Detailed Tables

A variety of statistics relating to lighting energy are presented in this section. Statistics are presented by subgroups based on building characteristics, and by subgroups based on lighting equipment. The three sets of subgroups presented are:

(1) Four classes of building characteristics: principal activity, size, year constructed, and Census region;

(2) Five lamp types: standard incandescent, energy-efficient incandescent, standard fluorescent, energy-efficient incandescent, high-intensity discharge (HID);

(3) Lighting configurations (combinations of lamps and conservation features): controls, high-efficiency ballast, reduced illuminance in (delamping).

The statistics presented are aggregate totals, such as lighted floorspace, and averages, such as illuminance and lighting power density. The averages shown for a particular building or equipment category are floorspace-weighted averages of the corresponding values for the individual buildings in that category. (Appendix A describes the computation of floorspace-weighted averages.) Because the quantities are computed at the building level and then averaged, it is not always possible to derive one column of a table from the statistics in corresponding columns of components.

For each table in this section, Appendix F gives a corresponding Relative Standard Error Table. The following Quick Reference Guide indicates the table numbers and what statistics each contains.

Quick Reference Guide to the Detailed Tables

Statistics on	By Building Characteristics	By Lamp Type	By Lamp and Conservation Features
Aggregate Totals			
Floorspace	1, 9		
Lighted Floorspace	1, 3, 9	1, 4	8
Lighted Floorspace by Lamp Type	1		
Lighted Floorspace-Hours	3	4	
Lighting Energy	9	8	8
Energy Savings		10, 11	
Floorspace-Weighted Averages			
Operating Hours	3	4	
Effective Lighting Hours	3	4	
Illuminance	5, 7	6	6
Efficacy		6	6
Lighting Power Density	7	6	6
End-Use Intensity	9	8	8

Savings Estimates by Conservation Case: Table 12.

Table 1. Lighted Floorspace by Type of Lamp and Building Characteristics

(Million Square Feet)

Building Characteristics	Type of Lamp							Total Lighted Floorspace	Total Floorspace
	Fluorescent			Incandescent			High Intensity Discharge		
	Standard	Energy-Efficient	Total	Standard	Energy-Efficient	Total			
All Buildings	20,700	17,131	37,831	6,774	2,551	9,325	3,064	49,590	58,199
Principal Activity									
Assembly	2,327	1,306	3,633	1,556	553	2,109	327	5,918	7,339
Education	2,854	3,372	6,225	442	181	623	242	6,968	7,292
Food Sales	281	256	538	77	Q	104	Q	668	712
Food Service	342	231	573	430	109	539	Q	1,133	1,281
Health Care	515	1,233	1,748	103	96	199	Q	2,010	2,107
Lodging	529	552	1,081	1,001	452	1,452	Q	2,423	2,785
Mercantile/Service	5,900	3,652	9,552	914	464	1,378	500	11,361	12,805
Office	3,704	4,059	7,763	537	382	919	170	8,763	9,546
Public Order and Safety	210	231	440	Q	Q	Q	Q	573	680
Warehouse	2,859	1,480	4,339	1,204	100	1,304	1,304	6,917	8,996
Vacant	683	309	992	245	114	358	38	1,392	2,931
Other	495	452	947	158	66	223	296	1,464	1,726
Building Size (square feet)									
1,001 to 5,000	2,745	972	3,717	1,051	150	1,201	74	5,023	6,209
5,001 to 10,000	2,833	1,281	4,114	1,016	296	1,311	163	5,545	6,861
10,001 to 25,000	3,580	1,953	5,532	1,187	462	1,650	275	7,405	9,119
25,001 to 50,000	3,430	2,205	5,636	1,101	295	1,396	445	7,451	8,661
50,001 to 100,000	2,856	2,821	5,677	817	455	1,272	534	7,350	8,559
100,001 to 200,000	2,409	2,394	4,803	691	306	998	543	6,275	7,161
200,001 to 500,000	1,764	3,107	4,872	672	386	1,058	527	6,198	6,737
Over 500,000	1,083	2,398	3,482	239	200	439	503	4,342	4,893
Year Constructed									
Before 1920	1,794	1,032	2,826	970	317	1,287	61	4,139	5,735
1920-1945	3,083	1,885	4,968	1,424	452	1,876	164	6,907	8,894
1946-1959	3,451	2,150	5,600	1,043	247	1,289	371	7,180	8,534
1960-1969	4,174	3,665	7,839	1,403	409	1,812	470	10,000	11,117
1970-1979	5,163	4,911	10,074	1,286	556	1,842	961	12,644	14,036
1980-1986	3,035	3,488	6,523	649	570	1,219	1,037	8,721	9,883
Census Region									
Northeast	3,760	4,103	7,863	1,330	410	1,740	543	9,963	11,830
Midwest	5,513	4,125	9,638	1,879	696	2,576	1,107	13,140	16,034
South	7,775	4,959	12,734	2,385	959	3,344	968	16,790	19,397
West	3,652	3,943	7,595	1,179	486	1,665	446	9,697	10,937

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent.

