAR AMOUNT should exclude:

- Merchandise,
- Repair charges,
- Service charges (hookup or disconnect fees, late payment fees, etc.), and
- Any other charges not specifically requested.

IF ANY CUSTOMERS IN THIS BUILDING ARE ON A BUDGETED BILLING CYCLE, DO NOT REPORT FIGURES FROM THE BUDGETED BILL. INSTEAD, PLEASE REPORT THE TOTAL DOLLAR AMOUNT FOR THE COST OF ACTUAL CONSUMPTION DURING EACH CONSUMPTION PERIOD.

- 2a. According to your records, how many customers do you currently supply in this building? a. _____
- 2b. During the period from 12/1/82 through 1/31/84, how many additional customers did you supply who are no longer in the building? b. _____
- 2c. How many of the customers in "a" and "b" are included in the consumption information reported above? PLEASE REPORT SEPARATELY FOR CURRENT CUSTOMERS ("a") AND FORMER CUSTOMERS ("b").

3. Does the information in Item 1 above include consumption in any building(s) other than the building shown on the label on the cover of this folder (CHECK ONE BOX.) YES NO
4. How many utility gas meters are used to monitor consumption in this building? # OF METERS _____
5. Form completed by: _____ NAME _____ TELEPHONE _____ DATE _____

UTILITY GAS USAGE

1. In the table below, please report utility gas consumption in this building during the period from December 1, 1982, through January 31, 1984.

Time Period	CONSUMPTION PERIOD		BILLING	QUANTITY USED Expressed in (Check One)	TOTAL DOLLAR AMOUNT*
	Beginning Date	Ending Date			
1			A E	<input type="checkbox"/> Therms <input type="checkbox"/> 100 Cubic Feet <input type="checkbox"/> 1000 Cubic Feet <input type="checkbox"/> Other (SPECIFY)	
2			A E		
3			A E		
4			A E		
5			A E		
6			A E		
7			A E		
8			A E		
9			A E		
10			A E		
11			A E		
12			A E		
13			A E		
14			A E		

*TOTAL DOLLAR AMOUNT should include:

- State and local taxes,
- Fuel adjustment charges
- System charges (minimum bill or base charge), and
- Demand charges.

*TOTAL DOLLAR AMOUNT should exclude:

- Merchandise,
- Repair charges,
- Service charges (hookup or disconnect fees, late payment fees, etc.), and
- Any other charges not specifically requested.

IF THE CUSTOMER IN THIS BUILDING IS ON A BUDGETED BILLING CYCLE, DO NOT REPORT FIGURES FROM THE BUDGETED BILL. INSTEAD, PLEASE REPORT THE TOTAL DOLLAR AMOUNT FOR THE COST OF ACTUAL CONSUMPTION DURING EACH CONSUMPTION PERIOD.

- 2a. According to your records, how many customers do you currently supply in this building? a. _____
- 2b. During the period from 12/1/82 through 1/31/84, how many additional customers did you supply who are no longer in the building? b. _____
- 2c. How many of the customers in "a" and "b" are included in the consumption information reported above? PLEASE REPORT SEPARATELY FOR CURRENT CUSTOMERS ("a") AND FORMER CUSTOMERS ("b").

3. Does the information in Item 1 above include consumption in any building(s) other than the building shown on the label on the cover of this folder (CHECK ONE BOX.) YES NO
4. How many utility gas meters are used to monitor consumption in this building? # OF METERS _____
5. Form completed by: _____ NAME _____ TELEPHONE _____ DATE _____

FUEL OIL

1. In the table below, please report all fuel oil deliveries to this building during the period from December 1, 1982, through January 31, 1984.

Time Period	Delivery Date	Gallons Delivered	Did this delivery fill the tank(s)? (Circle One Answer; DK = Don't Know)	K Factor (Check this box if K Factor not applicable to this customer: <input type="checkbox"/>)	TOTAL DOLLAR AMOUNT*
1			YES NO DK		
2			YES NO DK		
3			YES NO DK		
4			YES NO DK		
5			YES NO DK		
6			YES NO DK		
7			YES NO DK		
8			YES NO DK		
9			YES NO DK		
10			YES NO DK		
11			YES NO DK		
12			YES NO DK		
13			YES NO DK		
14			YES NO DK		

*TOTAL DOLLAR AMOUNT should include:

- State and local taxes,
- Fuel adjustment charges,
- System charges (minimum bill or base charge), and
- Demand charges.

*TOTAL DOLLAR AMOUNT should exclude:

- Merchandise,
- Repair charges,
- Service charges (hookup or disconnect fees, late payment fees, etc.), and
- Any other charges not specifically requested.

2. Types of fuel oil delivered. Please check box(es) to indicate type(s) of fuel oil supplied to this building:

Kerosene #4 Fuel Oil #1 Diesel Oil
 #1 Fuel Oil #5 Fuel Oil #2 Diesel Oil
 #2 Fuel Oil #6 Fuel Oil Other (Please Specify) _____

3a. According to your records, how many customers do you currently supply in this building? a. _____

3b. During the period from 12/1/82 through 1/31/84, how many additional customers did you supply who are no longer in the building? b. _____

3c. How many of the customers in "a" and "b" are included in the consumption information reported above? PLEASE REPORT SEPARATELY FOR CURRENT CUSTOMERS ("a") AND FORMER CUSTOMERS ("b"). a. _____ b. _____

4. Does the information in Item 1 above include deliveries to any building(s) other than the building shown on the label on the cover of this folder (CHECK ONE BOX.)

Form completed by: _____ NAME _____ TELEPHONE _____ DATE _____

AGGREGATE FUEL OIL

1. In the table below, please report aggregate figures for all fuel oil deliveries to this building during the period from December 1, 1982, through January 31, 1984.

Time Period	Delivery Date	Gallons Delivered	Did this delivery fill the tank(s)? (Circle One Answer; DK = Don't Know)	K Factor (Check this box if K Factor not applicable to this customer: <input type="checkbox"/>)	TOTAL DOLLAR AMOUNT*
1			YES NO DK		
2			YES NO DK		
3			YES NO DK		
4			YES NO DK		
5			YES NO DK		
6			YES NO DK		
7			YES NO DK		
8			YES NO DK		
9			YES NO DK		
10			YES NO DK		
11			YES NO DK		
12			YES NO DK		
13			YES NO DK		
14			YES NO DK		

*Total Dollar Amount should include state and local taxes and exclude all merchandise, repair, or service charges.

2. Types of fuel oil delivered. Please check box(es) to indicate type(s) of fuel oil supplied to this building:

Kerosene #4 Fuel Oil #1 Diesel Oil
 #1 Fuel Oil #5 Fuel Oil #2 Diesel Oil
 #2 Fuel Oil #6 Fuel Oil Other (Please Specify) _____

3a. According to your records, how many customers do you currently supply in this building? a. _____

3b. During the period from 12/1/82 through 1/31/84, how many additional customers did you supply who are no longer in the building? b. _____

3c. How many of the customers in "a" and "b" are included in the consumption information reported above? PLEASE REPORT SEPARATELY FOR CURRENT CUSTOMERS ("a") AND FORMER CUSTOMERS ("b"). a. _____ b. _____

4. Does the information in Item 1 above include deliveries to any building(s) other than the building shown on the label on the cover of this folder (CHECK ONE BOX.)

Form completed by: _____ NAME _____ TELEPHONE _____ DATE _____

INDIVIDUAL

1. In the table below, please report all fuel deliveries to this building during the period from December 1, 1982, through January 31, 1984.

Time Period	Delivery Date	Expressed in: (Please specify unit, e.g., gallons, tons, etc.)	QUANTITY	TOTAL DOLLAR AMOUNT*
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

*TOTAL DOLLAR AMOUNT should include:

- State and local taxes.
- Fuel adjustment charges.
- System charges (minimum bill or base charge).
- Demand charges.

*TOTAL DOLLAR AMOUNT should exclude:

- Merchandise.
- Repair charges.
- Service charges (hookup or disconnect fees, late payment fees, etc.), and
- Any other charges not specifically requested.

