



*Pacific Gas and
Electric Company*[™]

Commercial Building
Survey Report

1999

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1. Executive Summary

The Commercial Building Survey was a data collection effort involving the on-site survey of almost 1,000 commercial customers chosen to represent the population of commercial buildings in PG&E's electric service territory. This survey collected information about the customers' building structures, business operations, equipment types, fuel choices, and operating schedules. This information, along with billing data and other available customer information, was further analyzed to produce simulated end-use intensities and simulated end-use sales. Data in this report were collected during the calendar years 1996 and 1997.

Major Findings

The average commercial premise in PG&E's service territory occupied approximately 6,400 square feet of space. However, about 75% of commercial premises were less than 5,000 square feet. Approximately 70% of commercial square footage was owned by the primary tenant, with the remainder renting or leasing. Fifty-six percent of commercial square footage was built since 1970 and 28% since 1980. Seventy-one percent of commercial square footage was heated and 58% cooled. In comparison, 60% of commercial premises had space heating equipment and 58% cooling equipment.

Interior lighting accounted for approximately 30% of total commercial electric sales, followed by cooling at 18%, and refrigeration at 14%. Space heating was the largest gas end use, accounting for 39% of commercial gas sales. Water heating and cooking accounted for 30% and 19% of annual gas sales, respectively.

Figure 1 shows how commercial sales were divided into the major end uses.

The goal of this effort was to provide a more current and robust data resource for understanding our electric customers and their energy usage and needs. This report details the methodology and major findings of this effort in order to expand the audience for and use of this vital data on commercial customers and to provide a common reference point for PG&E-specific data for further analysis.

The focus of this survey was on PG&E's electricity customers. This is in contrast to the 1993 survey, which included customers in the gas-only service territory, such as portions of Sacramento, Palo Alto, and Santa Rosa, which are served electricity by municipalities.

Figure 1 - Annual Sales by End Use

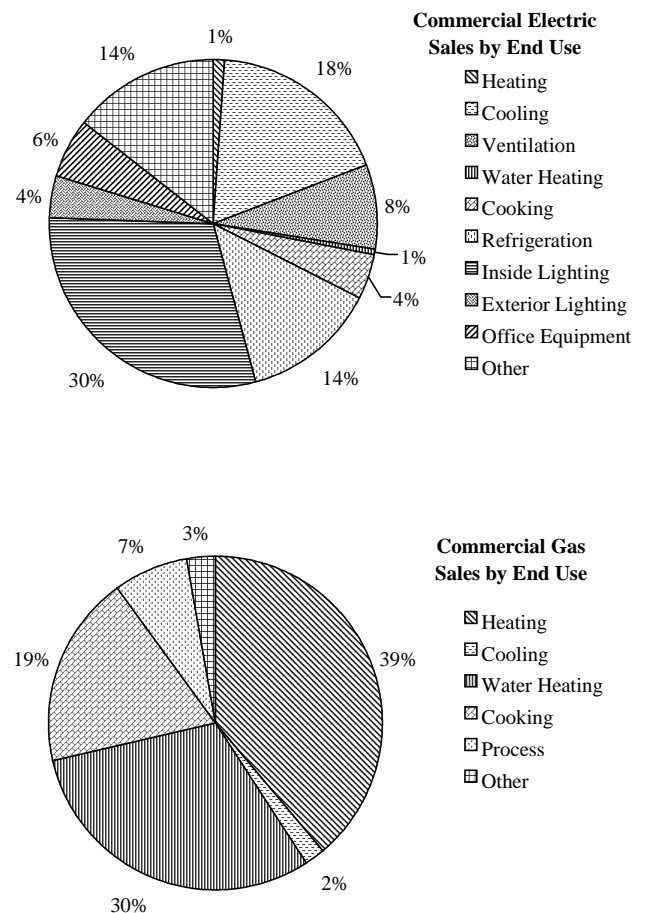
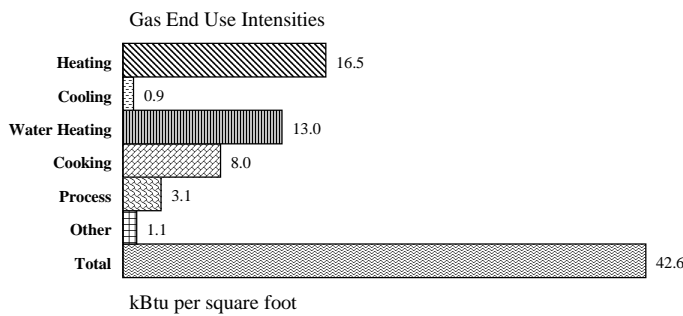
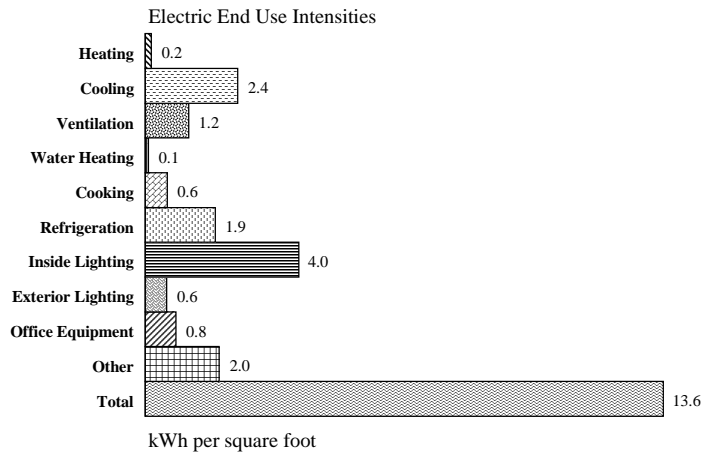


Figure 2 - End-Use Intensities



On average, commercial premises used 13.6 kWh per square foot per year of electricity. Interior lighting has the highest annual electric intensity at 4.0 kWh per square foot, followed by cooling at 2.4 kWh per square foot.

On average, commercial premises with natural gas from PG&E used 42.6 kBtu per square foot per year. Heating had the highest annual gas intensity for commercial premises at 16.5 kBtu per square foot, followed by water heating at 13 kBtu per square foot.

Figure 2 provides the commercial annual end-use intensities for electricity and gas.

Comparison to the 1997 Commercial Building Survey Report

PG&E conducted a commercial building survey in 1993. The results of the 1993 survey are published in the 1997 Commercial Building Survey Report. There are significant differences between the 1997 Report and the 1999 Report that preclude direct comparisons between the two. These differences are due primarily to:

- (i) Different target populations: the 1993 survey targeted all PG&E commercial customers, including those that are gas-only customers (for example, customers served electricity by municipalities in Sacramento, Palo Alto, and Santa Rosa.) The 1997 survey targeted PG&E electric customers only.
- (ii) Different methodologies: the 1993 and 1997 surveys employed different account-to-premise grouping algorithms, which resulted in averages of 1.4 and 1.6 electric accounts per premise, respectively.

2. Building Construction and Characteristics

Square Footage

There were approximately 277,300 premises comprising 1.76 billion square feet of commercial space in PG&E's electric service territory. The average premise has approximately 6,400 square feet.

Table 1 shows estimates of square footage and the number of premises by business type and climate zone for PG&E's service territories.

Offices accounted for 36% of commercial floor space, more than twice as much as any other business type. Colleges had the largest average premise size at 95,000 square feet, followed by hospitals at 40,500 square feet and schools at 31,300 square feet. Restaurants and retail facilities had the smallest average premise size at 2,400 square feet and 3,800 square feet, respectively.

Table 1 - Square Footage and Number of Premises

	<i>Electric Customers</i>				Average Square Feet
	Thousands of Square Feet	Customers	% of Total Square Feet	% of Total Customers	
Office	631,620	90,900	35.8%	32.8%	6,950
Restaurants	61,030	25,300	3.5%	9.1%	2,410
Retail	273,680	72,900	15.5%	26.3%	3,750
Grocery	53,150	12,800	3.0%	4.6%	4,150
Ref Warehouse	27,600	1,000	1.6%	0.4%	27,740
Warehouse	220,750	23,600	12.5%	8.5%	9,370
Schools	147,480	4,700	8.4%	1.7%	31,270
Colleges	60,710	600	3.4%	0.2%	95,000
Hospitals	58,670	1,400	3.3%	0.5%	40,520
Lodging	86,350	3,500	4.9%	1.2%	25,000
Miscellaneous	143,590	40,600	8.1%	14.7%	3,530
Desert/Mountain	234,150	43,200	13.3%	15.6%	5,420
Valley	186,840	40,200	10.6%	14.5%	4,650
Coastal	669,730	105,400	38.0%	38.0%	6,350
Hill	673,910	88,500	38.2%	31.9%	7,610
Total	1,764,630	277,300	100.0%	100.0%	6,360

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

Table 2 shows PG&E's total floor space by climate zone for each business type.

Seventy-five percent of all premises in PG&E's electric service territories were 5,000 ft² or less

in size. Ninety percent of restaurants and 87% of grocery stores fall into this size category. At the other extreme, colleges had the highest percentage of premises (20%) in the over 100,000 ft² size range.

Table 2 - Square Footage (thousand) by Business Type and Climate

	Desert/Mountain (very hot)	Valley (hot)	Coastal (cool)	Hill (moderate)	Total
Office	79,010	50,900	289,610	212,100	631,620
Restaurants	11,470	9,340	17,580	22,640	61,030
Retail	33,640	45,840	81,450	112,760	273,680
Grocery	9,390	9,360	16,670	17,730	53,150
Ref Warehouse	5,410	10,300	9,890	2,020	27,600
Warehouse	14,540	19,430	88,220	98,550	220,750
Schools	33,300	13,780	36,930	63,460	147,480
Colleges	6,800	3,790	20,660	29,460	60,710
Hospitals	5,730	4,070	15,430	33,440	58,670
Lodging	8,790	6,320	50,980	20,250	86,350
Miscellaneous	26,060	13,720	42,310	61,500	143,590
Total	234,150	186,840	669,730	673,910	1,764,630

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned.

For more information, see page 2.

Table 3 - Percent of Premises by Business Type or Climate and Square Footage Category

	0– 1,000	1,001– 2,000	2,001– 5,000	5,001– 10,000	10,001– 25,000	25,001– 50,000	50,001– 100,000	100,001 & Up
Office	25%	28%	18%	16%	8%	2%	1%	1%
Restaurants	20%	31%	39%	9%	1%	0%	0%	0%
Retail	36%	29%	18%	8%	7%	1%	1%	1%
Grocery	24%	49%	14%	8%	3%	3%	0%	0%
Ref Warehouse	2%	2%	15%	21%	29%	16%	4%	10%
Warehouse	23%	16%	8%	19%	20%	10%	4%	1%
Schools	4%	0%	0%	10%	25%	47%	5%	10%
Colleges	0%	45%	15%	0%	15%	5%	0%	20%
Hospitals	25%	15%	0%	5%	20%	9%	16%	10%
Lodging	0%	0%	15%	38%	27%	9%	6%	6%
Miscellaneous	34%	4%	47%	7%	6%	2%	1%	0%
Desert/Mountain	30%	16%	24%	16%	9%	3%	1%	1%
Valley	32%	36%	12%	11%	5%	3%	1%	1%
Coastal	32%	25%	21%	10%	7%	3%	1%	1%
Hill	20%	21%	29%	13%	10%	4%	1%	2%
Total	28%	24%	23%	12%	8%	3%	1%	1%

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned.