Notes: • The sum across lamp types may be greater than the total lighted floorspace because some floorspace is lighted by more than one type of lamp. The discrepancy is approximately 2 percent or less. • Table of RSE's can be found in Appendix F. • See Appendix A for an explanation of floorspace computations and the Glossary for explanations of abbreviations and definitions used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-871A, "Building Questionnaire" of the 1986 Nonresidential Buildings Energy Consumption Survey.

Table 2. Percent of Lighted Floorspace by Type of Lamp and Building Characteristics

Building Characteristics	Type of Lamp							Total Lighted Floorspace
	Fluorescent			Incandescent			High-Intensity Discharge	
	Standard	Energy-Efficient	Total	Standard	Energy-Efficient	Total		
All Buildings	41.7	34.5	76.3	13.7	5.1	18.8	6.2	100.0
Principal Activity								
Assembly	39.3	22.1	61.4	26.3	9.3	35.6	5.5	100.0
Education	41.0	48.4	89.3	6.3	2.6	8.9	3.5	100.0
Food Sales	42.1	38.4	80.5	11.6	3.9	15.5	Q	100.0
Food Service	30.2	20.3	50.5	38.0	9.6	47.6	Q	100.0
Health Care	25.6	61.4	87.0	5.1	4.8	9.9	Q	100.0
Lodging	21.9	22.8	44.6	41.3	18.6	59.9	Q	100.0
Mercantile/Service	51.9	32.1	84.1	8.0	4.1	12.1	4.4	100.0
Office	42.3	46.3	88.6	6.1	4.4	10.5	1.9	100.0
Public Order and Safety	36.6	40.2	76.9	18.8	Q	20.3	Q	100.0
Warehouse	41.3	21.4	62.7	17.4	1.4	18.8	18.9	100.0
Vacant	49.1	22.2	71.3	17.6	8.2	25.7	2.8	100.0
Other	33.8	30.9	64.7	10.8	4.5	15.3	20.2	100.0
Building Size (square feet)								
1,001 to 5,000	54.6	19.3	74.0	20.9	3.0	23.9	1.5	100.0
5,001 to 10,000	51.1	23.1	74.2	18.3	5.3	23.6	2.9	100.0
10,001 to 25,000	48.3	26.4	74.7	16.0	6.2	22.3	3.7	100.0
25,001 to 50,000	46.0	29.6	75.6	14.8	4.0	18.7	6.0	100.0
50,001 to 100,000	38.9	38.4	77.2	11.1	6.2	17.3	7.3	100.0
100,001 to 200,000	38.4	38.2	76.5	11.0	4.9	15.9	8.6	100.0
200,001 to 500,000	28.5	50.1	78.6	10.8	6.2	17.1	8.5	100.0
Over 500,000	24.9	55.2	80.2	5.5	4.6	10.1	11.6	100.0
Year Constructed								
Before 1920	43.3	24.9	68.3	23.4	7.7	31.1	1.5	100.0
1920-1945	44.6	27.3	71.9	20.6	6.5	27.2	2.4	100.0
1946-1959	48.1	29.9	78.0	14.5	3.4	18.0	5.2	100.0
1960-1969	41.7	36.7	78.4	14.0	4.1	18.1	4.7	100.0
1970-1979	40.8	38.8	79.7	10.2	4.4	14.6	7.6	100.0
1980-1986	34.8	40.0	74.8	7.4	6.5	14.0	11.9	100.0
Census Region								
Northeast	37.7	41.2	78.9	13.4	4.1	17.5	5.5	100.0
Midwest	42.0	31.4	73.4	14.3	5.3	19.6	8.4	100.0
South	46.3	29.5	75.8	14.2	5.7	19.9	5.8	100.0
West	37.7	40.7	78.3	12.2	5.0	17.2	4.6	100.0

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent.