2. Types of fuel delivered. Please check box(es) to indicate type(s) of fuel delivered to this building:

- Anthracite Bituminous Coal Propane Other (Please Specify) _____

3a. According to your records, how many customers do you currently supply in this building? a. _____

3b. During the period from 12/1/82 through 1/31/84, how many additional customers did you supply who are no longer in the building? b. _____

3c. How many of the customers in "a" and "b" are included in the consumption information reported above? PLEASE REPORT SEPARATELY FOR CURRENT CUSTOMERS ("a") AND FORMER CUSTOMERS ("b"). a. _____ b. _____

4. Does the information in item 1 above include deliveries to any building(s) other than the building shown on the label on the cover of this folder (CHECK ONE BOX.)

YES NO

5. Form completed by: _____ NAME _____ TELEPHONE _____ DATE _____

AGGREGATE

1. In the table below, please report all fuel deliveries to this building during the period from December 1, 1982, through January 31, 1984.

Time Period	Delivery Date	Expressed in: (Please specify unit, e.g., gallons, tons, etc.)	QUANTITY	TOTAL DOLLAR AMOUNT*
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

*Total Dollar Amount should include state and local taxes and exclude all merchandise, repair, or service charges.

2. Types of fuel delivered. Please check box(es) to indicate type(s) of fuel delivered to this building:

- Anthracite Bituminous Coal Propane Other (Please Specify) _____

3a. According to your records, how many customers do you currently supply in this building? a. _____

3b. During the period from 12/1/82 through 1/31/84, how many additional customers did you supply who are no longer in the building? b. _____

3c. How many of the customers in "a" and "b" are included in the consumption information reported above? PLEASE REPORT SEPARATELY FOR CURRENT CUSTOMERS ("a") AND FORMER CUSTOMERS ("b"). a. _____ b. _____

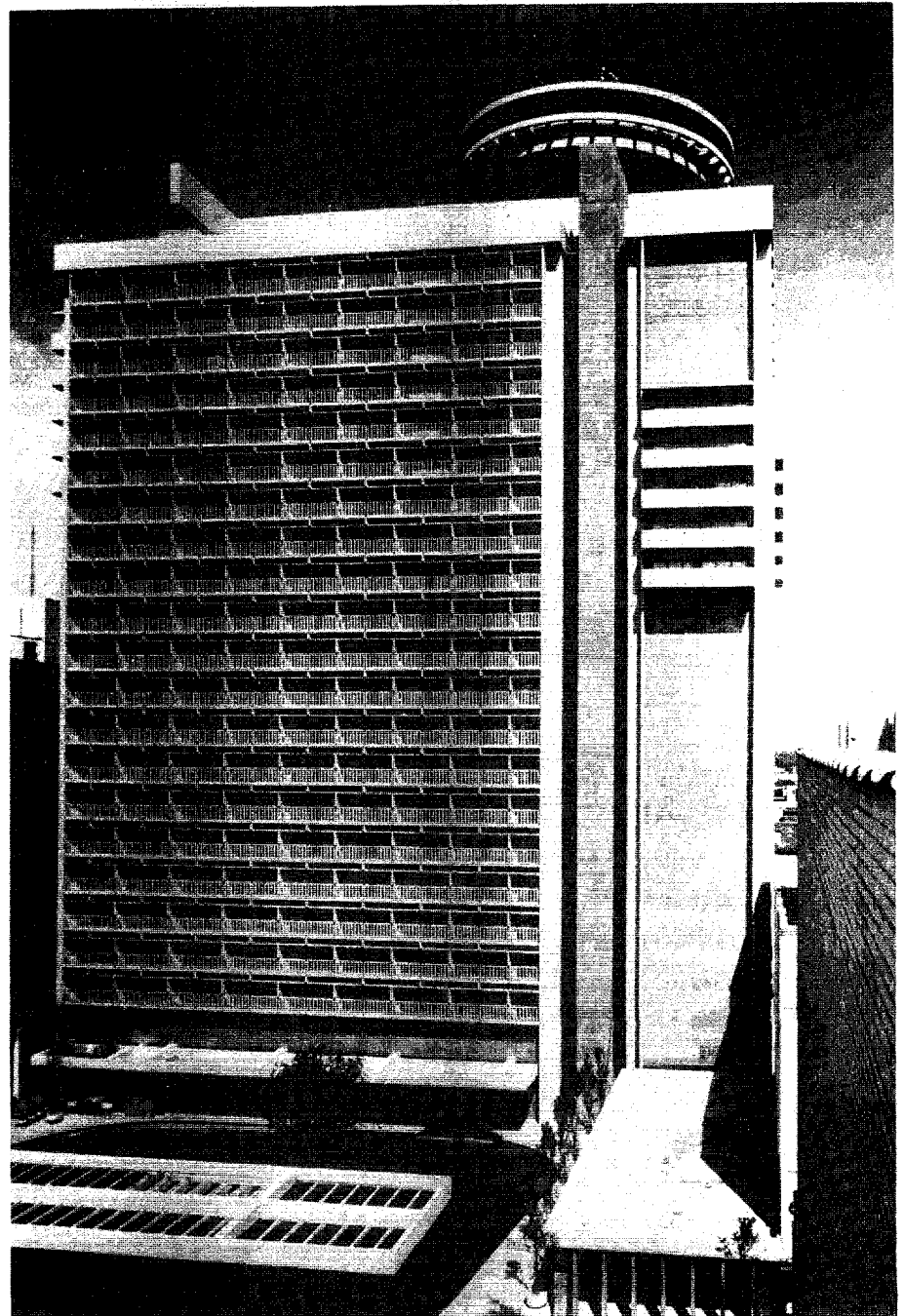
4. Does the information in item 1 above include deliveries to any building(s) other than the building shown on the label on the cover of this folder (CHECK ONE BOX.)

YES NO

5. Form completed by: _____ NAME _____ TELEPHONE _____ DATE _____

Appendix F

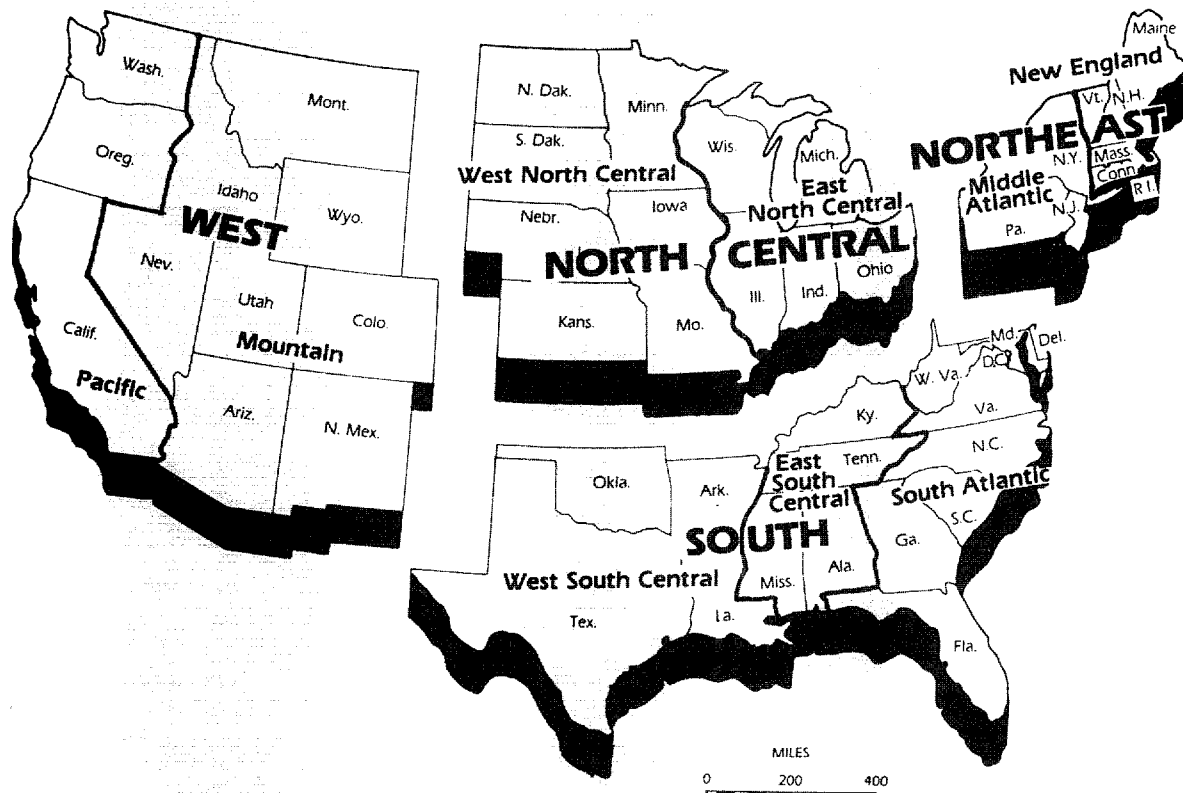
U.S. Weather Zone Map and Census Region Map



Hotels and motels are included in lodging buildings, which are those that offer multiple accommodations for short-term or long-term residents.