For more information, see page 2.

Fuels Used at Premise

Of all commercial premises in PG&E's electric service territory, it is estimated that about 169,770 premises also used gas, while 7,690 used LPG and 2,490 premises used an alternate fuel - solar, wind, wood, or other.

Table 4 shows the number of premises that used each fuel type by business type and climate. In this table, a gas premise is defined as any premise that uses natural gas. This takes into account those premises that were not PG&E gas customers, and those who received shared service and had no gas account.

Table 5 provides an estimate of the percent of square footage by business type and climate using fuels on the premise. Warehouses and refrigerated warehouses had the smallest percentage of square footage using gas on the premise at 39% and 33%, respectively. At the other extreme, it is estimated that all lodging establishments have some gas use. About 14% of school floor space used LPG as a fuel. Approximately 15% of hospital floor space and 10% of school floor space had an alternate fuel being used on the premise.

Ownership of Premises

Thirty-seven percent of commercial premises were owned by the primary occupant, while the remaining premises either rented or leased space. Seventy percent of commercial square footage was owned by the primary occupant

Colleges owned 40% of their premises, which accounted for 96% of their square footage. This shows that while colleges owned the vast majority of their spatial requirements, they rented or leased numerous smaller premises to supplement their needs. Hospitals also followed this pattern with 50% of the premises owned, representing 93% of total hospital floor space. Table 6 provides more detail on premise ownership.

Table 4 - Fuels Used at Premise

	Electric	Gas	LPG	Other
Office	90,910	60,790	1,520	360
Restaurants	25,270	21,290	2,140	
Retail	72,930	43,290	1,170	20
Grocery	12,810	7,100	1,050	90
Ref. Warehouse	1,000	330	30	
Warehouse	23,550	9,080	260	990
Schools	4,720	3,360	660	470
Colleges	640	350		10
Hospitals	1,450	1,190		220
Lodging	3,450	3,450		320
Miscellaneous	40,650	19,530	860	10
Desert/Mountain	43,220	23,390	1,930	570
Valley	40,210	26,680	5,000	390
Coastal	105,410	64,380	480	1,490
Hill	88,540	55,320	270	40
Total	277,370	169,770	7,690	2,490

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

Table 5 - Percent of Square Footage Using Fuel at Premise

	Electric	Gas	LPG	Other
Office	100%	67%	2%	0%
Restaurants	100%	84%	8%	0%
Retail	100%	59%	2%	0%
Grocery	100%	55%	8%	1%
Ref. Warehouse	100%	33%	3%	0%
Warehouse	100%	39%	1%	4%
Schools	100%	71%	14%	10%
Colleges	100%	55%	0%	1%
Hospitals	100%	82%	0%	15%
Lodging	100%	100%	0%	9%
Miscellaneous	100%	48%	2%	0%
Desert/Mountain	100%	54%	4%	1%
Valley	100%	66%	12%	1%
Coastal	100%	61%	0%	1%
Hill	100%	62%	0%	0%
Total	100%	61%	3%	1%

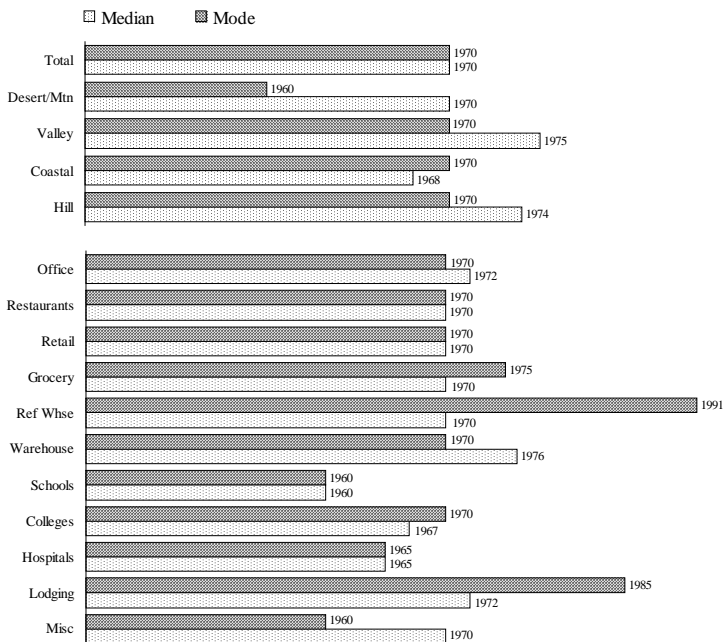
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Table 6 - Ownership of Premises

	Percent of Premises		Percent of Square Footage	
	Own	Rent/Lease	Own	Rent/Lease
	Office	53%	48%	81%
Restaurants	23%	77%	43%	57%
Retail	16%	85%	42%	63%
Grocery	25%	75%	33%	67%
Ref. Warehouse	84%	16%	89%	11%
Warehouse	35%	66%	64%	42%
Schools	96%	4%	99%	1%
Colleges	40%	60%	96%	4%
Hospitals	50%	50%	93%	7%
Lodging	81%	19%	79%	21%
Miscellaneous	41%	59%	57%	43%
Desert/Mountain	52%	48%	79%	22%
Valley	38%	63%	73%	33%
Coastal	37%	63%	73%	31%
Hill	29%	71%	64%	37%
Total	37%	64%	70%	32%

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

Figure 3 - Median and Mode of the Year of Construction



Year of Construction

Close to half of PG&E’s commercial customers’ square footage was constructed before 1970 and half after, making 1970 the median year of construction. More square footage was constructed in 1970—which is also the mode year of construction—than in any other single year. Figure 3 provides a comparison of the median and mode of the year of construction for commercial square footage by business type and climate zone.

Twenty-eight percent of commercial premises were constructed during the 70s, the largest percentage of any decade. Retail had the largest percentage of premises constructed prior to 1940 at 28%. Conversely, 41% of refrigerated warehouses were constructed after 1985. Table 7 shows the percent of premises by construction year by business type and climate zone.

Table 8 displays the percent of total square footage by construction year by business type and climate zone. Twenty-eight percent of commercial floor space was constructed in the 1970s. There was a significant amount of college and school floor space constructed in the 1950s—25% and 24%, respectively. Sixty-two percent of the square footage for refrigerated warehouses was constructed after 1985. However, only 41% of refrigerated-warehouse premises were constructed after 1985, demonstrating that newer refrigerated warehouses are much larger on average than the existing stock. Lodging also follows this pattern with 9% of the premises constructed after 1985, accounting for 23% of the floor stock.

Table 7 - Percent of Premises by Year of Construction

	No data	Pre 1940s	1940s	1950s	1960s	1970– 1974	1975– 1979	1980– 1984	1985– 1989	1990s
Office	9%	12%	6%	10%	10%	18%	12%	12%	10%	2%
Restaurants	6%	21%	3%	7%	8%	24%	3%	11%	18%	1%
Retail	0%	28%	5%	4%	16%	14%	16%	6%	7%	4%
Grocery	7%	16%	7%	12%	21%	9%	12%	11%	5%	1%
Ref Warehouse	0%	12%	7%	20%	13%	1%	3%	2%	17%	24%
Warehouse	5%	1%	19%	8%	9%	19%	7%	25%	4%	3%
Schools	0%	1%	12%	24%	42%	10%	3%	5%	1%	1%
Colleges	0%	0%	0%	16%	15%	31%	16%	17%	5%	0%
Hospitals	0%	0%	15%	5%	39%	15%	18%	5%	0%	3%
Lodging	0%	11%	8%	21%	34%	2%	10%	5%	8%	1%
Miscellaneous	1%	1%	2%	23%	35%	16%	12%	2%	5%	4%
Desert/Mountain Valley	11%	16%	5%	15%	20%	8%	8%	12%	4%	3%
Coastal	10%	16%	9%	7%	9%	15%	12%	8%	11%	4%
Hill	1%	19%	8%	12%	17%	15%	14%	9%	4%	2%
Total	3%	6%	4%	9%	17%	24%	10%	10%	14%	3%
Total	4%	14%	6%	11%	16%	17%	11%	9%	8%	3%

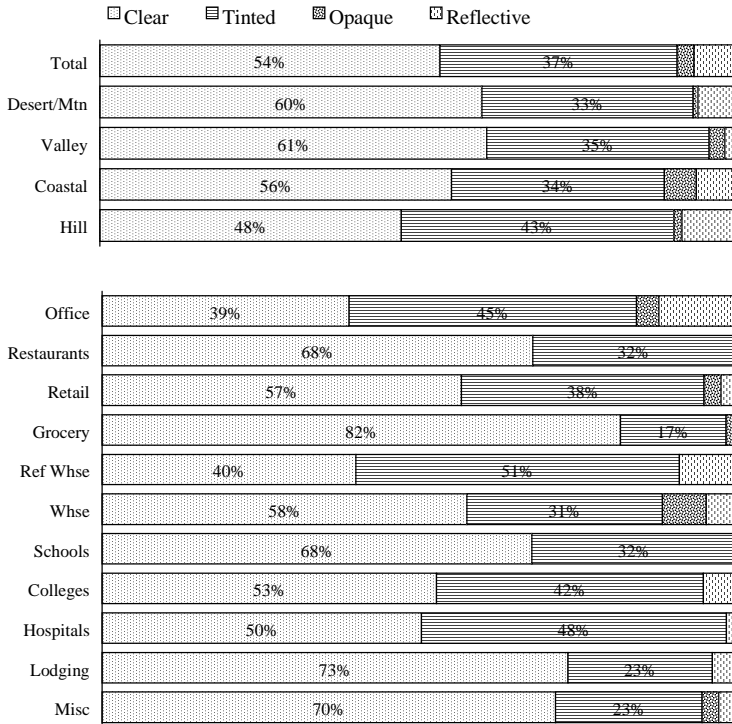
Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned.
For more information, see page 2.

Table 8 - Percent of Square Footage by Year of Construction

	Blank	Pre 1940s	1940s	1950s	1960s	1970– 1974	1975– 1979	1980– 1984	1985– 1989	1990s
Office	1%	11%	3%	10%	16%	16%	9%	14%	15%	6%
Restaurants	5%	12%	7%	4%	15%	29%	4%	9%	14%	1%
Retail	1%	14%	2%	6%	10%	32%	11%	6%	8%	10%
Grocery	6%	8%	4%	13%	18%	18%	13%	7%	4%	8%
Ref Warehouse	0%	3%	10%	19%	2%	1%	3%	0%	33%	29%
Warehouse	4%	2%	2%	6%	12%	20%	14%	17%	8%	14%
Schools	0%	4%	11%	24%	35%	13%	6%	5%	1%	1%
Colleges	0%	0%	0%	25%	52%	15%	8%	0%	1%	0%
Hospitals	0%	0%	13%	17%	37%	13%	14%	3%	0%	2%
Lodging	0%	12%	4%	11%	14%	11%	10%	15%	22%	1%
Miscellaneous	0%	5%	7%	15%	27%	11%	11%	4%	13%	7%
Desert/Mountain Valley	2%	8%	9%	15%	21%	12%	7%	10%	8%	8%
Coastal	4%	6%	6%	11%	17%	17%	11%	6%	12%	10%
Hill	0%	15%	3%	12%	18%	17%	8%	11%	8%	7%
Total	2%	2%	4%	9%	20%	22%	12%	10%	15%	6%
Total	1%	8%	4%	11%	19%	18%	10%	10%	11%	7%

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned.
For more information, see page 2.