Notes: • The percentage in each cell was computed by taking the floorspace from the corresponding cell in Table 1 and dividing it by the total lighted floorspace for that row. • The sum of percentages over types of lamps may be greater than 100 because some floorspace is lighted by more than one type of lamp. The discrepancy is approximately 2 percent or less. • Table of RSE's can be found in Appendix F. • See Appendix A for an explanation of floorspace computations and the Glossary for explanations of abbreviations and definitions used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-871A, "Building Questionnaire" of the 1986 Nonresidential Buildings Energy Consumption Survey.

Table 3. Usage Measures by Building Characteristics

Building Characteristics	Total Lighted Floorspace (million square feet)			Operating Hours per Week	Total Weekly Lighted Floorspace-Hours (billion square foot-hours)			Effective Lighting Hours per Week	
	Open	Closed	Ratio (Closed/ Open)		Open	Closed	Total (Open + Closed)	H[e]	Ratio (Effective Lighting/ Operating)
All Buildings	49,590	8,304	0.17	70.6	3,501	465	3,965	80.0	1.13
Principal Activity									
Assembly	5,918	505	0.09	55.2	327	33	360	60.8	1.10
Education	6,968	589	0.08	52.1	363	64	427	61.3	1.18
Food Sales	668	231	0.35	103.8	69	9	78	117.5	1.13
Food Service	1,133	160	0.14	91.6	104	8	112	98.7	1.08
Health Care	2,010	1,102	0.55	152.6	307	1	308	153.3	1.00
Lodging	2,423	1,211	0.50	160.5	389	2	391	161.5	1.01
Mercantile/Service	11,361	1,522	0.13	66.5	756	129	885	77.9	1.17
Office	8,763	1,272	0.15	54.6	478	127	606	69.1	1.27
Public Order and Safety	573	295	0.51	127.3	73	5	78	135.3	1.06
Warehouse	6,917	847	0.12	65.9	456	55	511	73.9	1.12
Vacant	1,392	143	0.10	36.3	50	15	65	47.0	1.30
Other	1,464	428	0.29	88.0	129	15	144	98.3	1.12
Building Size (square feet)									
1,001 to 5,000	5,023	563	0.11	59.4	298	39	337	67.2	1.13
5,001 to 10,000	5,545	485	0.09	60.5	336	39	375	67.6	1.12
10,001 to 25,000	7,405	967	0.13	63.7	472	55	526	71.1	1.12
25,001 to 50,000	7,451	1,004	0.13	64.3	479	64	543	72.8	1.13
50,001 to 100,000	7,350	1,192	0.16	74.0	544	70	614	83.5	1.13
100,001 to 200,000	6,275	1,270	0.20	74.4	467	68	535	85.2	1.15
200,001 to 500,000	6,198	1,545	0.25	82.5	512	67	579	93.4	1.13
Over 500,000	4,342	1,278	0.29	90.8	394	62	456	105.1	1.16
Year Constructed									
Before 1920	4,139	563	0.14	60.5	250	44	294	71.0	1.17
1920-1945	6,907	1,022	0.15	66.9	462	57	518	75.0	1.12
1946-1959	7,180	932	0.13	65.0	467	58	525	73.1	1.12
1960-1969	10,000	1,658	0.17	70.0	700	95	794	79.4	1.14
1970-1979	12,644	2,443	0.19	76.2	963	132	1,096	86.7	1.14
1980-1986	8,721	1,686	0.19	75.6	659	79	738	84.6	1.12
Census Region									
Northeast	9,963	1,812	0.18	73.5	733	103	836	83.9	1.14
Midwest	13,140	2,133	0.16	70.0	920	130	1,049	79.9	1.14
South	16,790	2,833	0.17	70.5	1,184	143	1,327	79.0	1.12
West	9,697	1,527	0.16	68.5	664	89	753	77.7	1.13

Notes: • Effective Lighting Hours are obtained by dividing the total lighted floorspace-hours by the open-hours lighted floorspace. • Hours per week shown for each row are floorspace-weighted averages. • Table of Relative Standard Errors can be found in Appendix F. • See Appendix D for explanation of floorspace-hour computations and the Glossary for explanations of abbreviations and definitions used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-871A, "Building Questionnaire" of the 1986 Nonresidential Buildings Energy Consumption Survey.