Figure F2. U.S. Census Region Map

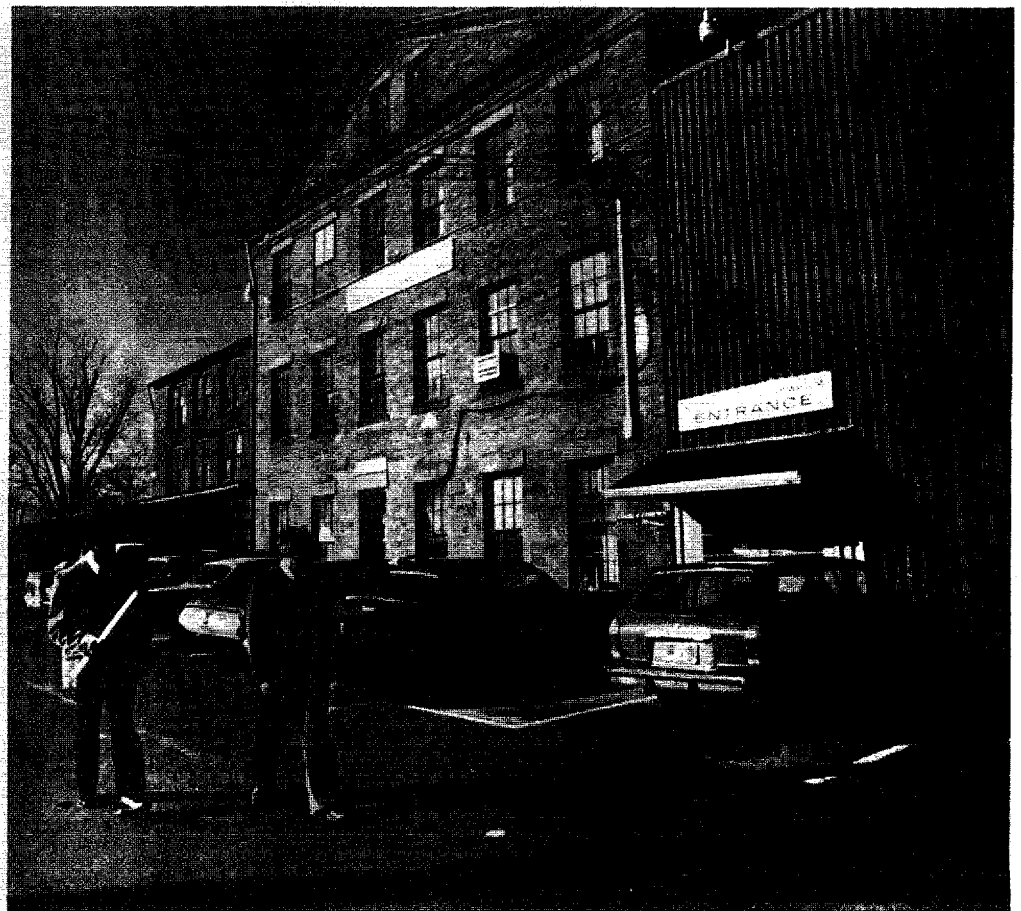




Appendix G

Related Energy- Consumption Publications

Warehouse and storage buildings, such as this one, are used to store goods, manufactured products, merchandise or raw materials.





Appendix G

Related Energy-Consumption Publications

Commercial Sector

Building Characteristics

Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1983; July 1985, DOE/EIA-0246(83), GPO Stock No. 061-003-00439-3, \$7.50.

Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings 1983--A Supplemental Reference; DOE/EIA-M008, \$22.95. Available from the National Technical Information Service (NTIS) Order Number DE85015581.

Nonresidential Buildings Energy Consumption Survey: Fuel Characteristics and Conservation Practices; June 1981, DOE/EIA-0278, GPO Stock No. 061-003-00200-5, \$9.00.

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

Consumption and Expenditures

Nonresidential Buildings Energy Consumption Survey: 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, Fuel Oil, LPG, and all Fuels; December 1983, DOE/EIA-0318(79)/2, GPO Stock No. 061-003-00366-4, \$6.00.

Residential Sector

Housing Characteristics

Residential Energy Consumption Survey: Housing Characteristics, 1984, DOE/EIA-0314(84), to be published in August 1986.

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. 061-003-330-3, \$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.

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.).

Consumption and Expenditures

Residential Energy Consumption Survey: Consumption and Expenditures, April 1982 Through March 1983, Part I: 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 II: 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 I: 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 II: Regional Data; November 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 I: 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 II: 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: 1978-1980 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 Residential-Sector Publications

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. 061-003-00347-8, \$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. 061-03-00217-0, \$4.50.

Energy Use by U.S. Households; November 1980, DOE/EIA-0248 (Brochure, no GPO Stock No.).

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.).

Residential Transportation Sector

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.).

Industrial Sector

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. 061-003-00233-1, \$2.50.

Methodological Report on the 1980 Manufacturing Industries Survey of Large Combustors (EIA-463); March 1982, DOE/EIA-0306 (no GPO Stock No.).

Cross-Sector

Natural Gas: Use and Expenditures; April 1983, DOE/EIA-0382, GPO Stock No. 061-003-00307-9, \$5.50.

See inside front cover for information concerning copies of these publications.

Magnetic tapes containing public data for the commercial, residential, and residential transportation sectors are available from:

National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4807



Glossary

Active Solar Heating Systems--Systems that use mechanical pumps or fans to circulate heat-laden fluids or air. These systems are made up of three major components:

1. **Solar Collecting Panels**--One or more flat, sun-oriented boxes with transparent covers, containing water tubes or air baffles under a blackened heat-absorbent panel.
2. **Insulated Heat-Storage Tank**--Containers of water (or rocks, where air is the heat-carrying medium) to serve as a reservoir of heat for cloudy days.
3. **Distribution System**--Radiators or other convectors, or air ducts. Often adapted from preexisting conventional heating systems.

(See **Passive Solar Heating Systems**, **Solar Water-Heating Systems**, **Solar Air-Conditioning Systems**, and **Solar-Assisted Heat Pump**.)

Additions--See **Large Additions**.

Air-Conditioning--Cooling of air by a refrigeration unit. The units operate by allowing liquid refrigerant (such as Freon) to expand and vaporize inside a coiled tube unit called an evaporator, thus creating an adiabatic drop in temperature. The cool vapor takes up heat from the space within the building. This heat is released and vented outdoors as the vapor becomes liquefied in a condenser or in an absorber vessel. The two major types of air conditioner, the vapor-compression type and the absorption type, differ in the way they liquefy the refrigerant vapor. Vapor-compression systems are commonly powered by electricity, while absorption systems are often powered by steam or natural gas. Vapor compression is the more common. In large commercial buildings it often takes the form of centrifugal or reciprocating chillers that produce chilled water. The chilled water is piped to coils in air-handling units that cool the air in a building. The various locations of these air-handling units (central or zonal) and their relationship to the heating systems of the building have created the diversity of systems in the stock of commercial buildings. Not included under air conditioning is cooling by fans or blowers not connected to a refrigeration unit. Included in this survey are all air-conditioning units in a building, even if they are not being used or are not in working condition. Also included is chilled water piped into the building for cooling. (See **Solar Air-Conditioning Systems**, **Heat Pump**, **HVAC**, and **Well Water for Cooling**.)

Baseboard--A heating system or a heat-distribution system in which either steam/hot-water finned tubes or electric resistance coils are mounted behind shallow panels along baseboards. Baseboards rely on passive convection to distribute heated air in the space. Electric baseboards are considered to be an example of "Self-Contained Units." (See **Self-Contained Heating Units** and **Heat-Distribution System**.)