Figure 4 - Window Treatment



Window Treatment

Fifty-four percent of the total window square footage in PG&E’s commercial class had no window treatment (clear). Thirty-seven percent was tinted, while 6% had a reflective tint. Approximately 3% of window square footage had an opaque treatment.

Sixty-one percent of the window square footage in offices had energy-saving glazing, made up of 45% tinted, 12% reflective, and 4% opaque. Sixty percent of the window surface area of refrigerated warehouses was glazed—51% tinted and 9% reflective. Grocery stores had the highest percentage of untreated window square footage at 82%.

Figure 4 shows the percentage of window square footage by glazing type by business type and climate zone.

3. End Uses

Space Conditioning

Seventy-one percent of PG&E’s commercial customers’ square footage was heated, while 58% was cooled. Figure 5 shows the percentage of floor space heated or cooled by business type and by climate zone.

Schools, colleges, and hospitals had the largest percentage of floor space heated at 99%, 97%, and 93% respectively. Hospitals, offices, and retail had the largest percentage of floor space cooled at 77%, 73%, and 70% respectively. Refrigerated warehouses had the smallest percentage of square footage heated or cooled at 9% and 12%, respectively.

The coastal climate zone had by far the smallest percent of premises cooled or heated at 29% and 47%, respectively. This reflects the moderate temperatures in this climate zone. Conversely, the valley climate zone had the highest percent of premises cooled and heated, reflecting the extreme temperatures in this climate zone.

Figure 6 shows the percentage of premises partially or fully heated or cooled by business type and climate zone.

Heating

Total heating capacity in PG&E’s commercial service territory is estimated at 66.3 billion Btu/h. Gas furnaces account for slightly more than half of total heating capacity. Of total gas furnace capacity, offices had the highest share at 38% (13.1 billion Btu/h). Gas boilers had the next highest share of total heating capacity at 42% or 27.7 billion Btu/h. Offices and hospitals had the highest gas boiler shares, each at slightly over 30% or about 9 billion Btu/h. Table 9 provides estimates of installed heating capacity by business type and climate.

Figure 5 - Percent of Square Footage Heated or Cooled

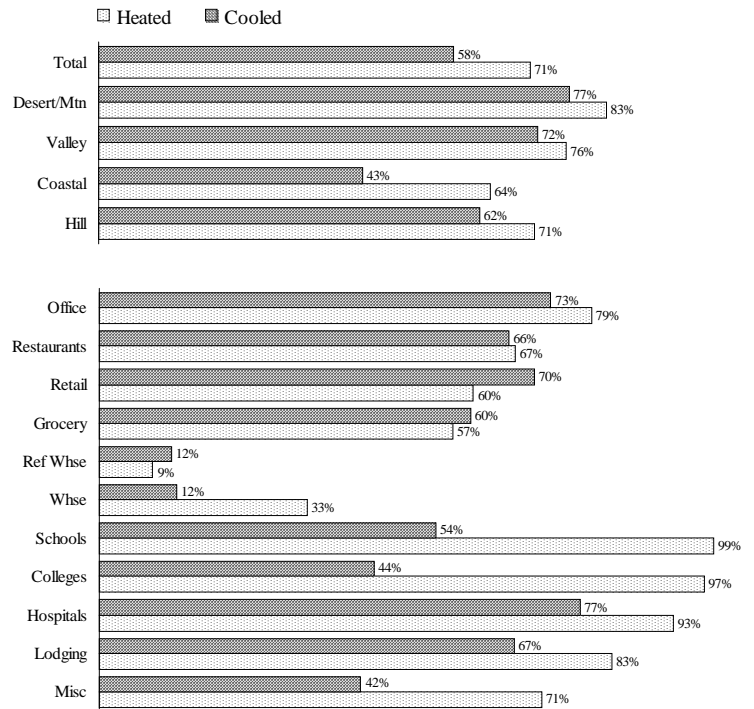


Figure 6 - Percent of Premises Heated or Cooled

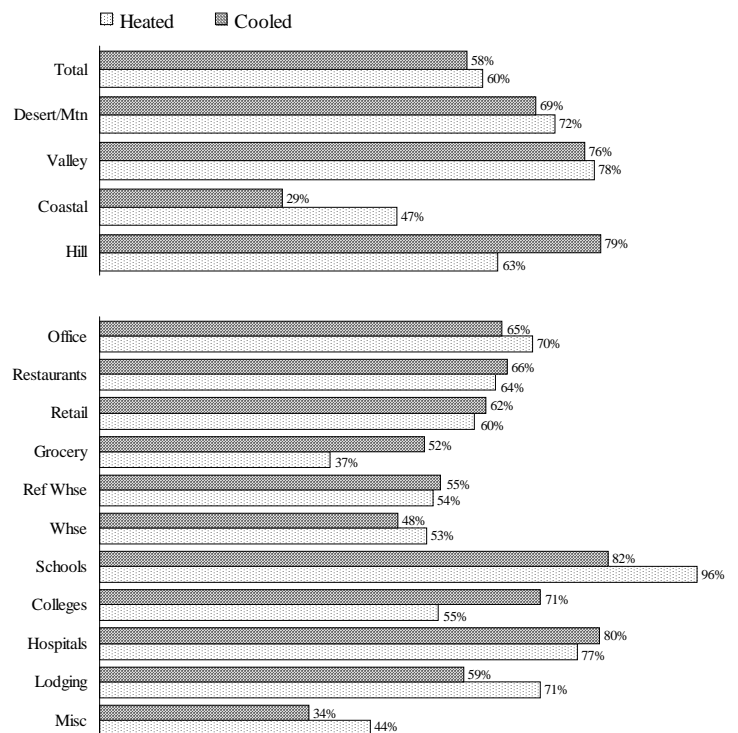


Table 9 - Heating Capacity (million Btu/h)

	Electric Resistance	Heat Pump	Electric Furnace w/Boiler	Gas Furnace	Gas Unit	Gas Boiler	Total
Offices	184	19	41	13,078	170	8,563	22,651
Restaurants	40	22	0	2,548	0	71	2,884
Retail	324	63	13	4,761	287	335	6,083
Grocery	29	16	0	894	0	26	1,072
Refrig. Warehouse	9	2	0	58	0	24	94
Warehouse	26	5	0	2,632	101	89	2,944
Schools	9	77	0	4,275	0	5,235	10,027
Colleges	0	0	0	483	16	3,309	3,809
Hospitals	18	1	0	534	0	8,726	9,528
Lodging	205	14	0	1,575	0	497	2,479
Miscellaneous	63	134	0	3,247	87	801	4,689
Desert/Mountain Valley	138	61	0	6,892	51	2,190	10,002
Coastal Hill	90	25	13	5,602	8	1,352	7,803
	516	76	0	9,191	315	9,729	20,377
	165	192	41	12,400	290	14,404	28,078
Total	908	354	54	34,085	662	27,675	66,259

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned.
For more information, see page 2.

Table 10 - Percent of Premises with Heating Capacity

	Electric Resistance	Heat Pump	Electric Furnace w/Boiler	Gas Furnace	Gas Unit	Gas Boiler	Total
Offices	4.3%	0.5%	0.0%	60.0%	2.1%	4.1%	69.7%
Restaurants	5.5%	0.5%	0.0%	51.9%	0.0%	0.4%	63.8%
Retail	11.3%	0.8%	0.6%	40.9%	5.8%	0.5%	60.3%
Grocery	11.1%	0.7%	0.0%	24.6%	0.0%	0.3%	37.1%
Refrig. Warehouse	22.8%	3.4%	0.0%	27.8%	0.0%	3.8%	53.6%
Warehouse	15.4%	0.2%	0.0%	34.3%	1.6%	0.4%	52.7%
Schools	1.2%	8.9%	0.0%	58.2%	0.0%	38.2%	96.3%
Colleges	0.0%	0.0%	0.0%	38.9%	1.4%	25.2%	54.5%
Hospitals	13.6%	1.2%	0.0%	61.3%	0.0%	19.7%	77.0%
Lodging	15.8%	1.5%	0.0%	40.7%	0.0%	8.2%	71.0%
Miscellaneous	3.1%	2.5%	0.0%	34.2%	2.2%	1.8%	43.6%
Desert/Mountain Valley	17.2%	1.1%	0.0%	51.6%	0.4%	2.5%	71.7%
Coastal Hill	6.5%	0.9%	1.0%	57.7%	2.0%	1.5%	77.9%
	6.2%	0.5%	0.0%	32.3%	5.5%	2.9%	46.9%
	4.9%	1.7%	0.0%	55.0%	0.6%	3.3%	62.8%
Total	7.5%	1.0%	0.2%	46.2%	2.7%	2.7%	60.3%

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned.
For more information, see page 2.

Table 10 provides the percent of premises with heating capacity by equipment type by business type and by climate zone. The total column is the percent of premises with any type of heating capacity. This column may be less than the sum of the equipment type percentages, because any one premise may have had more than one type of heating equipment.

About 60% of premises had heating equipment. Gas furnaces were the most common type of heating equipment, found at about 77% of premises that had heating capacity. Electric resistance heating was the second most common equipment type, found at 12% of premises with heating capacity.

Built-Up Heating

Built-up heating is a heating system used to heat various portions of a building through one or more heating units and a distribution system to circulate the heat. About 96% of built-up heating capacity used gas as the heating fuel, with less than 1% using electricity. Boilers made up 95% of built-up heating capacity by equipment type.

Table 11 shows the built-up heating capacity by equipment type and fuel type.

Packaged Heating

Packaged heating and cooling systems—combined heating and/or cooling equipment in one box or “package”—represented 54% of the installed heating capacity. Ninety-four percent of packaged heating capacity used gas furnaces, while only 3% used unit heaters and 2% used electric heaters. Gas was the dominant fuel, accounting for 93% of capacity, with electricity making up only 4%. Table 12 details packaged heating capacity by equipment type and fuel type.

Cooling

PG&E’s Commercial customers had approximately 2.4 million tons of installed cooling capacity. Direct expansion cooling systems accounted for 1,050 thousand tons or 44% of capacity, while centrifugal chillers accounted for an additional 28%. Together, heat pumps and reciprocating chiller/screw compressors accounted for most of the remaining capacity.

Table 13 provides installed cooling capacity by equipment type and fuel type by business type and by climate zone.

Offices accounted for the largest share of overall cooling capacity at 46% or 1,100 tons. This is well over twice that of retail stores (18% or 423 tons), who had the second highest share.