Table 4. Usage Measures by Lighting Equipment

Lamp Type	Total Lighted Floorspace (million square feet)			Operating Hours per Week	Total Weekly Lighted Floorspace-Hours (billion square foot-hours)			Effective Lighting Hours per Week	
	Open	Closed	Ratio (Closed/ Open)		Open	Closed	Total (Open + Closed)	H^e	Ratio (Effective Lighting/ Operating)
Fluorescent	37,831	6,238	0.16	68.8	2,601	377	2,978	78.7	1.14
Standard	20,700	2,810	0.14	64.4	1,332	194	1,527	73.7	1.15
Energy-Efficient	17,131	3,428	0.20	74.1	1,269	183	1,452	84.7	1.14
Incandescent	9,325	1,571	0.17	75.1	701	63	763	81.9	1.09
Standard	6,774	1,079	0.16	71.7	486	43	529	78.1	1.09
Energy-Efficient	2,551	492	0.19	84.3	215	19	234	91.9	1.09
High-Intensity Discharge	3,064	697	0.23	83.7	256	33	289	94.3	1.13

Notes: • Floorspace allocation by lamp type assumes the proportions of floorspace served by different lamps within a building is the same during off-hours as during operating hours. • Effective Lighting Hours are obtained by dividing the total lighted floorspace-hours by the open-hours lighted floorspace. • Hours per week shown for each row are floorspace-weighted averages. • Table of Relative Standard Errors can be found in Appendix F. • See Appendix D for explanation of floorspace-hour computations and the Glossary for explanations of abbreviations and definitions used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-871A, "Building Questionnaire" of the 1986 Nonresidential Buildings Energy Consumption Survey.

Table 5. Average Assigned Illuminance Ranges by Building Characteristics

Building Characteristics	Average Assigned Illuminance Range (lumens per square foot)		
	Low	Medium	High
All Buildings	30.0	45.0	65.3
Principal Activity			
Assembly	19.1	28.6	46.9
Education	50.0	75.0	100.0
Food Sales	20.0	30.0	50.0
Food Service	10.0	15.0	20.0
Health Care	92.8	139.2	186.5
Lodging	20.0	30.0	50.0
Mercantile/Service	20.0	30.0	50.0
Office	44.6	66.9	91.0
Public Order and Safety	37.1	55.7	78.5
Warehouse	7.9	11.8	17.6
Vacant	2.0	3.0	5.0
Other	48.7	73.1	117.5
Building Size (square feet)			
1,001 to 5,000	24.4	36.5	55.0
5,001 to 10,000	24.3	36.5	54.8
10,001 to 25,000	26.7	40.0	59.5
25,001 to 50,000	28.5	42.7	61.8
50,001 to 100,000	28.6	42.9	62.7
100,001 to 200,000	33.1	49.7	69.9
200,001 to 500,000	35.4	53.1	75.3
Over 500,000	42.5	63.7	89.7
Year Constructed			
Before 1920	25.7	38.5	56.9
1920-1945	30.7	46.1	66.4
1946-1959	29.4	44.1	63.7
1960-1969	30.6	45.9	66.2
1970-1979	30.1	45.2	65.5
1980-1986	31.3	46.9	68.2
Census Region			
Northeast	29.7	44.6	64.7
Midwest	31.1	46.6	67.4
South	28.9	43.4	63.1
West	30.8	46.2	66.7

Notes: • Table of Relative Standard Errors can be found in Appendix F. • See Appendix B for explanation of the average assigned illuminances and the Glossary for explanations of abbreviations and definitions used in this report.

Sources: Adapted from Energy Information Administration, Office of Energy Markets and End Use, Form EIA-788A, "Building Form" of the 1979 Nonresidential Buildings Energy Consumption Survey; Form EIA-871A, "Building Questionnaire" of the 1986 Nonresidential Buildings Energy Consumption Survey; and Illuminating Engineering Society of North America, *IES Lighting Handbook: 1987 Application Volume.*

