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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.

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.

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.
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

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

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

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

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<tr>
<th></th>
<th>0–1,000</th>
<th>1,001–2,000</th>
<th>2,001–5,000</th>
<th>5,001–10,000</th>
<th>10,001–25,000</th>
<th>25,001–50,000</th>
<th>50,001–100,000</th>
<th>100,001 &amp; Up</th>
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</thead>
<tbody>
<tr>
<td>Office</td>
<td>25%</td>
<td>28%</td>
<td>18%</td>
<td>16%</td>
<td>8%</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Restaurants</td>
<td>20%</td>
<td>31%</td>
<td>39%</td>
<td>9%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Retail</td>
<td>36%</td>
<td>29%</td>
<td>18%</td>
<td>8%</td>
<td>7%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Grocery</td>
<td>24%</td>
<td>49%</td>
<td>14%</td>
<td>8%</td>
<td>3%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Ref Warehouse</td>
<td>2%</td>
<td>2%</td>
<td>15%</td>
<td>21%</td>
<td>29%</td>
<td>16%</td>
<td>4%</td>
<td>10%</td>
</tr>
<tr>
<td>Warehouse</td>
<td>23%</td>
<td>16%</td>
<td>8%</td>
<td>19%</td>
<td>20%</td>
<td>10%</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>Schools</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>10%</td>
<td>25%</td>
<td>47%</td>
<td>5%</td>
</tr>
<tr>
<td>Colleges</td>
<td>0%</td>
<td>45%</td>
<td>15%</td>
<td>0%</td>
<td>15%</td>
<td>5%</td>
<td>0%</td>
<td>20%</td>
</tr>
<tr>
<td>Hospitals</td>
<td>25%</td>
<td>15%</td>
<td>0%</td>
<td>5%</td>
<td>20%</td>
<td>9%</td>
<td>16%</td>
<td>10%</td>
</tr>
<tr>
<td>Lodging</td>
<td>0%</td>
<td>0%</td>
<td>15%</td>
<td>38%</td>
<td>27%</td>
<td>9%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>34%</td>
<td>4%</td>
<td>47%</td>
<td>7%</td>
<td>6%</td>
<td>2%</td>
<td>1%</td>
<td>0%</td>
</tr>
</tbody>
</table>

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

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

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

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

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

<table>
<thead>
<tr>
<th>Business Type</th>
<th>Percent of Premises</th>
<th>Percent of Square Footage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Own</td>
<td>Rent/ Lease</td>
</tr>
<tr>
<td>Office</td>
<td>53%</td>
<td>48%</td>
</tr>
<tr>
<td>Restaurants</td>
<td>23%</td>
<td>77%</td>
</tr>
<tr>
<td>Retail</td>
<td>16%</td>
<td>85%</td>
</tr>
<tr>
<td>Grocery</td>
<td>25%</td>
<td>75%</td>
</tr>
<tr>
<td>Ref. Warehouse</td>
<td>84%</td>
<td>16%</td>
</tr>
<tr>
<td>Warehouse</td>
<td>35%</td>
<td>66%</td>
</tr>
<tr>
<td>Schools</td>
<td>96%</td>
<td>4%</td>
</tr>
<tr>
<td>Colleges</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>Hospitals</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Lodging</td>
<td>81%</td>
<td>19%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>41%</td>
<td>59%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Climate Zone</th>
<th>Percent of Premises</th>
<th>Percent of Square Footage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desert/Mountain</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Valley</td>
<td>38%</td>
<td>63%</td>
</tr>
<tr>
<td>Coastal</td>
<td>37%</td>
<td>63%</td>
</tr>
<tr>
<td>Hill</td>
<td>29%</td>
<td>71%</td>
</tr>
<tr>
<td>Total</td>
<td>37%</td>
<td>64%</td>
</tr>
</tbody>
</table>

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.
### Table 7 - Percent of Premises by Year of Construction