Table 11- Built-Up Heating Capacity (million Btu/h) by Equipment Type and Fuel Type

	Electric	Gas	LPG	Other	Total
Electric Furnace	49				49
Gas Furnace		1,513			1,513
Boiler	41	27,675	243	728	28,688
Total	90	29,188	243	728	30,250

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

Table 12- Packaged Heating Capacity (million Btu/h) by Equipment Type and Fuel Type

	Electric	Gas	LPG	Other	Total
Electric Furnace	13				13
Electric Resist.	822	38			860
Gas Furnace		32,572	1,156		33,728
Heat Pump	354				354
Unit Heater	310	721		24	1,055
Total	1,499	33,331	1,156	24	36,009

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

Table 13 - Cooling Capacity (thousand tons)

	Direct Expansion	Heat Pump	Centrifugal Chiller	Recip. Chiller/ Screw Compressor	Absorption	Other	Total
Offices	415	57	419	198	10	1	1,100
Restaurants	146	54				2	202
Retail	207	71	101	38	3	3	423
Grocery	72	9		3			84
Refrig. Warehouse	2	7		1			10
Warehouse	32	6	6	7			51
Schools	91	11	9	24			136
Colleges	18	2	39	13	3	0	76
Hospitals	9	2	64	25	16	1	116
Lodging	5	2	23	25	4		58
Miscellaneous	54	21	16	28			119
Desert/Mountain Valley	182	77	56	54	3	0	382
Coastal Hill	156	17	58	53	9	0	293
	203	36	336	146	14	1	736
	508	112	217	113	10	5	965
Total	1,050	241	677	364	37	7	2,376

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned.
For more information, see page 2.

Table 14 - Percent of Premises with Cooling Capacity

	Direct Expansion	Heat Pump	Centrifugal Chiller	Recip. Chiller/ Screw Compressor	Absorption	Other	Total
Offices	54%	13%	1%	2%	0%	0%	65%
Restaurants	54%	12%				2%	66%
Retail	46%	16%	0%	0%	0%	0%	62%
Grocery	43%	9%		0%			52%
Refrig. Warehouse	29%	32%		0%			55%
Warehouse	43%	9%	0%	0%			49%
Schools	57%	58%	1%	4%			82%
Colleges	51%	20%	7%	3%	6%	1%	71%
Hospitals	57%	34%	8%	20%	2%	1%	80%
Lodging	31%	32%	4%	6%	0%		59%
Miscellaneous	15%	21%	0%	0%			34%
Desert/Mountain Valley	60%	12%	0%	1%	0%		69%
Coastal Hill	67%	13%	0%	1%	0%	0%	76%
	22%	7%	1%	1%	0%	0%	29%
	54%	29%	1%	1%	0%	1%	79%
Total	45%	16%	1%	1%	0%	0%	58%

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned.
For more information, see page 2.

Table 14 provides the percent of commercial premises with cooling capacity by business type and by climate zone. The total column is the percent of premises with any cooling capacity. This column may be less than the sum of the equipment type percentages, because any one premise may have more than one type of cooling equipment.

About 58% of premises had packaged electric cooling equipment. Direct expansion units were the most common type of cooling equipment, found at about 78% of the premises that had cooling capacity. Heat pumps were the second most common equipment type, found at 28% of premises with cooling capacity.

Schools had the highest percentage of premises with cooling capacity at 82% followed by hospitals at 80%. Miscellaneous

Table 15 - Installed Lighting Capacity (MW)

	Incan- descent	Compact Fluores- cent	Fluores- cent Tube	Other	Total
Office	82.74	6.90	588.07	70.74	748.46
Restaurants	27.39	3.29	29.62	11.18	71.48
Retail	38.68	3.39	289.80	66.80	398.66
Grocery	3.19	0.21	63.82	3.90	71.13
Ref. Whse	0.20	0.01	6.17	11.19	17.56
Warehouse	22.89	0.29	98.09	21.93	143.20
Schools	4.71	1.19	177.93	8.58	192.41
Colleges	2.43	0.97	70.67	3.19	77.27
Hospitals	7.43	0.80	53.14	1.77	63.13
Lodging	60.96	2.67	28.64	4.67	96.94
Misc	32.92	0.56	98.72	25.49	157.69
Desert/Mnt Valley	40.02	2.41	223.69	30.10	296.22
Coastal Hill	21.37	1.49	165.53	35.82	224.20
	135.80	11.14	495.55	84.86	727.34
	86.36	5.25	619.91	78.65	790.16
Total	283.54	20.29	1,504.67	229.43	2,037.93

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

commercial and warehouses had the lowest rates of premises with cooling capacity at 34% and 49%, respectively.

Interior Lighting

Commercial buildings in the PG&E service territory had approximately 2,038 megawatts of installed lighting capacity. Fluorescent tubes of varying lengths (2 to 8 feet) made up 74% of the installed lighting capacity, while incandescent lighting made up an additional 14%. Table 15 provides the installed lighting capacity by lighting equipment type by business type and climate zone.

Eighty-five percent of fluorescent lamps are four-foot lamps. Lamp counts for four-foot fluorescent lamps are shown in Table 16. It is impressive to note that 41% of all four-foot fluorescent lamps found in PG&E's commercial service territory are T8 lamps. Offices had the largest number of T8 lamps at 5,736, which is 38% of all lamps found in offices. In grocery stores, roughly 76% of four-foot fluorescent lamps are T8 lamps.

Table 16 - Four-Foot Fluorescent Lamp Counts (000)

	40- Watt	34- Watt	High T8	High Output	Total Four-Ft.
Office	5,093	4,216	5,736	77	15,122
Restaurants	449	132	39	0	620
Retail	1,852	988	2,615	0	5,455
Grocery	199	85	905	3	1,192
Ref. Whse	41	48	13	1	103
Warehouse	452	289	330	8	1,079
Schools	1,122	1,138	1,977	0	4,237
Colleges	146	1,005	790	2	1,943
Hospitals	87	797	622	2	1,508
Lodging	404	94	153	0	651
Misc	816	377	541	0	1,734
Total	10,661	9,169	13,721	93	33,644

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

Water Heating

Eighty-nine percent of water heating capacity by volume was made up of individual hot water tanks, while 10% used hot water only boilers. Less than 1% of water heating capacity was made up of instantaneous, purchased steam heat exchangers, and space heat boilers. Table 17 provides commercial water heating capacity in gallons by equipment type by business type and climate zone.

Gas fueled 74% of water heating capacity, followed by electricity at 23% and LPG at 2%. Other fuels were utilized in less than 1% of water heating capacity.

Table 18 shows water heating capacity by equipment type and fuel type by business type and climate zone.

Table 17 - Water Heating Capacity

	Hot Water Only Boiler	Individual Hot Water Tank	Instantaneous	Purchased Steam Heat Exchanger	Space Heat Boiler	Total
Office	19,600	2,382,000	2,000	2,600	100	2,406,300
Restaurants	24,900	1,284,100				1,308,900
Retail	190,200	1,282,500	100		49,800	1,522,500
Grocery		392,700				392,700
Ref. Warehouse		23,300				23,300
Warehouse		300,400	300			300,700
Schools	237,000	414,400			1,400	652,700
Colleges	170,700	538,000			1,800	710,500
Hospitals	158,200	256,300			13,000	427,400
Lodging	106,200	946,500		13,300	4,300	1,070,200
Miscellaneous	93,600	944,600			1,500	1,039,800
Desert/Mountain Valley	81,200	1,236,200			1,100	1,318,600
Coastal Hill	206,100	895,500			32,400	1,134,000
	241,600	3,247,100	300	15,900	10,000	3,514,900
	471,500	3,385,800	2,000		28,400	3,887,700
Total	1,000,300	8,764,700	2,300	15,900	71,900	9,855,100

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

Table 18 - Water Heating Capacity by Equipment Type and Fuel Type

	Electricity	Gas	LPG	Other	Total
Hot Water Only Boiler	1,200	983,000	3,100	13,100	1,000,300
Individual Hot Water Tank	2,293,400	6,263,800	181,100	26,400	8,764,700
Instantaneous	2,300				2,300
Purchased Steam Heat Exchanger				15,900	15,900
Space Heat Boiler		70,300	1,500		71,900
Total	2,296,900	7,317,200	185,700	55,400	9,855,100

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

4. Energy Usage

Annual Energy Usage

The average PG&E commercial electric customer used 87,000 kWh annually.

Colleges had the highest average annual electricity usage across all building types at 992,000 kWh. At the other extreme, retail stores and miscellaneous commercial facilities had the lowest average annual usage per premise at 52,000 kWh and 42,000 kWh, respectively.

Offices accounted for the largest share of commercial electricity energy sales at 34% or approximately 8,112,300 MWh. This is over twice as high as retail stores, which had the second highest share of sales.

Table 19 provides the annual energy usage of PG&E commercial customers by business type and climate zone.

Table 19 - Annual Energy Usage

	Electricity			PG&E Gas		
	Annual kWh	Customers	Average	Annual MM Btu	Customers	Average
Office	8,112,308,400	90,900	89,000	12,102,800	57,500	210
Restaurants	2,173,946,300	25,300	86,000	9,850,800	18,600	530
Retail	3,787,198,300	72,900	52,000	6,669,600	38,500	170
Grocery	2,496,011,800	12,800	195,000	1,574,000	4,400	360
Ref. Warehouse	617,077,900	1,000	620,000	176,700	300	680
Warehouse	1,333,925,200	23,600	57,000	1,360,500	8,300	160
Schools	1,006,298,700	4,700	213,000	4,191,700	3,000	1,400
Colleges	633,614,000	600	992,000	3,480,200	300	10,240
Hospitals	1,243,704,600	1,400	859,000	6,925,400	1,000	7,050
Lodging	939,030,300	3,500	272,000	3,419,900	2,900	1,190
Miscellaneous	1,722,736,900	40,600	42,000	4,364,600	18,800	230
Desert/Mountain	3,737,483,200	43,200	86,000	6,838,300	18,800	360
Valley	3,039,583,900	40,200	76,000	7,405,200	24,500	300
Coastal	8,007,571,000	105,400	76,000	17,038,000	55,800	300
Hill	9,281,214,300	88,500	105,000	22,834,600	54,400	420
Total	24,065,852,400	277,300	87,000	54,116,200	153,500	350

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

Table 20 provides quarterly electric and gas sales by business type and climate zone.

Electric usage peaked in the third quarter, in no small part due to the air conditioning loads of summer. Refrigeration loads also contributed to

higher electricity consumption during the summer months, especially for refrigerated warehouses and grocery stores.

Table 20 - Quarterly Electric (MWh) and Gas (billion Btu) Usage

	Electric Usage (MWh)				Gas Usage (billion Btu)			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Office	1,846,465	2,051,332	2,291,299	1,944,277	4,572	4,572	1,504	4,023
Restaurants	483,938	561,674	621,312	504,834	2,599	2,599	2,342	2,574
Retail	839,004	952,881	1,099,925	902,804	2,039	2,039	1,335	1,927
Grocery	586,299	632,551	674,396	597,957	529	529	269	471
Ref Warehouse	124,130	154,405	189,089	151,689	19	19	71	41
Warehouse	309,827	333,378	369,096	320,100	500	500	181	474
Schools	259,404	262,993	257,065	275,951	1,673	1,673	425	1,403
Colleges	152,176	158,095	162,960	161,512	1,190	1,190	526	1,118
Hospitals	274,126	301,028	338,304	291,949	2,049	2,049	1,399	1,851
Lodging	219,030	230,847	257,919	227,237	942	942	768	916
Miscellaneous	382,935	450,563	499,316	392,767	1,446	1,446	739	1,327
Desert/Mountain	801,096	970,497	1,146,000	849,361	2,337	1,232	1,103	2,167
Valley	652,433	769,589	909,393	693,265	2,371	1,419	1,384	2,231
Coastal	1,911,092	1,998,292	2,082,879	1,987,122	5,382	3,594	3,228	4,834
Hill	2,112,713	2,351,369	2,622,408	2,241,328	7,467	4,629	3,845	6,893
Total	5,477,334	6,089,747	6,760,681	5,771,077	17,557	10,874	9,560	16,125

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

5. End-Use Intensities and End-Use Sales

End-use intensities were calculated using SitePro modeling of the survey data. (SitePro is a model developed by Regional Economic Research Inc. to simulate end use load shapes from survey data. It uses DOE-2 to simulate HVAC end uses and engineering models for the other non HVAC end uses.)