Table 6. Illuminance and Power Measures by Lighting Configuration

Lamp Type and Conservation Feature Present	Percent of Total Lighted Floorspace	Usage Factor (percent)	Illuminance (lumens per square foot)		Efficacy (lumens per square foot)	In-Use Lighting Power Density (watts per
			In-Use	Time-Averaged		
Standard Fluorescent	41.6	43.9	62.7	28.8	59.0	1.0
No Conservation Features	22.8	41.3	59.2	25.6	59.0	1.0
Ballast	6.6	43.6	61.5	27.3	59.0	1.0
Controls	3.3	48.1	62.7	29.4	59.0	1.1
Delamping	2.6	45.3	73.5	33.9	59.0	1.3
Ballast and Controls	2.7	54.5	61.0	34.2	59.0	1.0
Ballast and Delamping	1.5	40.5	67.6	27.6	59.0	1.1
Controls and Delamping	1.2	55.4	91.4	58.9	59.0	1.6
Ballast, Controls, and Delamping	0.9	51.2	87.2	49.2	59.0	1.4
Energy-Efficient Fluorescent	34.6	50.4	77.3	41.4	62.0	1.2
No Conservation Features	6.5	44.3	66.2	30.5	62.0	1.1
Ballast	9.5	46.7	76.8	38.0	62.0	1.1
Controls	2.6	46.2	65.9	30.9	62.0	1.1
Delamping	1.2	46.6	79.7	37.0	62.0	1.3
Ballast and Controls	4.1	62.1	83.5	54.6	62.0	1.2
Ballast and Delamping	4.2	49.5	85.4	44.6	62.0	1.3
Controls and Delamping	1.1	47.7	84.8	41.0	62.0	1.4
Ballast, Controls, and Delamping	5.4	59.8	84.0	54.3	62.0	1.3
Standard Incandescent	13.6	46.5	50.6	24.7	18.0	2.8
No Conservation Features	10.4	43.6	47.8	22.4	18.0	2.7
Controls	1.8	58.4	54.6	29.3	18.0	3.0
Delamping	0.9	45.5	63.4	29.4	18.0	3.5
Controls and Delamping	0.5	65.3	71.9	48.3	18.0	4.0
Energy-Efficient Incandescent	5.2	54.7	61.4	34.9	20.0	3.1
No Conservation Features	2.6	45.9	56.6	26.3	20.0	2.8
Controls	1.1	64.5	63.5	43.8	20.0	3.2
Delamping	0.6	52.9	70.6	36.3	20.0	3.5
Controls and Delamping	0.9	70.3	67.5	48.8	20.0	3.4
High-Intensity Discharge	6.3	56.1	51.9	31.2	69.0	0.8
No Conservation Features	3.2	52.0	42.3	20.9	69.0	0.6
Controls	1.5	65.6	62.3	45.0	69.0	0.9
Delamping	0.9	49.2	47.5	21.7	69.0	0.7
Controls and Delamping	0.7	64.1	80.7	62.3	69.0	1.2

Notes: • Ballast, Controls, and Delamping, respectively, indicate that high efficiency ballasts, any type or combination of lighting controls, and a delamping program were reported for the building containing the floorspace lit by the indicated lamp. High-efficiency ballasts, when reported, were assumed to apply only to fluorescent lamps. The illuminance or power measure for each lighting equipment configuration is the (lighted-floorspace-weighted) average of that measure across buildings. A column that represents an average product is not equal to the product of the corresponding columns. For example, for a single building, the time-averaged illuminance is the product of the usage factor and the in-use illuminance; however, the average time-averaged illuminance is not the average usage factor times the average in-use illuminance. • Table of Relative Standard Errors can be found in Appendix F. • See Appendices B, C, and D for derivations and the Glossary for explanations of abbreviations and definitions used in this report.

Sources: Percent of floorspace and usage factor from Energy Information Administration, Office of Energy Markets and End Use, Form EIA-871A, "Building Questionnaire" of the 1986 Nonresidential Buildings Energy Consumption Survey; Illuminance and efficacy derived from sources described in Appendices B and C. Lighting power density is derived from illuminance and efficacy.