Boiler--A vessel or tank where hot water or steam is produced from the combustion of fuels such as natural gas, fuel oil, or coal. Steam can be used for space heating, water heating, or absorption cooling. Many buildings contain their own boilers, while other buildings have steam piped in from a central steam plant. "Firetube" boilers pass hot combustion gases through tubes submerged in the boiler water to produce as much as 25,000 pounds of steam per hour. "Watertube" boilers circulate boiler water inside tubes surrounded by hot combustion gases to produce as much as 500,000 pounds of steam per hour. (See **Furnace**, **Central Heating System**, **HVAC**, and **Steam Energy Source**.)

Bounding Rule--A procedure used to eliminate overlap between the "Original Sample" of the 1979 NBECS and the sample of buildings drawn from the F.W. Dodge Information Division's 1979 file of new construction (1979 having been the first year of the "New-Buildings Sample"). For example, Dodge may have listed a new building or large addition in 1979 that was still under construction at that time and could not have been included in the 1979 "Original Sample." According to the bounding rule, the project would be considered part of the "New-Buildings Sample" in the current survey. (See **Dodge**, **Building**, **New-Buildings Sample**, **Original Sample**, **Projects**, and **Nonresidential Building**.)

Btu--British thermal unit. A unit quantity 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. The term is used in this report to help with the comparison of consumption among fuels that are measured in different units.

Btu conversion factors for this survey are as follows:

Electricity	3,412	Btu/kilowatthour
Natural Gas	1,031	Btu/cubic foot
Distillate Fuel Oils (Nos. 1, 2, and 4)	138,690	Btu/gallon
Residual Fuel Oils (Nos. 5 and 6)	149,690	Btu/gallon
Kerosene	135,000	Btu/gallon
Propane	91,333	Btu/gallon
Purchased Steam	1,000	Btu/pound

(See Consumption, Cubic Foot, kWh, and Pounds of Steam.)

Building--As defined for this survey, a structure totally enclosed by walls extending from the foundation to the roof and not solely residential. Unless a building is known to be nonresidential, there must be a sign or other advertising medium, visible from the sidewalk, indicating that the building is not used solely for residential purposes. According to this definition, a private residence is included in the survey if it contains an office or business, such as a physician's office. Structures that were included in the survey despite not being "totally enclosed by walls" 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 leave the sides at ground level open. Excluded from the survey 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); buildings located on farms (such as silos, grain elevators, and barns); buildings on military bases or reservations; mobile homes and trailers, even if they housed nonresidential activity; and oil storage tanks. For this report, industrial buildings have been excluded. Also excluded are nonbuildings that consume energy (such as street lights, pumps, bridges, swimming pools, and construction sites). (See **Commercial Buildings**, **Nonresidential Buildings**, and **Residential Buildings**.)

Campus or Complex--A well-defined geographic area containing a group of separate buildings that are operated as a unit, such as a university campus or a hospital complex. (See **Multibuilding Establishment**.)

CDD--See **Cooling Degree-Days**.

Census Region--An area consisting of various States selected by the U.S. Bureau of the Census according to population size and physical location. The States are grouped into four regions:

Northeast:

Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont

North Central:

Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin

South:

Alabama, Arkansas, Delaware, the District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia

West:

Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming

Alaska and Hawaii, normally considered parts of the western region, were not included in the sample for this survey.

Central Air-Conditioning System--A system that uses a central chiller or chillers to produce cooled air or fluid and deliver it to all air-conditioned areas of a building. Such systems may be either factory assembled or built up from individual components. Central air-conditioning systems are often built in conjunction with central heating systems, with which they share air ducts or mixing boxes (for example, terminal reheat, multizone, or dual-duct systems.) (See **Air Conditioning, HVAC, Heat Pump, and Well Water for Cooling.**)

Central Heating System--A centrally located heating plant, such as a furnace/boiler or an electric resistance unit, that produces heated air or water. This heated air or water is distributed to designated parts of a building through a system of ducts or pipes. Central heating systems are often built in conjunction with central cooling systems, with which they share air ducts or mixing boxes (for example, terminal reheat, multizone, or dual-duct systems). (See **HVAC, Boiler, Furnace, Heat Pump, Baseboard, Radiator, Convector or Panel, and Solar Energy.**)

Climate Zone--One of seven distinct areas, designated by the American Institute of Architects (AIA) for the U.S. Department of Energy and the U.S. Department of Housing and Urban Development, that are used to classify housing units or buildings by long-term weather conditions. The zones were determined according to the annual sum of heating and cooling degree-days averaged over 45 years, as follows:

Zone	Cooling Degree-Days	Heating Degree-Days
1	Less than 2,000	More than 7,000
2	Less than 2,000	5,500 to 7,000
3	Less than 2,000	4,000 to 5,499
4	Less than 2,000	2,000 to 3,999
5	Less than 2,000	Less than 2,000
6	More than 2,000	Less than 2,000
7	More than 2,000	2,000 to 3,999

Zones 4 and 5 and Zones 6 and 7 have been combined for this report. A building was assigned to a climate zone on the basis of its geographic location. (See **Heating Degree-Days, Cooling Degree-Days, and NOAA Division.**)

Cogeneration--A procedure for generating both electric power (or shaft horsepower) and useful heat from a single installation. Cogeneration is common in industrial operations. The heat can be used for industrial processes, space heating or cooling, or water heating. With steam-driven generators, exhaust steam is recovered and used. With gas-turbine or diesel-powered generators, exhaust gases are utilized by waste-heat boilers. Cogeneration in commercial buildings is not common now, but it is expected to become more widespread. Typical of cogeneration units in commercial buildings are packaged units that are powered by natural-gas or diesel internal-combustion engines. Engine exhaust heat is recovered for use in space heating and water heating, and sometimes for absorption cooling. Thus, cogeneration packages involve recovery of waste heat from electric power generation. However, some respondents who do not use cogeneration may have considered other forms of waste-heat recovery to be "cogeneration." (See **Electricity Generation, Boiler, and Waste-Heat Recovery System.**)

Commercial Buildings--Buildings whose principal activity is nonresidential, nonindustrial, and nonagricultural. Commercial buildings include, but are not limited to, stores, offices, schools, churches, gymnasiums, libraries, museums, hospitals, clinics, warehouses, and jails. Government buildings are included except buildings on military bases or reservations. Industrial buildings and farm buildings have been excluded from this report. For a more complete list, see Appendix D, "Types of Buildings." (See **Building and Principal Activity in the Building.**)

Computer-Assisted Telephone Interviewing (CATI)--A telephone process in which an interviewer reads the survey question as it appears on the screen of a video display terminal and enters the response via a keyboard connected to a computer. The computer software controls the sequence of followup questions so that only appropriate questions are displayed at the terminal. The system also checks responses against allowable codes.

Computerized Energy Management System--An Energy Monitoring and Control System (EMCS) 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. The 1983 survey was concerned only with the use of such systems for improving efficiency in heating and air conditioning. Not included are clock timers or thermostats.

Conservation Practices--Measures that owners or occupants of buildings may initiate manually or automatically to reduce the amount of energy consumed by the heating, ventilation, and air conditioning (HVAC) or lighting systems in a building. Two of these measures are: reducing heating, cooling, or lighting when the building is not in full use

and having a regular maintenance program for the HVAC. Energy conservation by processing equipment is not included in this definition. (See **Reduced Cooling, Reduced Heating, Regular Maintenance Program for HVAC, and Computerized Energy Management System.**)

Consumption--The amount of energy used by or delivered to a building during the 365-day period of calendar year 1983. 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 might include other uses of electricity as well (such as water heating). (See **Btu, Energy Suppliers, Expenditures.**)

Cooling--See **Air Conditioning.**

Cooling Degree-Days (CDD)--A quantity used to estimate the need for cooling systems in buildings. A rough assumption is that cooling is not required in a building when the outdoor average daily temperature is below 65 degrees Fahrenheit. Cooling degree-days are determined by subtracting the base of 65 from the average daily temperature. (The average daily temperature is defined here as the mean of the maximum and minimum temperatures for a 24-hour period.) For example, a day with an average temperature of 85 degrees has 20 cooling degree-days ($85 - 65 = 20$), while one with an average temperature of 65 degrees or lower has zero cooling degree-days. Cooling degree-days are thus computed for each day, then summed over a month, or a year. The 1983 cooling degree-days in the tables of this report were assigned to individual sample buildings on the basis of weather data from the NOAA Division covering those buildings. (See **NOAA Division, Climate Zone, and Heating Degree-Days.**)

Cubic Foot (ft)--The amount of gas contained in a cube with an edge that is 1-foot long. (See **Natural Gas and Btu**)

Demolition--The intentional destruction of buildings, as well as destruction by fire or other natural hazards. These structures are no longer in the building stock and were not included in the survey. (See **Out-of-Scope.**)

District Heating Systems--See "Purchased Steam".