For all end uses except cooling, heating, and ventilation, the total amount of energy used during the year for each end use was divided by the premise square footage for all premises with that end use to arrive at the end-use intensity. Heating, cooling, and ventilation were divided *only by the square footage served by those systems*. Therefore, if a premise was partially heated and used both gas and electricity as heating fuels, the electric end-use intensity for heating took the electric energy used in heating and divided it by the portion of the conditioned square footage served by the electric heating equipment, based on the percent of the total capacity that was electric.

The total column was calculated by taking the sum of all end uses for each site, summing those for each business type and climate, and dividing by the affected square footage. Table 21 shows the end-use intensities in kWh per square foot by business type and climate zone.

Food stores had the highest electric intensity at 47.0 kWh per square foot, with restaurants second at 35.6. Warehouses and schools were the least electric energy intensive business types at 6.0 and 6.8 kWh per square foot, respectively. As one may expect, restaurants had by far the largest cooking intensity at 54.2, while food stores and refrigerated warehouses had the largest refrigeration intensities at 27.0 and 15.1 kWh per square foot, respectively. Restaurants also had the largest cooling intensity, while food stores had the largest interior lighting intensity. Hospitals had the highest electric heating intensity.

Table 21 - Annual Electric End-Use Intensities (kWh per Conditioned Square Foot)

	Cooling	Heating	Vent	Refrigeration	Water Heating	Cooking	Interior Lighting	Other	Total
Office	4.46	7.00	1.47	0.29	0.22	0.36	3.72	3.06	12.84
Restaurants	8.29	2.04	2.72	8.49	2.38	54.21	5.55	2.95	35.62
Retail	3.47	2.24	1.21	1.48	0.17	0.53	5.91	2.33	13.84
Grocery	5.78	2.92	1.38	27.03	0.49	7.03	7.96	2.95	46.96
Ref. Warehouse	4.17	3.60	0.42	15.14	0.02	0.05	2.66	1.95	22.36
Warehouse	4.06	1.50	0.37	0.62	0.05	0.16	1.99	1.52	6.04
Schools	2.44	7.20	0.86	0.44	0.69	0.39	3.22	0.82	6.82
Colleges	3.55	0.12	1.23	0.36	1.74	0.53	4.48	1.90	10.44
Hospitals	6.20	8.73	2.61	0.62	2.14	1.76	6.00	4.35	21.20
Lodging	3.69	6.89	1.14	0.99	1.46	1.69	2.96	1.29	10.87
Miscellaneous	5.11	2.01	1.27	0.59	0.30	1.64	3.51	3.40	12.00
Desert/Mountain	4.41	5.38	1.31	3.01	0.38	4.16	4.34	2.90	15.96
Valley	3.91	4.90	1.24	3.63	0.34	5.64	4.33	2.42	16.27
Coastal	3.99	2.72	1.20	1.73	0.22	1.98	3.77	2.08	11.96
Hill	4.69	5.91	1.38	1.50	0.27	3.74	4.08	2.76	13.77
Total	4.34	4.35	1.29	2.03	0.27	3.11	4.02	2.49	13.64

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

Table 22 provides gas end-use intensities by business type and climate. Restaurants had the largest gas intensity at 210.1 kBtu per square foot, with hospitals following at 137.0 kBtu per square foot. Not surprisingly, the restaurant gas intensity is driven by gas cooking which has an intensity of 192.6 kBtu per square foot. Refrigerated warehouses were the least gas intensive business type at only 16.8 kBtu per square foot.

High gas intensities for process uses were found in several of the building categories. For the retail segment, which also includes services, dry cleaning facilities use large amounts of process steam. In refrigerated warehouses, vegetable processing takes place such as blanching, dicing, and blast freezing. And in warehouses, there are light-assembly processes that use natural gas.

Figure 7 provides the percent of annual electric sales by end use. It is estimated that interior lighting accounted for approximately 30% of commercial electric sales, followed by other, cooling, and refrigeration at 25%, 18%, and 14% respectively. The combination of heating, cooling, and vent made up about 27% of electric sales.

Figure 8 provides an estimate of the percent of annual commercial gas sales by end use. Heating accounted for 39% of commercial gas sales. Water heating made up an additional 30% and cooking another 19%. Cooling, process, and other combined for approximately 1% of gas sales.

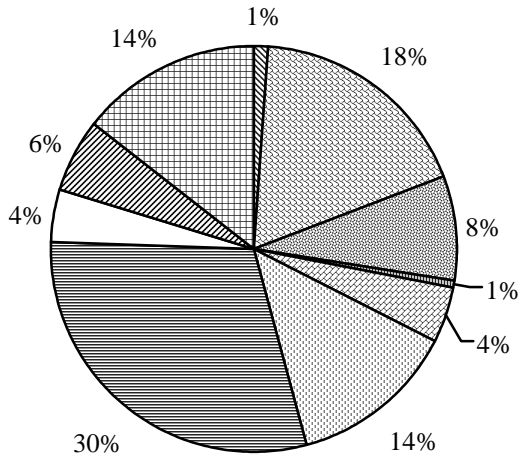
Figures 9 through 38 provide annual end-use sales percentages by business type and climate zone.

Table 22 - Annual Gas End-Use Intensities (kBtu per Square Foot)

	Cooling	Heating	Cooking	Process	Water Heating	Misc.	Total
Office	0.98	20.64	4.85	27.62	6.97	9.48	23.80
Restaurants		15.83	192.56		60.00		210.07
Retail	29.15	13.52	9.40	372.67	21.78	130.43	44.53
Grocery		22.10	74.70		10.15	62.10	48.94
Ref. Warehouse		9.85		404.20	0.64	0.02	16.77
Warehouse		13.12	0.05	1,750.49	0.88	12.18	10.08
Schools		20.30	3.43		20.37	0.22	35.25
Colleges	14.04	29.05	3.90	1.23	54.29	0.22	64.81
Hospitals	128.55	52.74	10.45	33.16	79.54	4.57	136.97
Lodging	0.00	8.73	12.23		41.92	1.61	45.00
Miscellaneous		25.51	14.50	0.21	40.95	9.85	49.00
Desert/Mountain	99.01	18.98	29.82	21.24	22.68	11.87	46.30
Valley	79.81	20.88	19.47	351.72	17.56	22.50	53.26
Coastal	0.59	21.64	24.47	56.15	17.96	7.30	35.90
Hill	94.74	20.92	23.11	121.56	24.79	16.70	44.80
Total	58.07	20.90	24.20	114.95	21.20	12.48	42.57

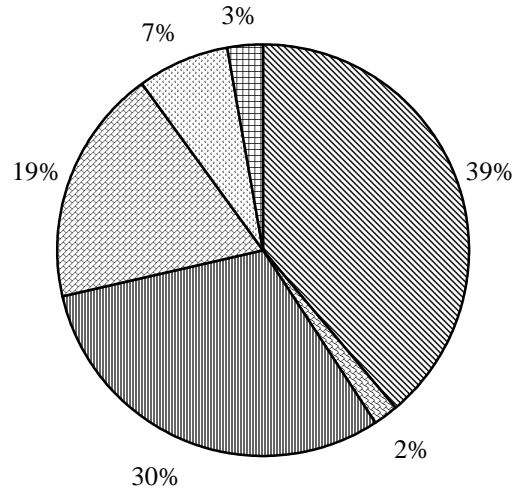
Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.

Figure 7 - Percent of Annual Electric Sales by End Use



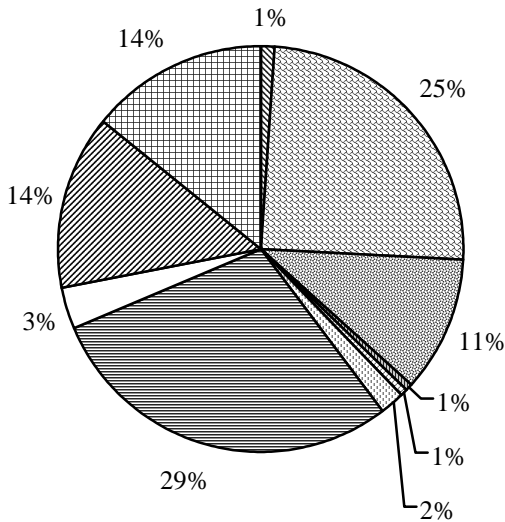
- Heating
- Water Heating
- Inside Lighting
- Other
- Cooling
- Cooking
- Exterior Lighting
- Ventilation
- Refrigeration
- Office Equipment

Figure 8 - Percent of Annual Gas Sales by End Use



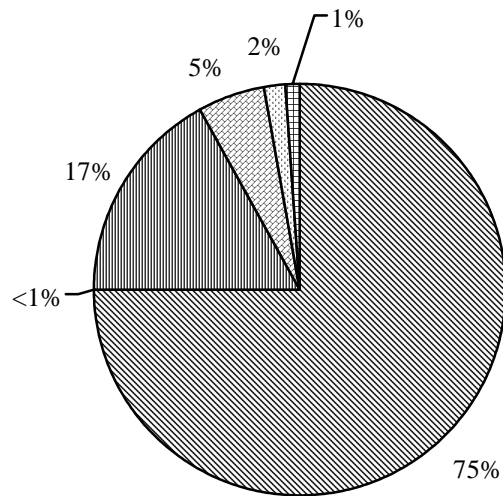
- Heating
- Cooling
- Water Heating
- Cooking
- Process
- Other

Figure 9 - Percent of Annual Office Electric Sales by End Use



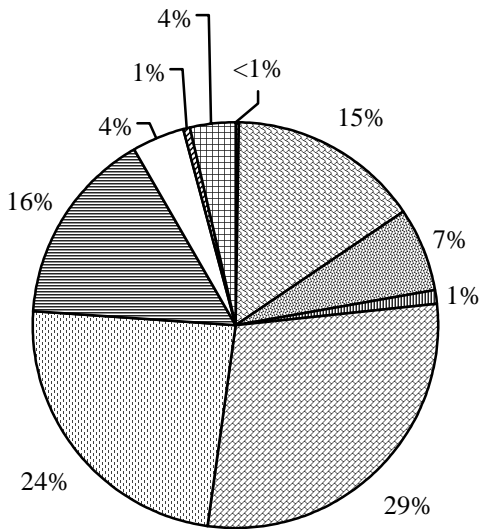
- Heating
- Water Heating
- Inside Lighting
- Other
- Cooling
- Cooking
- Exterior Lighting
- Ventilation
- Refrigeration
- Office Equipment