Table 7. Illuminance and Power Measures by Building Characteristics

Building Characteristics	Percent of Total Lighted Floorspace 1986	Usage Factor (percent)	Illuminance (lumens per square foot)		In-Use Lighting Power Density (watts/square foot)
			In-Use	Time-Averaged	
All Buildings	100.0	47.6	65.3	32.9	1.4
Principal Activity					
Assembly	11.9	36.2	46.9	17.0	1.4
Education	14.1	36.5	100.0	36.5	1.9
Food Sales	1.3	70.0	50.0	35.0	1.1
Food Service	2.3	58.8	20.0	11.7	0.7
Health Care	4.1	91.3	186.5	170.2	3.6
Lodging	4.9	96.1	50.0	48.1	2.0
Mercantile/Service	22.9	46.4	50.0	23.2	1.0
Office	17.7	41.1	91.0	37.5	1.8
Public Order and Safety	1.2	80.5	78.5	63.2	1.9
Warehouse	13.9	44.0	17.6	7.7	0.4
Vacant	2.8	28.0	5.0	1.4	0.1
Other	3.0	58.5	117.5	68.7	2.5
Building Size (square feet)					
1,001 to 5,000	10.1	40.0	55.0	21.9	1.3
5,001 to 10,000	11.2	40.2	54.8	21.4	1.3
10,001 to 25,000	14.9	42.3	59.5	25.1	1.4
25,001 to 50,000	15.0	43.3	61.8	27.8	1.3
50,001 to 100,000	14.8	49.7	62.7	30.9	1.4
100,001 to 200,000	12.7	50.7	69.9	37.9	1.4
200,001 to 500,000	12.5	55.6	75.3	43.6	1.6
Over 500,000	8.8	62.6	89.7	63.9	1.7
Year Constructed					
Before 1920	8.3	42.3	56.9	25.0	1.5
1920-1945	13.9	44.6	66.4	31.6	1.6
1946-1959	14.5	43.5	63.7	29.4	1.4
1960-1969	20.2	47.3	66.2	31.6	1.4
1970-1979	25.5	51.6	65.5	36.9	1.3
1980-1986	17.6	50.3	68.2	36.5	1.4
Census Region					
Northeast	20.1	49.9	64.7	33.4	1.4
Midwest	26.5	47.6	67.4	34.6	1.5
South	33.9	47.0	63.1	31.7	1.4
West	19.6	46.3	66.8	32.4	1.4

Notes: • The illuminance or power measure for each building characteristic is the (lighted-floorspace-weighted) average of that measure across buildings. A column that represents an average product is not equal to the product of the corresponding columns. For example, for a single building, the time-averaged illuminance is the product of the usage factor and the in-use illuminance; however, the average time-averaged illuminance is not the average usage factor times the average in-use illuminance. • Table of Relative Standard Errors can be found in Appendix F. • See Appendices B, C, and D for derivations and the Glossary for explanations of abbreviations and definitions used in this report.

Sources: Percent of floorspace and usage factor from Energy Information Administration, Office of Energy Markets and End Use, Form EIA-871A, "Building Questionnaire" of the 1986 Nonresidential Buildings Energy Consumption Survey; Illuminance and efficacy derived from sources described in Appendices B and C. Lighting power density is derived from illuminance and efficacy.

Table 8. Lighting Energy and Intensity by Lighting Configuration

Lamp Type and Conservation Feature Present	Floorspace (million square feet)		Annual Lighting End-Use Intensity (kWh/square foot)	Annual Lighting Energy (billion kWh)
	Total Lighted	Percent of Total Lighted		
Standard Fluorescent	20,700	41.6	4.3	88.6
No Conservation Features	11,327	22.8	3.8	43.1
Ballast	3,286	6.6	4.1	13.3
Controls	1,654	3.3	4.4	7.2
Delamping	1,297	2.6	5.0	6.5
Ballast and Controls	1,322	2.7	5.1	6.7
Ballast and Delamping	739	1.5	4.1	3.0
Controls and Delamping	615	1.2	8.7	5.4
Ballast, Controls, and Delamping	460	0.9	7.3	3.4
Energy-Efficient Fluorescent	17,130	34.6	5.9	100.4
No Conservation Features	3,222	6.5	4.3	13.9
Ballast	4,702	9.5	5.4	25.3
Controls	1,286	2.6	4.4	5.6
Delamping	600	1.2	5.2	3.1
Ballast and Controls	2,042	4.1	7.7	15.8
Ballast and Delamping	2,098	4.2	6.3	13.2
Controls and Delamping	526	1.1	5.8	3.1
Ballast, Controls, and Delamping	2,654	5.4	7.7	20.4
Standard Incandescent	6,774	13.6	12.0	81.3
No Conservation Features	5,177	10.4	10.9	56.3
Controls	899	1.8	14.3	12.8
Delamping	455	0.9	14.3	6.5
Controls and Delamping	243	0.5	23.5	5.7
Energy-Efficient Incandescent	2,551	5.2	15.3	39.0
No Conservation Features	1,305	2.6	11.5	15.0
Controls	536	1.1	19.2	10.3
Delamping	279	0.6	15.9	4.5
Controls and Delamping	431	0.9	21.4	9.2
High-Intensity Discharge	3,064	6.3	3.9	12.1
No Conservation Features	1,570	3.2	2.7	4.2
Controls	722	1.5	5.7	4.1
Delamping	440	0.9	2.8	1.2
Controls and Delamping	332	0.7	7.9	Q

Q Data withheld because the Relative Standard Error (RSE) was greater than 50 percent.