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Office</td>
<td>9%</td>
<td>12%</td>
<td>6%</td>
<td>10%</td>
<td>10%</td>
<td>18%</td>
<td>12%</td>
<td>12%</td>
<td>10%</td>
<td>2%</td>
</tr>
<tr>
<td>Restaurants</td>
<td>6%</td>
<td>21%</td>
<td>3%</td>
<td>7%</td>
<td>8%</td>
<td>24%</td>
<td>3%</td>
<td>11%</td>
<td>18%</td>
<td>1%</td>
</tr>
<tr>
<td>Retail</td>
<td>0%</td>
<td>28%</td>
<td>5%</td>
<td>4%</td>
<td>16%</td>
<td>14%</td>
<td>16%</td>
<td>6%</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td>Grocery</td>
<td>7%</td>
<td>16%</td>
<td>7%</td>
<td>12%</td>
<td>21%</td>
<td>9%</td>
<td>12%</td>
<td>11%</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Ref Warehouse</td>
<td>0%</td>
<td>12%</td>
<td>7%</td>
<td>20%</td>
<td>13%</td>
<td>1%</td>
<td>3%</td>
<td>2%</td>
<td>17%</td>
<td>24%</td>
</tr>
<tr>
<td>Warehouse</td>
<td>5%</td>
<td>1%</td>
<td>19%</td>
<td>8%</td>
<td>9%</td>
<td>19%</td>
<td>7%</td>
<td>25%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Schools</td>
<td>0%</td>
<td>1%</td>
<td>12%</td>
<td>24%</td>
<td>42%</td>
<td>10%</td>
<td>3%</td>
<td>5%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Colleges</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>16%</td>
<td>15%</td>
<td>31%</td>
<td>16%</td>
<td>17%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>Hospitals</td>
<td>0%</td>
<td>0%</td>
<td>15%</td>
<td>5%</td>
<td>39%</td>
<td>15%</td>
<td>18%</td>
<td>5%</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Lodging</td>
<td>0%</td>
<td>11%</td>
<td>8%</td>
<td>21%</td>
<td>34%</td>
<td>2%</td>
<td>10%</td>
<td>5%</td>
<td>8%</td>
<td>1%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
<td>23%</td>
<td>35%</td>
<td>16%</td>
<td>12%</td>
<td>2%</td>
<td>5%</td>
<td>4%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Office</td>
<td>1%</td>
<td>11%</td>
<td>3%</td>
<td>10%</td>
<td>16%</td>
<td>16%</td>
<td>9%</td>
<td>14%</td>
<td>15%</td>
<td>6%</td>
</tr>
<tr>
<td>Restaurants</td>
<td>5%</td>
<td>12%</td>
<td>7%</td>
<td>4%</td>
<td>15%</td>
<td>29%</td>
<td>4%</td>
<td>9%</td>
<td>14%</td>
<td>1%</td>
</tr>
<tr>
<td>Retail</td>
<td>1%</td>
<td>14%</td>
<td>2%</td>
<td>6%</td>
<td>10%</td>
<td>32%</td>
<td>11%</td>
<td>6%</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>Grocery</td>
<td>6%</td>
<td>8%</td>
<td>4%</td>
<td>13%</td>
<td>18%</td>
<td>18%</td>
<td>13%</td>
<td>7%</td>
<td>4%</td>
<td>8%</td>
</tr>
<tr>
<td>Ref Warehouse</td>
<td>0%</td>
<td>3%</td>
<td>10%</td>
<td>19%</td>
<td>2%</td>
<td>1%</td>
<td>3%</td>
<td>0%</td>
<td>33%</td>
<td>29%</td>
</tr>
<tr>
<td>Warehouse</td>
<td>4%</td>
<td>2%</td>
<td>2%</td>
<td>6%</td>
<td>12%</td>
<td>20%</td>
<td>14%</td>
<td>17%</td>
<td>8%</td>
<td>14%</td>
</tr>
<tr>
<td>Schools</td>
<td>0%</td>
<td>4%</td>
<td>11%</td>
<td>24%</td>
<td>35%</td>
<td>13%</td>
<td>6%</td>
<td>5%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Colleges</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>25%</td>
<td>52%</td>
<td>15%</td>
<td>8%</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Hospitals</td>
<td>0%</td>
<td>0%</td>
<td>13%</td>
<td>17%</td>
<td>37%</td>
<td>13%</td>
<td>14%</td>
<td>3%</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Lodging</td>
<td>0%</td>
<td>12%</td>
<td>4%</td>
<td>11%</td>
<td>14%</td>
<td>11%</td>
<td>10%</td>
<td>15%</td>
<td>22%</td>
<td>1%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>0%</td>
<td>5%</td>
<td>7%</td>
<td>15%</td>
<td>27%</td>
<td>11%</td>
<td>11%</td>
<td>4%</td>
<td>13%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Direct comparisons to the 1997 Commercial Building Survey Report are strongly cautioned. For more information, see page 2.
### Figure 4 - Window Treatment