Figure 10 - Percent of Annual Office Gas Sales by End Use



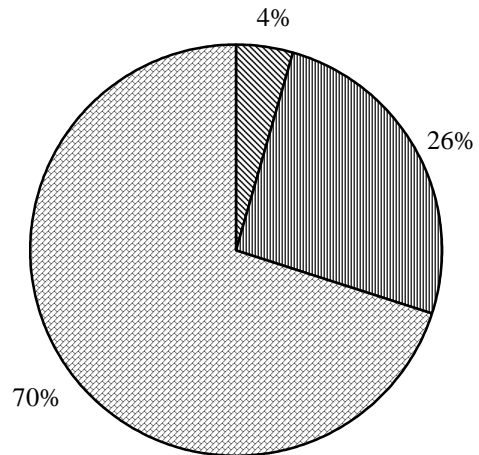
- Heating
- Cooling
- Water Heating
- Cooking
- Process
- Other

Figure 11 - Percent of Annual Restaurant Electric Sales by End Use



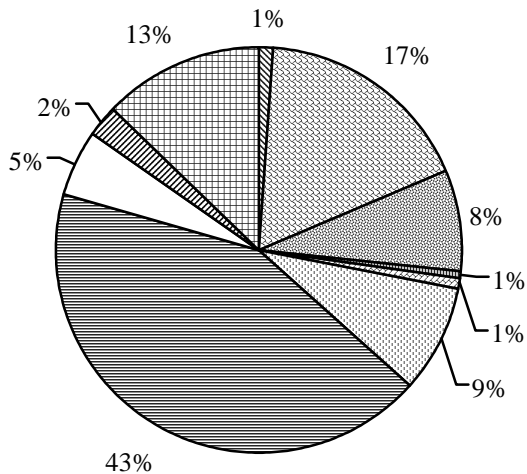
- Heating
- Water Heating
- Inside Lighting
- Other
- Cooling
- Cooking
- Exterior Lighting
- Ventilation
- Refrigeration
- Office Equipment

Figure 12 - Percent of Annual Restaurant Gas Sales by End Use



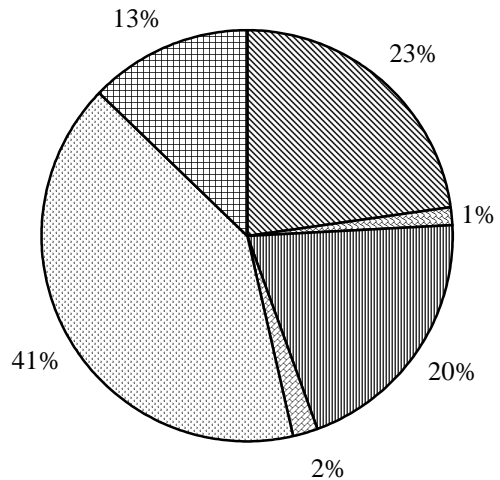
- Heating
- Cooking
- Water Heating
- Other
- Cooling
- Process

Figure 13 - Percent of Annual Retail Electric Sales by End Use



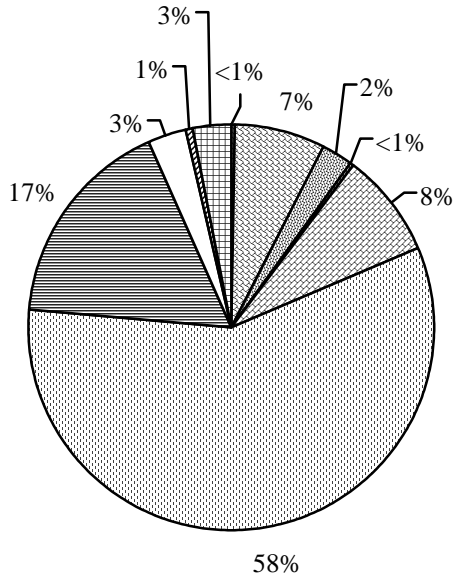
- Heating
- Water Heating
- Inside Lighting
- Other
- Cooling
- Cooking
- Exterior Lighting
- Ventilation
- Refrigeration
- Office Equipment

Figure 14 - Percent of Annual Retail Gas Sales by End Use



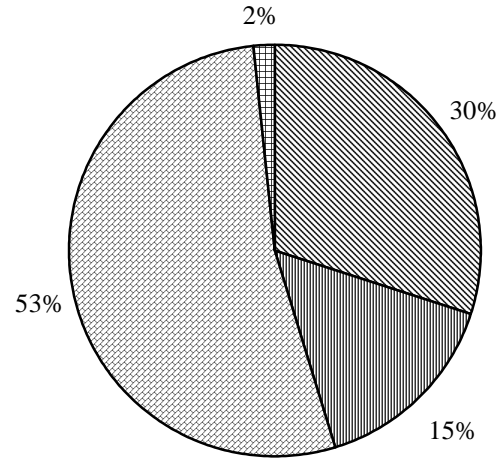
- Heating
- Cooking
- Water Heating
- Other
- Cooling
- Process

Figure 15 - Percent of Annual Grocery Electric Sales by End Use



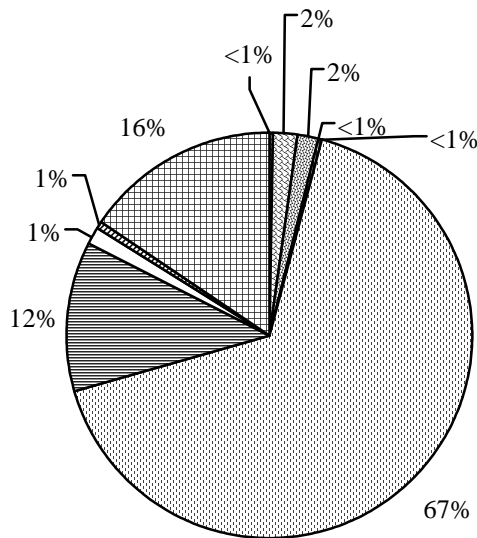
- Heating
- Water Heating
- Inside Lighting
- Other
- Cooling
- Cooking
- Exterior Lighting
- Ventilation
- Refrigeration
- Office Equipment

Figure 16 - Percent of Annual Grocery Gas Sales by End Use



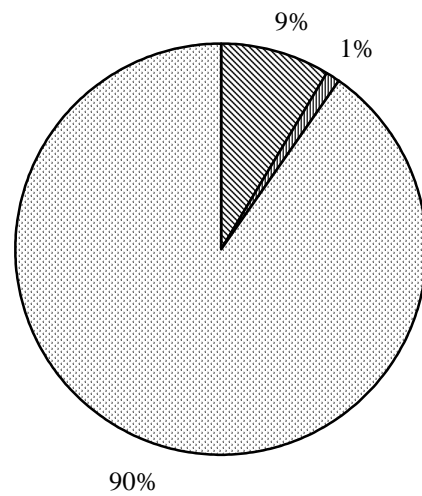
- Heating
- Cooling
- Water Heating
- Cooking
- Process
- Other

Figure 17 - Percent of Annual Refrigerated Warehouse Electric Sales by End Use



- Heating
- Water Heating
- Inside Lighting
- Other
- Cooling
- Cooking
- Exterior Lighting
- Ventilation
- Refrigeration
- Office Equipment

Figure 18 - Percent of Annual Refrigerated Warehouse Gas Sales by End Use



- Heating
- Cooling
- Water Heating
- Cooking
- Process
- Other

Figure 19 - Percent of Annual Warehouse Electric Sales by End Use

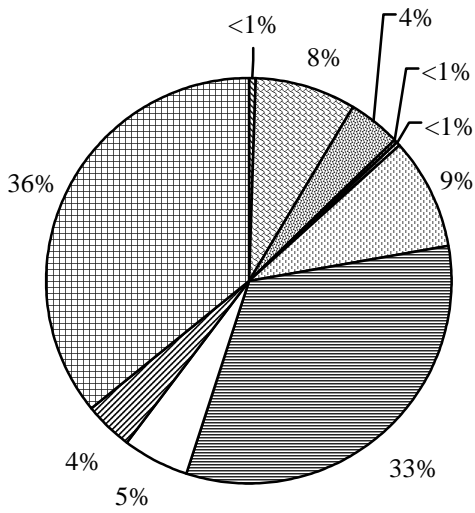
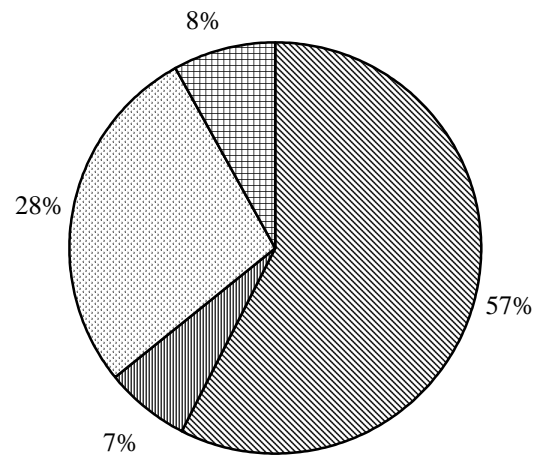


Figure 20 - Percent of Annual Warehouse Gas Sales by End Use



- Heating
- Water Heating
- Inside Lighting
- Other
- Cooling
- Cooking
- Exterior Lighting
- Other
- Ventilation
- Refrigeration
- Office Equipment

- Heating
- Cooking
- Other
- Cooling
- Process
- Water Heating

Figure 21 - Percent of Annual School Electric Sales by End Use

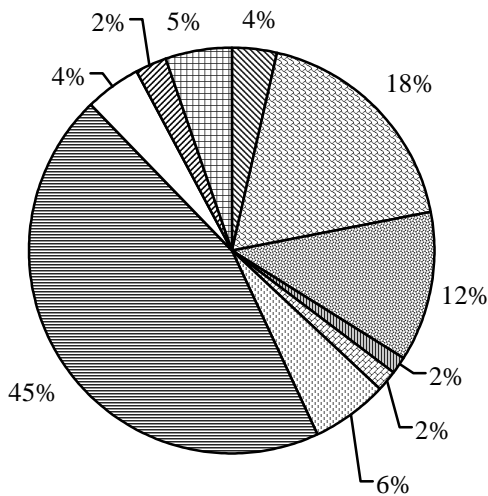
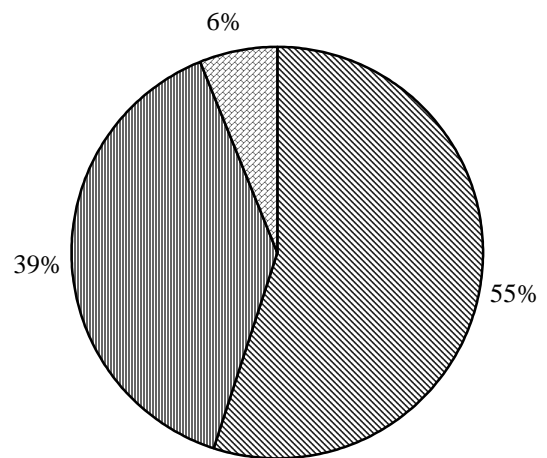