Dodge--F.W. Dodge Information Division, a member of the Construction Information Group of McGraw-Hill, Inc. This organization compiles lists of new construction projects, including new buildings, alterations, and large additions, among other things. Buildings and large additions constructed since the 1979 Nonresidential Buildings Energy Consumption Survey were sampled from the Dodge lists for the 1983 survey. These "New Buildings," together with "Old Buildings" from 1979, comprise all buildings in the 1983 survey. (See **New-Buildings Sample, Original Sample, Projects, Bounding Rule, Large Additions, Nonresidential Building, and Building.**)

Ducted Forced Air--Heated, cooled, or ventilated air that is distributed throughout a building through ducts by fans or blowers. (See **Self-Contained Heating Units, Wall Unit, Window Unit, Central Air-Conditioning System, Central Heating System, Heat-Distribution System, HVAC, and Heat Pump.**)

Electricity Consumption--Energy in the form of electricity supplied to a building by a central utility via underground or aboveground powerlines. It is usually measured in kilowatthours (kWh). It does not refer to electric power generated on site for exclusive use within the building. The fuel used for the latter type of generation would be referred to as "fuel used to generate electricity." (See **Electricity Generation and kWh.**)

Electricity Generation--The on-site production of electricity from electricity generators. The generators of electric utilities are usually driven by steam turbines. Electricity-generating plants belonging to utility companies, which produce electric power for sale to other buildings, were not included in this survey. Generators in commercial buildings are usually powered by internal-combustion engines, which burn natural gas or diesel fuel. The stock of commercial buildings includes some with the capacity to generate their own electric power on a regular basis or on an emergency basis. (See **Electricity, Boiler, and Cogeneration.**)

Energy Suppliers--The companies that provide electricity, natural gas, fuel oil, coal, or other forms of energy to a building and to the individual customers within the building. Each respondent interviewed as the representative of a building was asked to sign a waiver to allow energy suppliers to provide data on consumption and expenditures for the survey. (See **Waiver, Consumption, and Expenditures.**)

Establishment--As defined by the Standard Industrial Classification Manual, "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." (See **Multiple-Establishment Building, Single-Establishment Building, Multibuilding Establishment, and Building.**)

Expenditures--Funds spent for the energy consumed in or delivered to a building during the 365-day period of calendar year 1983. 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, service charges, and any other charges not specifically requested. If the building (or separately billed establishments within a building) receives a budgeted bill, the budgeted bill is not provided but instead the actual consumption and expenditures are provided. 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 typically include other uses of electricity as well (such as lighting and water heating). (See **Consumption and Energy Suppliers.)**

Fuel Oil--A liquid petroleum product--less volatile than gasoline--that is burned to generate heat. In order of increasing viscosity and decreasing volatility, there are kerosene, "distillate fuel oils" (No. 1, No. 2, No. 4) and "residual fuel oils" (No. 5 or No. 6). For tables in this report, distillate and residual fuel oils were reported together with kerosene as one category--fuel oil, but different Btu conversion factors were used for the three subcategories. If a fuel oil category was not specified by the energy supplier, it was treated as distillate fuel oil (the most commonly reported subcategory.) (See **Btu.)**

Furnace--An enclosed chamber where fuel is burned or where electrical- resistance heat is generated to provide a building with heat, which is distributed as hot air, hot water, or steam. (See **Boiler, Central Heating System, and HVAC.)**

Glass as a Percentage of Exterior Surface--The proportion of the exterior wall surface area that is composed of glass.

Government Occupancy--Occupancy of a building by Federal, State, or local government agencies. The buildings may be occupied by agencies of more than one government and may also be shared with nongovernment establishments.

HDD--See **Heating Degree-Days.**

Heat-Distribution System--The part of a heating system that conveys heated water and/or air throughout a building by means of pipes, pumps, ducts, or fans. Often a single distribution system serves for both heating and cooling. (See **Ducted Forced Air, Baseboard, Radiator, Convactor, or Panel, and Central Heating System.)**

Heat Pump--A system that during the heating season transports environmental heat into a building and during the cooling season transports heat from the building to the environment. 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. Outdoor coils exchange heat with ambient air or (more efficiently) with water (for example, solar-heated water, heat-distribution water, or well water). The former are called air-to-air heat pumps; the latter are called hydronic heat pumps. Hydronic heat pumps that use well water are sometimes referred to as "ground-coupled heat pumps." Some hydronic heat-pump systems circulate water through different zones in a building. Each zone can "pump" heat into or out of the water, depending on its need for cooling or heating. The number of heat pumps reported in this survey is a conservative estimate, since counts were obtained from the answers to open-ended questions about heating and heat-distribution systems not mentioned in the questionnaire. (See **Air Conditioning, Central Air-Conditioning System, Central Heating System, HVAC, Solar-Assisted Heat Pump, Boiler and Well Water for Cooling.)**

Heating Degree-Days (HDD)--A measurement used to estimate the need for the heating systems in a building. A rough assumption is that heating is not required in a building when the outdoor average daily temperature is above 65 degrees Fahrenheit. (The average daily temperature is defined here as the mean of the maximum and minimum temperatures for a 24-hour period.) Heating degree-days are determined by subtracting the average daily temperature below 65 degrees from the base 65. For example, a day with an average temperature of 50 degrees has 15 heating degree-days ($65 - 50 = 15$), while one with an average temperature of 65 or higher has zero heating degree-days. Heating degree-days are thus computed for each day, then summed over a month, or a year. The 1983 heating degree-days in the tables of this report were assigned to individual sample buildings on the basis of weather data from the NOAA Division covering those buildings. (See **NOAA Division, Climate Zone, and Cooling Degree-Days.)**

Hot-Deck Imputation--A statistical procedure for deriving a probable response to a questionnaire item for a building in cases where no response was given during the interview. To perform the procedure, an analyst sorts the data file of all buildings by variables related to the missing item. A building for which the values on the matching variables are identical to those for the building for which there was no response is then randomly selected to serve as a "donor," to supply a value for the missing item to the "recipient" building (the building for which there was no response). This technique was also used in certain cases to impute the consumption of an energy source during two or more billing periods for which no data on the consumption were received from the utility. The proportion of the "donated" consumption to the full-year consumption in the donor building was multiplied by the consumption data that was

reported for the recipient building. In this way, the imputation was an adjusted hot-deck procedure. (See **Imputation and Regression**, and Appendix C: Data Quality.)

Hours of Operation for a Typical Week--The number of hours per week that a building is used for any nonresidential activity or activities; excludes hours when the building is occupied only by maintenance, security, or other support personnel. Many buildings do not maintain constant hours of operation during the year. For buildings with a schedule that varied during the year, "hours of operation" refers to the schedule followed most often. Buildings that are open intermittently or by appointment only, or are open without being staffed, were recorded as having zero operating hours even though they were not vacant. (This last category includes automatic bank tellers and roadside rest stops.)

HVAC--An abbreviation for "heating, ventilation, and air conditioning system," the system or systems that condition air in buildings. Sometimes heating, ventilation, and air conditioning are done by separate systems. Often a single system is designed for all of the functions--for example, terminal reheat, single-zone, and multizone systems each use a single set of ducts for delivering fan-forced air, which is heated or cooled as it passes through coiled-tube units. (See **Central Heating System, Central Air-Conditioning System, Furnace, Boiler, and Heat Pump**.)

Imputation--A statistical method used to estimate the response to specific questions for which answers are missing, or to estimate missing fuel consumption and expenditures. There are many techniques, including hot-decking and regression. (See **Hot-Deck Imputation and Regression**.)