Notes: • Ballast, Controls, and Delamping, respectively, indicate that high-efficiency ballasts, any type or combination of lighting controls, and a delamping program were reported for the building containing the floorspace lighted by the indicated lamp. High-efficiency ballasts, when reported, were assumed to apply only to fluorescent lamps. • Table of RSE's can be found in Appendix F. • See Appendix D for derivations and the Glossary for explanations of abbreviations and definitions in this report.

Sources: Floorspace from Energy Information Administration, Office of Energy Markets and End Use, Form EIA-871A, "Building Questionnaire" of the 1986 Nonresidential Buildings Energy Consumption Survey; Illuminance and efficacy derived from sources described in Appendices B and C. Lighting end-use intensity and energy measures derived from illuminance and efficacy.

Table 9. Lighting Energy and Intensity by Building Characteristics

Building Characteristics	Floorspace, 1986 (million square feet)			Annual Lighting End-Use Intensity (kWh/square foot)		Annual Lighting Energy (billion kWh)
	Total	Total Lighted	Percent of Total Lighted	per Total Square Feet	per Total Lighted Square Feet	
All Buildings	58,199	49,590	100.0	5.5	6.5	321.4
Principal Activity						
Assembly	7,339	5,918	11.9	3.2	4.0	23.6
Education	7,292	6,968	14.1	6.2	6.5	45.1
Food Sales	712	668	1.3	6.3	6.7	4.5
Food Service	1,281	1,133	2.3	3.2	3.7	4.2
Health Care	2,107	2,010	4.1	28.6	30.0	60.3
Lodging	2,785	2,423	4.9	14.5	16.6	40.2
Mercantile/Service	12,805	11,361	22.9	3.8	4.3	48.3
Office	9,546	8,763	17.7	6.1	6.6	58.1
Public Order and Safety	680	573	1.2	11.8	14.0	8.0
Warehouse	8,996	6,917	13.9	1.2	1.5	10.7
Vacant	2,931	1,392	2.8	0.2	0.3	0.4
Other	1,726	1,464	3.0	10.5	12.3	18.0
Building Size (square feet)						
1,001 to 5,000	6,209	5,023	10.1	3.8	4.7	23.7
5,001 to 10,000	6,861	5,545	11.2	3.7	4.6	25.2
10,001 to 25,000	9,119	7,405	14.9	4.4	5.5	40.4
25,001 to 50,000	8,661	7,451	15.0	4.7	5.5	40.7
50,001 to 100,000	8,559	7,350	14.8	5.3	6.1	45.2
100,001 to 200,000	7,161	6,275	12.7	6.4	7.3	45.6
200,001 to 500,000	6,737	6,198	12.5	7.7	8.4	52.1
Over 500,000	4,893	4,342	8.8	9.9	11.2	48.6
Year Constructed						
Before 1920	5,735	4,139	8.3	4.1	5.7	23.7
1920-1945	8,894	6,907	13.9	5.6	7.2	49.4
1946-1959	8,534	7,180	14.5	4.8	5.7	41.2
1960-1969	11,117	10,000	20.2	5.7	6.4	63.5
1970-1979	14,036	12,644	25.5	6.1	6.8	85.3
1980-1986	9,883	8,721	17.6	5.9	6.7	58.3
Census Region						
Northeast	11,830	9,963	20.1	5.7	6.8	67.3
Midwest	16,034	13,140	26.5	5.5	6.7	87.9
South	19,397	16,790	33.9	5.4	6.2	104.4
West	10,937	9,697	19.6	5.6	6.4	61.7

Notes: • Table of Relative Standard Errors can be found in Appendix F. • See Appendix D for derivations and the Glossary for explanations of abbreviations and definitions used in this report.

Sources: Floorspace from Energy Information Administration, Office of Energy Markets and End Use, Form EIA-871A, "Building Questionnaire" of the 1986 Nonresidential Buildings Energy Consumption Survey; Illuminance and efficacy derived from sources described in Appendices B and C. Lighting end-use intensity and energy measures derived from illuminance and efficacy.