Figure 22 - Percent of Annual School Gas Sales by End Use



- Heating
- Water Heating
- Inside Lighting
- Other
- Cooling
- Cooking
- Exterior Lighting
- Other
- Ventilation
- Refrigeration
- Office Equipment

- Heating
- Cooking
- Other
- Cooling
- Process
- Water Heating

Figure 23 - Percent of Annual College Electric Sales by End Use

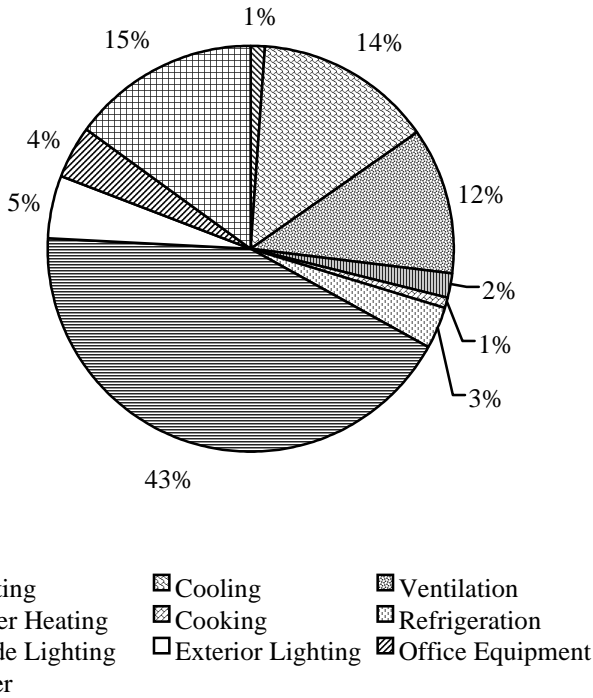


Figure 24 - Percent of Annual College Gas Sales by End Use

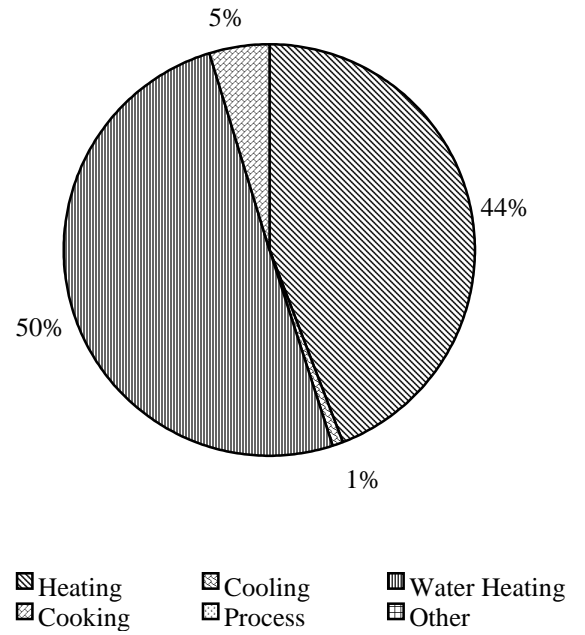


Figure 25 - Percent of Annual Hospital Electric Sales by End Use

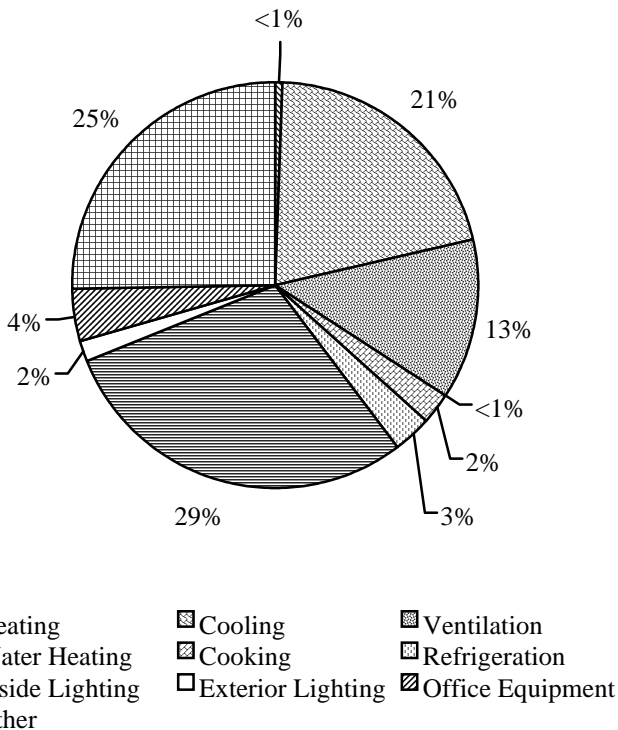


Figure 26 - Percent of Annual Hospital Gas Sales by End Use

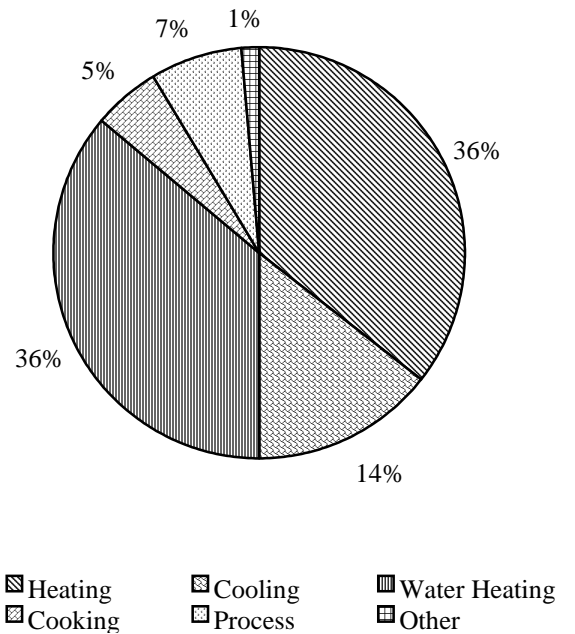


Figure 27 - Percent of Annual Lodging Electric Sales by End Use

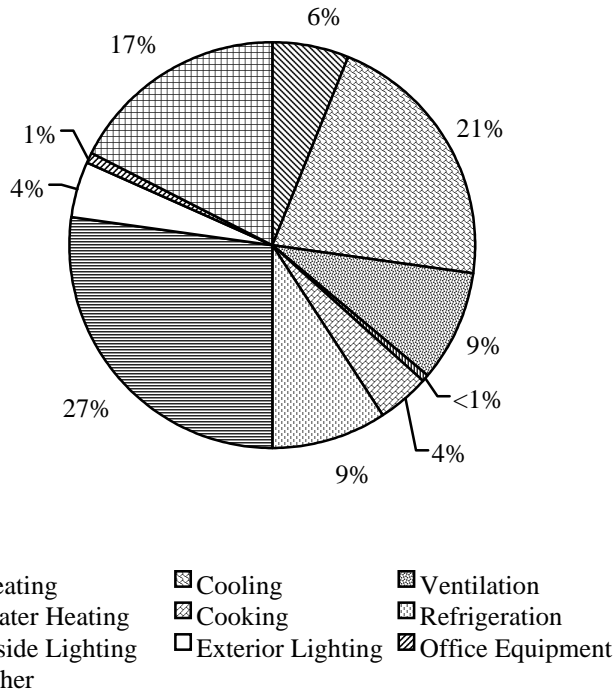


Figure 28 - Percent of Annual Lodging Gas Sales by End Use

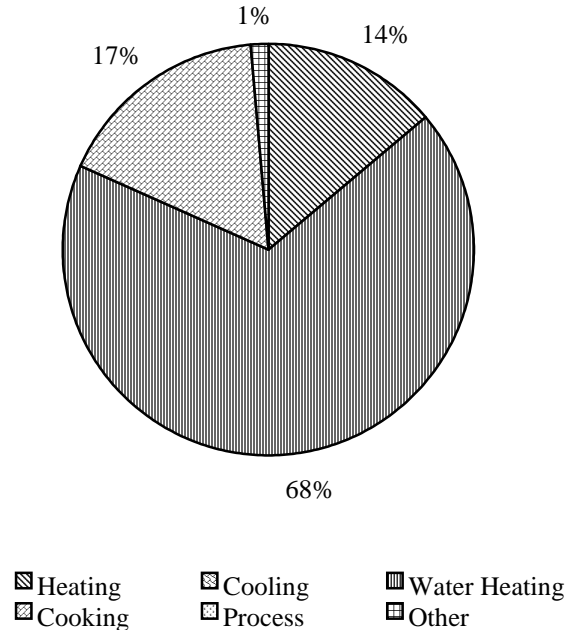


Figure 29 - Percent of Annual Miscellaneous Electric Sales by End Use

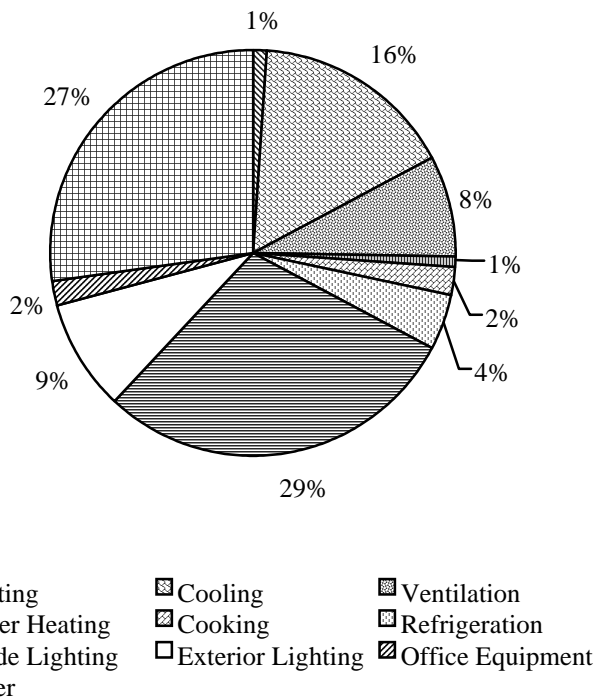


Figure 30 - Percent of Annual Miscellaneous Gas Sales by End Use

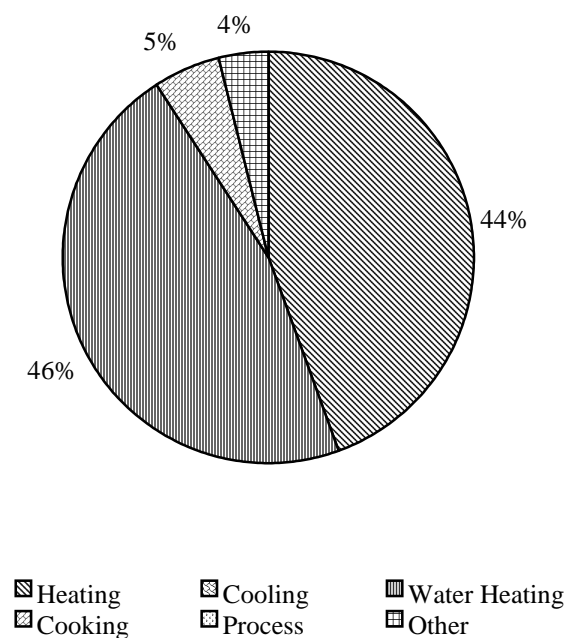
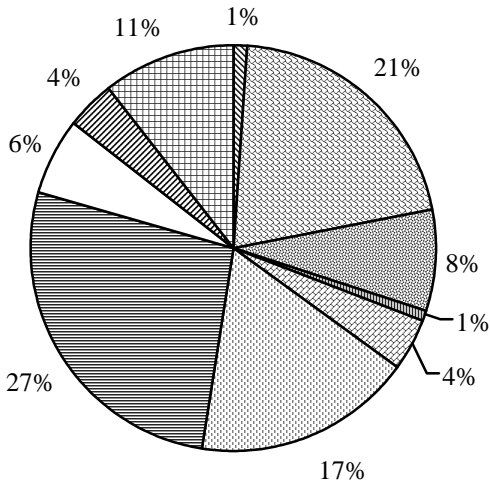
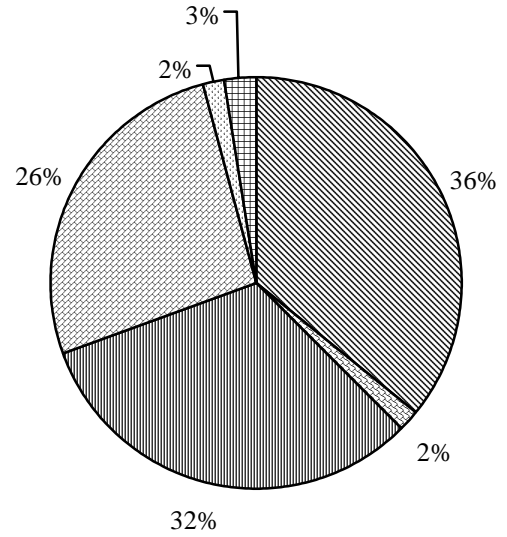


Figure 31 - Percent of Annual Desert/Mountain Climate Zone Electric Sales by End Use



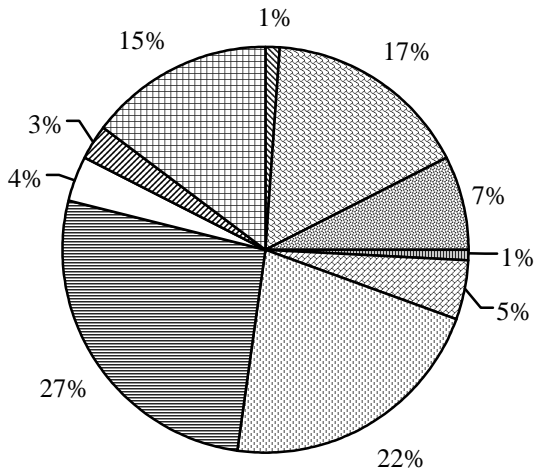
- Heating
- Water Heating
- Inside Lighting
- Other
- Cooling
- Cooking
- Exterior Lighting
- Ventilation
- Refrigeration
- Office Equipment

Figure 32 - Percent of Annual Desert/Mountain Climate Zone Gas Sales by End Use



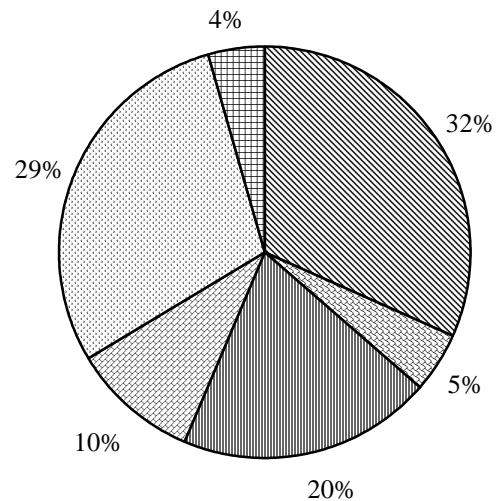
- Heating
- Cooking
- Water Heating
- Other
- Cooling
- Process

Figure 33 - Percent of Annual Valley Climate Zone Electric Sales by End Use



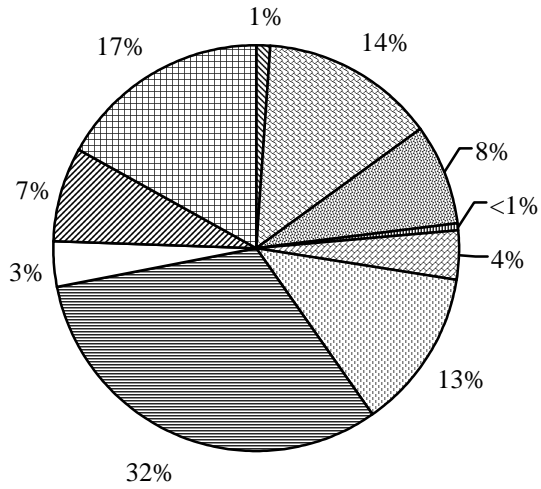
- Heating
- Water Heating
- Inside Lighting
- Other
- Cooling
- Cooking
- Exterior Lighting
- Ventilation
- Refrigeration
- Office Equipment

Figure 34 - Percent of Annual Valley Climate Zone Gas Sales by End Use



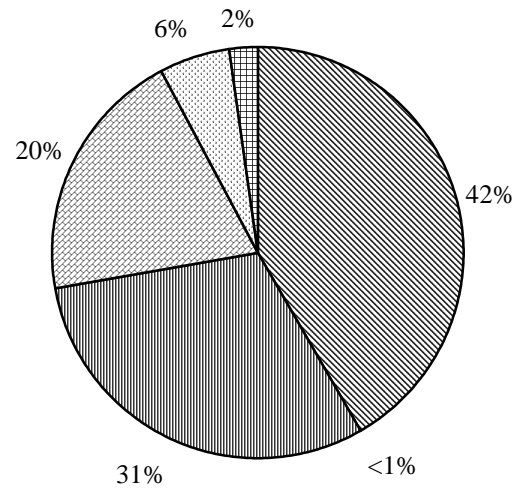
- Heating
- Cooking
- Water Heating
- Other
- Cooling
- Process

Figure 35 - Percent of Annual Coastal Climate Zone Electric Sales by End Use



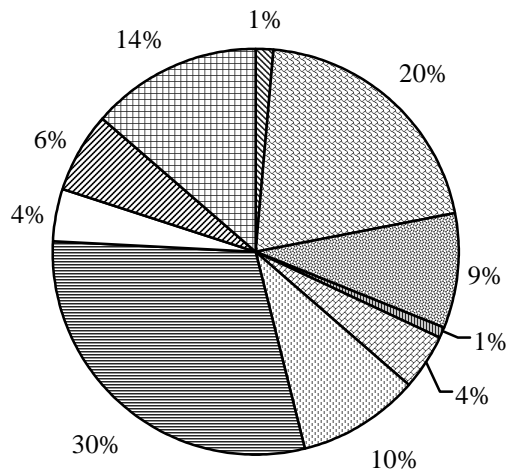
- Heating
- Water Heating
- Inside Lighting
- Other
- Cooling
- Cooking
- Exterior Lighting
- Ventilation
- Refrigeration
- Office Equipment

Figure 36 - Percent of Annual Coastal Climate Zone Gas Sales by End Use



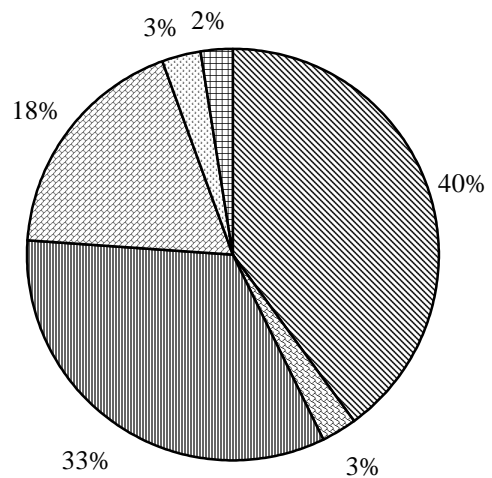
- Heating
- Cooking
- Heating
- Cooling
- Process
- Water Heating
- Other

Figure 37 - Percent of Annual Hill Climate Zone Electric Sales by End Use



- Heating
- Water Heating
- Inside Lighting
- Other
- Cooling
- Cooking
- Exterior Lighting
- Ventilation
- Refrigeration
- Office Equipment

Figure 38 - Percent of Annual Hill Climate Zone Gas Sales by End Use



- Heating
- Cooking
- Heating
- Cooling
- Process
- Water Heating
- Other

6. Appendix

Premise Definition