In-Scope--Buildings that contain at least some nonresidential activity and are thus eligible to be in the survey. (See **Out-of-Scope, Nonresidential Building, Dodge, Large Additions, and Building**.)

Industrial Buildings--Nonresidential buildings in which industrial/ manufacturing activities occupy more of the total square footage than any other type of activity. Examples include manufacture of automobiles, fabrication of plastic and rubber goods, assembly of furniture and electronic equipment. (See **Nonresidential Building, Commercial Buildings, Building, and Projects**.)

Insulation--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 **Special Glass and Weatherstripping or Caulking**.)

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, kerosene is included with distillate and residual fuel oils under one category--fuel oil. (See **Fuel Oil**.)

kWh (kilowatthour)--A unit of work or energy, measured as 1 kilowatt (1,000 watts) of power expended for 1 hour. One kWh is equivalent to 3,412 Btu. (See **Btu, Electricity Consumption**.)

Large Additions--In the 1983 survey, additions of 10,000 square feet or larger that at least doubled the total square footage of a building and made it eligible to be sampled as a "New Building," rather than as a previously existing building. "New Buildings" and "Old Buildings" are the two mutually exclusive categories that comprise all buildings in the 1983 survey. (See **Building, Projects, Dodge, New-Buildings Sample, Original Sample and Year Constructed**.)

Large-Buildings List--See **Special-Buildings List**.

Liquefied Petroleum Gas or LPG--Gas fuel supplied to a building in liquid form. It is usually delivered by tank truck and stored near the building in a tank or cylinder until used. LPG contains mostly propane but can also contain such gases as butane, propylene, butylene, ethane. For this report, any LPG reported was assumed to be propane. (See **Propane and Natural Gas**.)

Major Fuels--The five most common sources of energy used in the stock of commercial buildings. They are: electricity, natural gas, fuel oil, propane, and steam.

Master-Metering--The method that electricity and natural gas utility companies use to measure collectively the total volume of energy consumed by several individual customers. (See **Separate Metering, Multibuilding Establishment, and Multiple-Establishment Building**.)

Mean--The simple arithmetic average for a population--the sum of all the values in a population, divided by the size of the population.

Median--A measure of central tendency intended to express a "typical" value for an attribute. The median is different from the average in that its value is not influenced much by extremes. An estimate of the average 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 per building would not be so affected. In this report, a second difference between the median and the average is that the average is a ratio estimate but the median is not. For example, the average square feet per worker here represents the total square feet in the population of buildings, divided by the total number of workers--a ratio; the median square feet per worker is that value such that half of all buildings have more, and half have fewer, square feet per worker. Medians are computed by listing all values in ascending order. The median is the value that divides the sum of the weights of the values in half. That is, the sum of the weights for values above the median is equal to the sum of the weights for values below the median. (See **Weight**.)

Metropolitan--Buildings located within Standard Metropolitan Statistical Areas (SMSA's) as defined in the 1970 Census. An SMSA, except in New England, is a county or a group of contiguous counties that contains at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000. The contiguous counties are included in an SMSA if they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England, however, SMSA's consist of towns and cities rather than counties. "Nonmetropolitan" refers to buildings not located within SMSA's as defined in the 1970 Census. Beginning with the 1980 Census, the term "Metropolitan Statistical Area," or "MSA," was used. However, MSA mappings based on the 1980 Census were not available at the time this survey was designed. (See **Primary Sampling Unit** or **PSU**.)

Multibuilding Establishment--An establishment that operates in more than one building at a single location. Examples include college campuses and large hospital complexes. The building represents the interviewed sampling unit. If an intended sampling unit turned out to be a cluster of buildings such as a campus, then a single building was selected from the cluster by subsampling. The survey required data on consumption and expenditures for the subsampled building only. Occasionally, however, several buildings in a multibuilding establishment were metered and billed as one account for an energy source. In those cases, the consumption and expenditures for the subsampled building were estimated by prorating according to the square footage of the subsampled building in relation to the establishment as a whole. (See **Establishment, Campus or Complex, Multiple-Establishment Building, Single-Establishment Building, Building, Master-Metering** , and **Separate Metering**.)

Multiple-Establishment Building--A single building that houses more than one establishment. Examples include enclosed shopping malls and office suites. In the 1983 survey, the building represented the interviewed sampling unit. If establishments in the building were billed for an energy source using separate meters or accounts, the utility (or energy supplier) was asked to provide data on aggregate consumption and expenditures for the entire building, on an "aggregate" reporting form that was provided. (See **Establishment, Single-Establishment Building, Multibuilding Establishment, Building, Master-Metering**, and **Separate Metering**.)

Multistage Area Probability Sampling--A sampling design that minimizes survey expense while maintaining nationwide coverage. This is done by sampling in stages and by selecting "clusters" of sampling units at each stage. The cost of travel among sampling units within a cluster is lower than among units that are widely dispersed. In the 1983 survey, a nationwide distribution of 79 Primary Sampling Units, or PSU's, were selected at the first stage. Each PSU was composed of a cluster of ZIP Code areas. At the second stage, an average of five ZIP Code units was selected from within each selected PSU. At the third stage, one segment (120 establishments) was selected from each ZIP Code area. At the final stage, buildings were selected from each segment. (See **Primary Sampling Unit** or **PSU**, **SMSA**, **Weight**, **Establishment**, and **Appendix B**, "Sample Design.")

Natural Gas--Hydrocarbon gas (mostly methane) supplied to individual buildings by pipelines from a central utility company. It does not refer to liquefied petroleum gas or to privately owned gas wells operated by a building owner. (See **Liquefied Petroleum Gas** and **Propane**.)

New-Buildings Sample--Buildings or large additions constructed since 1979 that were sampled from within the PSU's by means of Dodge lists of new construction. A new-buildings sample was drawn to make inferences about all "new buildings" at large. New Buildings, together with Old Buildings, cover all buildings in the 1983 survey. (See **Original Sample**, **Dodge**, **Primary Sampling Unit** or **PSU**, and **Multistage Area Probability Sample**.)

NOAA Division--One of the 344 weather divisions designated by the National Oceanic and Atmospheric Administration (NOAA), encompassing the 48 contiguous States and District of Columbia. These divisions usually follow county borders to encompass counties with similar weather conditions. However, the NOAA division does not follow county borders when weather conditions vary considerably within a county, as is likely to be the case when a county borders the ocean or contains high mountains. A State contains an average of seven NOAA divisions; a NOAA division contains an average of nine counties. (See **Climate Zone**, **Cooling Degree-Days**, and **Heating Degree-Days**.)

Nonresidential Building--A roofed and walled structure that is used for some purpose other than residential. Nonresidential buildings include industrial plants, office, health care, and retail sales/service. The scope of this definition is quite broad and includes some buildings that are primarily residential (as well as commercial and industrial

buildings). For example, a residential building such as an apartment building that also contained some obvious nonresidential activity such as a store or an office, was considered a nonresidential building for the purposes of the 1983 survey. Nonresidential buildings comprise three groups: commercial, industrial, and farm. Both industrial and commercial buildings were sampled; however, the sample design was most efficient for commercial buildings. Only the commercial buildings are included in this report. (See **Commercial Buildings, Industrial Buildings, Building, Residential Building, Principal Activity in the Building**, and Appendix D, "Types of Buildings.")

Number of Employees in the Building--The typical number of people working in a building on a typical workday most of the year.

Number of Floors--The count of levels in the tallest section of a building, including parking areas, basements, or other floors below ground level.

Occupant Control of Heating or Air Conditioning--A term indicating that employees who were not engaged to maintain or operate a building are able to control the heating or cooling equipment where they work.

Original Sample--Buildings sampled during the 1979 Nonresidential Buildings Energy Consumption Survey for which interviews were again attempted in the 1983 survey. The 1979 survey employed a Multistage Area Probability Sample design. These buildings and the buildings sampled from lists maintained by F.W. Dodge make up all buildings covered by the 1983 survey. (See **New-Buildings Sample, Multistage Area Probability Sampling**, and **Dodge**.)