Table 10. Lighting Energy Savings by Lamp Type for Various Conservation Cases, with No Illumination Reduction

(Billion Kilowatthours)

	Standard Fluorescent	Energy-Efficient Fluorescent	Standard Incandescent	Energy-Efficient Incandescent	High Intensity Discharge	Total
Base Case Energy Estimate .	88.6	100.3	81.4	39.0	12.1	321.3
REPLACEMENT SCHEME AND CONSERVATION FEATURE EFFECT (Savings Relative to Base Case)						
Comprehensive						
Modest	42.6	45.4	62.9	29.1	3.6	183.6
Optimistic	60.0	66.2	68.2	31.9	5.5	231.9
Compact Fluorescent Conversion Only						
Modest	0.0	0.0	60.8	28.1	0.0	88.9
Optimistic	0.0	0.0	62.5	28.9	0.0	91.5
Comprehensive Improvements Without Compact Fluorescent Conversions						
Modest	42.6	45.4	8.1	3.9	3.6	103.6
Optimistic	60.0	66.2	24.4	11.7	5.5	167.9

Notes: • A conservation case is defined by a replacement scheme together with an assumed effect of conservation features and reduction in illumination (delamping). • This table shows the amount of lighting energy saved for each no-delamping case, by type of lamp. • See Appendix E for savings estimation methodology and the Glossary for explanations of abbreviations and definitions used in this report.

Sources: Adapted from Energy Information Administration, Office of Energy Markets and End Use, Form EIA-871A, "Building Questionnaire" of the 1986 Nonresidential Buildings Energy Consumption Survey; and sources described in Appendices B and C.

Table 11. Lighting Energy Savings by Lamp Type for Various Conservation Cases, with No Illumination Reduction

(Percent)

	Standard Fluorescent	Energy-Efficient Fluorescent	Standard Incandescent	Energy-efficient Incandescent	High-Intensity Discharge	Total
Base Case Energy Estimate .	100.0	100.0	100.0	100.0	100.0	100.0
REPLACEMENT SCHEME AND CONSERVATION FEATURE EFFECT (Savings Relative to Base Case)						
Comprehensive						
Modest	48.0	45.3	77.3	74.8	29.9	57.1
Optimistic	67.7	66.0	83.8	82.0	45.5	72.2
Compact Fluorescent Conversion Only						
Modest	0.0	0.0	74.8	72.0	0.0	27.7
Optimistic	0.0	0.0	76.9	74.3	0.0	28.5
Comprehensive Improvements Without Compact Fluorescent Conversions						
Modest	48.0	45.3	10.0	10.0	29.9	32.2
Optimistic	67.7	66.0	30.0	30.0	45.5	52.2

Notes: • A conservation case is defined by a replacement scheme together with an assumed effect of conservation features and reduction in illumination (delamping). • This table shows the amount of lighting energy saved for each no-delamping case, by type of lamp, as a percent of the base lighting energy used by that lamp type. • See Appendix E for savings estimation methodology and the Glossary for explanations of abbreviations and definitions used in this report.

Sources: Adapted from Energy Information Administration, Office of Energy Markets and End Use, Form EIA-871A, "Building Questionnaire" of the 1986 Nonresidential Buildings Energy Consumption Survey; and sources described in Appendices B and C.

Table 12. Overall Percent Lighting Energy Savings for Various Conservation Cases

Reduction in Illuminance (Delamping)	Equipment Replacement Scheme		
	(1) Comprehensive	(2) Compact Fluorescent Conversion Only	(3) Comprehensive Improvements without Compact Fluorescent Conversions
None	57-72	28-29	32-52
Modest (10 percent)	61-75	35-36	39-75
Optimistic (25 percent)	68-79	46-46	49-64

Note: • A conservation case is defined by an equipment replacement scheme together with an assumed effect of conservation features and a reduction in illuminance (delamping). Each range given is the range of estimated savings from the modest and to the optimistic assumptions for the effect of conservation features, as described in Appendix C. The equipment replacement schemes are:

(1) Comprehensive: highest efficiency fluorescent and HID lamps and equipment; incandescent bulbs converted to compact fluorescent with reflectors; lighting controls on all lamps;

(2) Compact Fluorescent Conversion Only: incandescent bulbs converted to compact fluorescent with reflectors; no lighting controls;

(3) Comprehensive Improvements Without Compact Fluorescent Conversions: highest efficiency fluorescent, incandescent, and HID lamps and equipment; no conversions of incandescent to compact fluorescent; lighting controls on all lamps.

The figure shows the amount of lighting energy saved for each case as a percent of the base case lighting energy (321.3 billion kilowatthours). •See Appendix E for savings estimation methodology and the Glossary for explanations of abbreviations and definitions used in this report.

Sources: Adapted from Energy Information Administration, Office of Energy Markets and End Use, Form EIA-871A, "Building Questionnaire" of the 1986 Nonresidential Buildings Energy Consumption Survey; and sources described in Appendices B and C.