A premise was defined as a specific customer at a specific location. For example, Joe's Deli occupies the first floor of a five story building, and Bill's Legal Firm occupies the other four floors, plus a two story building on the same side of the same block with a different address. These were considered as two premises, one for each business. However, if the legal firm purchased Joe's Deli and made it into a cafeteria for the firm, it would have been considered one premise.

Business Type Definition

Business types were assigned by mapping the corrected site activity Standard Industrial Classification (SIC) code into 11 business types. Table 23 shows how SIC Codes are mapped into business types.

General Table Format

With a few exceptions, the tables in this report were designed to provide detail at the business type and climate zone level. The first eleven rows after the column titles give results by business type. Following a blank row, the next four rows give results by climate zone. The last row provides totals. The total row is the sum for both the business type and climate zone sections. The business type and climate zone sections are two intermediate views of the same total. Therefore, summing an entire column will double the actual total.

Data Cleaning

This report used a sample of 983 surveys for analysis. Seventeen surveys were removed from the original sample size of 1,000 surveys. Most were mislabeled as commercial accounts where the sample was drawn.

Table 23 - SIC Code to Business Type Mapping

SIC Code Mapping	
Office	4720, 4724, 4725, 4729, 6011-6799, 7311-7389, 8082-8099, 8111, 8322-8399, 8611-8699, 8711-8721, 8741-8748, 8999-9661
Restaurants	5812-5813
Retail	5211-5399, 5511-5736, 5912-5999, 7211-7299, 7622-7699
Grocery	5411-5499
Ref. Warehouse	4222, 5142-5144, 5146-5148
Warehouse	4221, 4225-4226, 5012-5141, 5149-5199
Schools	8211
Colleges	8221-8222, 8243-8299
Hospitals	8050-8079
Lodging	7011-7041
Miscellaneous	4311, 5145, 7513-7549, 7812-8099, 8231, 8412-8422, 8731-8734, 8811, 8999, 9711, 9721

Weighting Techniques

Two weights were used in this report. A mean per unit weight was used to calculate the number of premises and other information solely related to the number of premises in the population. A ratio weight based on energy usage was used to calculate all other tables and figures. Both weights used 1996 as the base year.

Tables that calculate an average per premise were developed by first using the energy weight to calculate the sum of the variable of interest. Second, the mean per unit weight was used to calculate the number of premises. The average was then calculated by dividing the sum of the variable of interest by the number of premises.

Climate Zone Definition

PG&E’s service territory was mapped into four climate zones for purposes of this analysis. The desert/mountain climate zone is characterized by extremely hot temperatures. The valley climate zone has hot temperatures, while the hill climate zone is characterized by moderate temperatures. The coastal climate zone has cooler temperatures.

Figure 39 shows how PG&E’s service territory is divided into the climate zones.

Figure 39 - Climate Zone Map