Out-of-Scope--Buildings that contained no nonresidential activity or that did not meet all of the conditions defining a "Building." Out-of-scope buildings were not included in the survey. (See **In-Scope, Building, Projects, New-Buildings Sample, Dodge, Large Additions**, and **Bounding Rule**.)

Packaged Units--Air-conditioning units built and assembled at a factory and installed as a unit to 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 also apply to heating systems, or combined heating and cooling systems. (See **Air Conditioning, Window Unit**, and **Wall Unit**.)

Passive Solar Heating Systems--Solar-heat systems operating without pumps, blowers, or other mechanical devices, in which the building is an integral part of the design of the system. Such a system relies on natural convection to circulate the air of the building past a solar-heated surface such as a thick masonry "thermal storage wall" situated behind large, sun-oriented, double glass panels. (See **Active Solar Heating Systems, Solar Air-Conditioning Systems**, and **Solar Water-Heating Systems**.)

Pounds of Steam (lb)--A weight quantity of steam--also used in this report to denote a quantity of energy in the form of steam. The amount of usable energy obtained from a pound of steam depends on its temperature and pressure at the point of consumption, and on the drop in pressure after consumption. For commercial applications, steam is generally delivered to the point of consumption at 212 to 320 degrees Fahrenheit, and at gauge pressures of 15 to 60 pounds per square inch. The amount of usable energy in this steam ranges from 970 Btu per pound to 1,020 Btu per pound. For the 1979 and 1983 surveys, a conversion factor of 1,000 Btu per pound was used. (See **Btu** and **Purchased Steam**.)

Primary Sampling Unit or PSU--The sampling units selected at the first stage in multistage area probability sampling. A PSU typically consists of one to several contiguous counties--for example, a metropolitan area with surrounding suburban counties. The approximately 3,100 counties and independent cities of the contiguous United States were grouped into about 1,900 PSU's by a procedure similar to the one used by the Census Bureau for its Current Population Survey. For the Nonresidential Buildings Energy Consumption Survey, 79 of these PSU's were selected with probabilities proportionate to their 1970 population. PSU's can be composed of one or more SMSA's or can be composed of rural counties. (See **Multistage Area Probability Sampling, SMSA, Metropolitan, Weight**, and Appendix B, "Sample Design.")

Principal Activity in the Building--A categorization of a building that is determined by the primary business, commerce, or function carried out by the occupants. The type categories were designed to group buildings that have similar patterns of energy consumption. Because often more than one activity is carried on in a building, in the 1983 survey a type category was assigned on the basis of the predominant use of floorspace. Examples of various types of building include Office, Health Care, Lodging, and Mercantile Sales/Service. (See **Nonresidential Building** and Appendix D, "Types of Buildings.")

Professional Energy Audit--An inspection that determines where (and how) a building uses energy, discovers where (and how) energy is wasted, and identifies energy-conservation possibilities. (See **Conservation Practices**.)

Projects--All construction represented by a single record of the F.W. Dodge Information Division's file of new construction (for example, new buildings, alterations, and additions to buildings); a project is generally, though not always, associated with a building or buildings. (See **Dodge, Large Additions, Bounding Rule, and Building.**)

Propane--A gaseous petroleum product that liquefies under pressure; it is a major component in liquefied petroleum gas, or LPG. For this report, any LPG reported was assumed to be propane. (See **Liquefied Petroleum Gas or LPG and Natural Gas.**)

Purchased Steam--Designation applied to buildings for which steam is bought from companies that generate and distribute steam and that often serve municipal areas. Many of these distributors are electric utilities that sell exhaust steam from their generator turbines. For the 1983 questionnaire, some buildings in a campus or complex with nonpurchased steam piped in from a central plant, may have reported this consumption as "purchased steam". "Purchased steam" does not apply to any building that uses purchased fuels to generate its own steam for use in that building or in other buildings of a campus or complex. (See **Pounds of Steam, Btu and Campus or Complex.**)

Quadrillion Btu--Equivalent to 1,000,000,000,000,000 Btu. (See **Btu.**)

Radiator, Convector, or Panel--Either a "Self-Contained Unit" that both produces and distributes heat, or a unit connected to a "Central Heating System" for the purpose of distributing heat throughout a building. A radiator is a steam or hot-water unit that distributes heat by a combination of direct radiation, conduction, and convection. Typically it is a freestanding cast-iron fixture exposed in the space it heats. A convector works on the same principle but is enclosed in a metal box with ventilation grills and dampers to control air convection. A convector is a unit that uses electric resistance coils or steam/hot-water finned tubes to heat the air and create convection currents. A heating panel is a unit containing electric coils or steam/hot-water tubes, built beneath the surface of walls, ceilings, or floors. A panel heats by radiation and passive convection. (See **Self-Contained Heating Units, Central Heating System, and Heat-Distribution System.**)

Reduced Cooling When Building Not in Use--Manual or automatic reduction in air conditioning during the hours a building is not in full use. Buildings that have no air-conditioning systems or have only window air-conditioning units are reported as "Not Applicable." (See **Air Conditioning, Central Air-Conditioning System, Window Unit, Heat Pump, and Conservation Practices.**)

Reduced Heating When Building Not in Use--Manual or automatic reduction in heating during the hours a building is not in full use. Buildings that do not have heating systems are reported as "Not Applicable." (See **Central Heating System, Self-Contained Heating Units, Heat Pump, and Conservation Practices.**)

Regression--A statistical procedure that was used to estimate consumption of energy and expenditures for energy when fewer than 31 days of data were available for the year 1983. The procedure takes into account many characteristics of buildings (such as size, age, principal activity, heating fuels). (See **Hot-Deck Imputation and Imputation.**)

Regular Maintenance Program for HVAC--A systematic program for checking the heating and/or air-conditioning equipment on a regular basis (at least once a year), even if there are no apparent problems. (See **HVAC, Central Heating System, Central Air-Conditioning System, Air Conditioning, Heat Pump, Self-Contained Heating Units, and Window Unit.**)

Relative Standard Error--See **RSE.**

Residential Buildings--Structures used primarily as a dwelling for one or more households. Residential buildings were considered within the scope of the 1983 NBECS survey if they showed evidence of some kind of commercial or industrial activity. For example, a residential building, such as an apartment building, that also contained some obvious nonresidential activity (such as, a store or an office) was considered a nonresidential building for this survey. For a private residence to have been selected for the 1983 survey, it had to have a sign (large enough to be visible from the street) advertising the presence of some commercial or industrial activity. (See **Principal Activity in the Building, and In-Scope.**)

RSE (Relative Standard Error)--A measure of the reliability or precision of the survey statistics we use. Variability occurs in survey statistics because the different samples that could be drawn would each produce different values for the survey statistics. Relative Standard Error, or RSE, is a measure of precision on a percentage scale. The RSE is defined as the standard error of a survey estimate, divided by the survey estimate and multiplied by 100. (Standard error is the square root of the variance.) For example, an RSE of 50 percent means that the standard error is half as large as the survey estimate. (See Appendix C, "Data Quality," for a discussion of sampling errors.)

RSE Column Factor--An adjustment factor that appears with each column of the main tables used to compute RSE's. For a survey estimate in a particular row and column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that particular "cell." (See **RSE, RSE Row Factor**, and the **Generalized Variances** section of Appendix C.)

RSE Row Factor--A factor used to compute RSE's. The row factor is equal to the geometric mean of the RSE's in a particular row of the main tables. For a survey estimate in a particular row and column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that particular "cell." (See **RSE, RSE Column Factor**, and the **Generalized Variances** section of Appendix C.)

Self-Contained Heating Units--Units, installed either in a building or on the roof, that generate and deliver heat only to a local zone within the building. Included are freestanding and portable heaters. (See **Central Heating System, Radiator, Convectector, or Panel**, and **Baseboard**.)

Separate Metering--The method by which utility companies that furnish electricity and natural gas measure the quantity of energy consumed by individual customers in a building. Each customer's consumption is measured on a separate meter. However, there is not necessarily a one-to-one correspondence between the number of separate meters and the number of customers in a building, because one customer might be served by more than one meter. (See **Master-Metering, Multibuilding Establishment**, and **Multiple-Establishment Building**.)

SIC--An abbreviation for Standard Industrial Classification codes developed by the U.S. Office of Management and Budget, which categorizes businesses into groups with similar economic activities. (See **Principal Activity in the Building** and Appendix D, "Types of Buildings.")

Single-Establishment Building--A building that houses only one establishment--for example, a building dedicated to the offices of a single corporation. (See **Establishment, Multibuilding Establishment, Multiple-Establishment Building**, and **Building**.)

SMSA--Standard Metropolitan Statistical Area. (See **Metropolitan**.)

Solar Air-Conditioning Systems--Systems that use energy from the sun to cool indoor air. Most commonly used are evaporative coolers, which draw air through a moist, porous medium. Although the air is cooled, its humidity is increased. This aspect limits the usefulness of such systems to dry climates such as the Southwest. Evaporative coolers are also known as "swamp coolers." (See **Active Solar Heating Systems, Passive Solar Heating Systems**, and **Solar Water-Heating Systems**.)

Solar-Assisted Heat Pump--A heat pump that during the heating season draws heat primarily from solar-heated water rather than from outdoor air. (See **Heat Pump, Active Solar Heating Systems**, and **Solar Water-Heating Systems**.)

Solar Energy--The radiant energy of the sun, which can be converted into other forms of energy, such as heat or electricity. Solar radiation is most often used in buildings for space heating and water heating. (See **Active Solar Heating Systems, Passive Solar Heating Systems, Solar Water-Heating Systems, Solar Air-Conditioning Systems**, and **Solar-Assisted Heat Pump**.)

Solar Water-Heating Systems--Systems that use solar collecting panels to heat water that is then stored in a tank for use in personal hygiene or general cleaning, as opposed to systems that collect solar energy for space heating. "Thermosiphons" are passive systems that use only convection to move heated water between the collecting panels and a storage tank. Active systems use pumps to maintain flow. (See **Active Solar Heating Systems, Passive Solar Heating Systems, Solar Air-Conditioning Systems**, and **Solar-Assisted Heat Pump**.)

Special-Buildings List--A list that was used to select a supplementary sample of large buildings for the 1979 Nonresidential Buildings Energy Consumption Survey. These buildings make up part of the "Original Sample" in the 1983 survey and were included to increase the reliability of the survey statistics. The list sampling procedure entailed locating "large" buildings within the selected PSU's. "Large" buildings were defined as those that had at least 250,000 square feet of enclosed floorspace and were located in PSU's that are in Standard Metropolitan Statistical Areas. In the remaining one-third of the PSU's, buildings with an area of 100,000 square feet or more were listed. The sample from the large-buildings list was meant to supplement the area probability sample. Weight adjustment was used to account for overlap between list and area samples. (See **Primary Sampling Units, Building, Nonresidential Building, New-Buildings Sample, Original Sample, Metropolitan**, and Appendix B, **Sample Design**.)

Special Glass--Tinted, reflective, insulated, or thermal pane types of glass that, when installed in the exterior windows of a building, reduce the rate of solar penetration into the building or the rate at which heat or cold is lost to the

environment. Such forms of glass may have been installed either at the time of construction or since construction (retrofitting). (See **Insulation and Weatherstripping** or **Caulking**.)

Special ZIP Codes--Codes allocated by the U.S. Postal Service to business establishments, government agencies, or buildings that have a great volume of mail.

Square Feet--All the area enclosed by the exterior walls of a building, including indoor parking facilities, basements, hallways, lobbies, stairways, and elevator shafts, in units of square feet. (See **Total Square Footage**.)

Tank Capacity--The amount of fuel oil or kerosene a tank can hold. In the 1983 survey, tank capacity did not refer to storage of liquefied petroleum gas or propane. (See **Fuel Oil and Kerosene**.)

Total Square Footage--Square footage of floorspace summed or aggregated over all buildings in a category (such as all office buildings in the United States). In the survey, aggregate square footage was estimated by multiplying each building's square footage by an appropriate weight, then summing over all sample buildings of interest to represent nationwide totals. (See **Square Feet** and **Weight**.)

Vacant--Designation for a building in which most of the floorspace was not being used at the time of the survey. A vacant building may contain occupants who are using small portions of floorspace.

Waiver--An authorization form, to be signed by the respondent from a building, instructing energy-supply companies that serve the building to release information on the volumes and costs of energy consumed in the buildings during a specified period. Occasionally the service district of an energy-supply company contained several sampled buildings for which waivers were not obtained. In these cases, the company was asked to provide aggregated data on consumption and expenditures for that group of buildings. In this way, confidentiality was protected for the individual buildings. A worksheet was provided to these companies to help with the computation. Imputation and proration procedures were then used to assign portions of the aggregated consumption and expenditures to the individual buildings.

Wall Unit--Self-contained unit for air conditioning, installed in a wall, with heat-radiating condensers exposed on the outdoor surface of the wall. (See **Air Conditioning**, **Central Air-Conditioning System**, and **Window Unit**.)

Waste-Heat Recovery System--An energy-conservation system whereby space heating or water heating is done by using byproduct heat that would otherwise be ejected into the environment. In nonresidential buildings, sources of waste heat include refrigeration/air-conditioner compressors, manufacturing or other processes, data processing centers, ventilation exhaust air, lighting, and the occupants themselves. For the 1983 survey, a waste-heat recovery system was said to exist if there was equipment for the specific purpose of collecting and redistributing waste heat. For example, air ducts or heat pumps might be installed to redistribute waste heat within a building, or heat from chillers might produce hot water for various uses. Not considered was the passive use of radiant heat from lighting, workers, motors, ovens, et cetera, when there were no special systems for collecting and redistributing heat. The number of waste-heat recovery systems reported in the 1983 survey is a conservative estimate, because counts were obtained from responses to open-ended questions about heating and heat-distribution systems not mentioned in the questionnaire. (See **Cogeneration**, **Air Conditioning**, **Heat Pump**, **HVAC**, and **Water Heating**.)

Waste Incineration--For this report, the burning of otherwise discarded combustible materials, generally by municipal or industrial facilities, to produce energy for such purposes as space heating and electric power generation. The size of the waste is reduced by shredders, grinders, or hammermills. Noncombustible materials, if any, are removed. The waste is then dried and burned, either alone or in combination with fossil fuels.

Water Heating--In the 1983 survey, hot water used mostly for personal hygiene and general cleaning. Not included is production of hot water or steam in boilers for use in space heating, electric power generation, or industrial processes. (See **Solar Water-Heating Systems** and **Boiler**.)

Weatherstripping or Caulking--Any material placed between the door or window and the door frame or window frame, to reduce the rate of loss of heat or cold due to air infiltration. (See **Insulation** and **Special Glass**.)

Weight--An "inflation" factor associated with each sample building, by which an attribute (such as square footage) is multiplied, when sample values are being used to estimate the values of the population at large. A weight is the number of actual buildings that a particular sample building is meant to represent. Summing over weighted sample values, thus, provides estimates of nationwide totals. Statistically, the weight of a building is the reciprocal of that building's probability of being selected into the sample and is known as a "basic weight." When an interview is unobtainable for a particular building, the basic weights of other similar sample buildings must be adjusted so that they collectively represent this nonrespondent. Basic weights then become "adjusted weights." (See **Primary Sampling Unit** or **PSU**, **Multistage Area Probability Sample**, and **Total Square Footage**.)

Well Water for Cooling--A system that uses cool well water for air conditioning. For example, well water may be pumped directly through cooling coils in the air-handling units of buildings. Or--more commonly--it may be used to remove heat that is pumped out of a building by a heat pump. Well water may also be used with hydronic heat pumps for heating a building during the winter. These systems are also known as "ground-coupled heat pumps" and are more efficient than air-to-air heat pumps. (See **Air Conditioning, Solar Air-Conditioning Systems, and Heat Pump**.)

Wind Energy--Energy present in wind motion that can be converted to mechanical energy for driving pumps, mills, and electric power generators. Wind pushes against sails, vanes, or blades radiating from a central rotating shaft.

Window Unit--Self-contained air-conditioners that are installed in a window. (See **Air Conditioning, Central Air-Conditioning System, and Wall Unit**.)

Year Constructed--The year in which the major part or the largest portion of a building was constructed. If a building was classified as a "New Building" due to large additions to its square footage, its "year constructed" was taken to be the completion date for those additions. (See **Large Additions, Dodge, and New-Buildings Sample**.)

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