<table>
<thead>
<tr>
<th>Glazing Type</th>
<th>Total</th>
<th>Desert/Mtn</th>
<th>Valley</th>
<th>Coastal</th>
<th>Hill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear</td>
<td>54%</td>
<td>60%</td>
<td>61%</td>
<td>56%</td>
<td>48%</td>
</tr>
<tr>
<td>Tinted</td>
<td>37%</td>
<td>33%</td>
<td>35%</td>
<td>34%</td>
<td>43%</td>
</tr>
<tr>
<td>Opaque</td>
<td>3%</td>
<td>6%</td>
<td>5%</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>Reflective</td>
<td>6%</td>
<td>6%</td>
<td>5%</td>
<td>6%</td>
<td>4%</td>
</tr>
</tbody>
</table>

**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.
Table 9 - Heating Capacity (million Btu/h)

<table>
<thead>
<tr>
<th></th>
<th>Electric Resistance</th>
<th>Heat Pump</th>
<th>Electric Furnace w/Boiler</th>
<th>Gas Furnace</th>
<th>Gas Unit</th>
<th>Gas Boiler</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offices</td>
<td>184</td>
<td>19</td>
<td>41</td>
<td>13,078</td>
<td>170</td>
<td>8,563</td>
<td>22,651</td>
</tr>
<tr>
<td>Restaurants</td>
<td>40</td>
<td>22</td>
<td>0</td>
<td>2,548</td>
<td>0</td>
<td>71</td>
<td>2,884</td>
</tr>
<tr>
<td>Retail</td>
<td>324</td>
<td>63</td>
<td>13</td>
<td>4,761</td>
<td>287</td>
<td>335</td>
<td>6,083</td>
</tr>
<tr>
<td>Grocery</td>
<td>29</td>
<td>16</td>
<td>0</td>
<td>894</td>
<td>0</td>
<td>26</td>
<td>1,072</td>
</tr>
<tr>
<td>Refrig. Warehouse</td>
<td>9</td>
<td>2</td>
<td>0</td>
<td>58</td>
<td>0</td>
<td>24</td>
<td>94</td>
</tr>
<tr>
<td>Warehouse</td>
<td>26</td>
<td>5</td>
<td>0</td>
<td>2,632</td>
<td>101</td>
<td>89</td>
<td>2,944</td>
</tr>
<tr>
<td>Schools</td>
<td>9</td>
<td>77</td>
<td>0</td>
<td>4,275</td>
<td>0</td>
<td>5,235</td>
<td>10,027</td>
</tr>
<tr>
<td>Colleges</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>483</td>
<td>16</td>
<td>3,309</td>
<td>3,809</td>
</tr>
<tr>
<td>Hospitals</td>
<td>18</td>
<td>1</td>
<td>0</td>
<td>534</td>
<td>0</td>
<td>8,726</td>
<td>9,528</td>
</tr>
<tr>
<td>Lodging</td>
<td>205</td>
<td>14</td>
<td>0</td>
<td>1,575</td>
<td>0</td>
<td>497</td>
<td>2,479</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>63</td>
<td>134</td>
<td>0</td>
<td>3,247</td>
<td>87</td>
<td>801</td>
<td>4,689</td>
</tr>
</tbody>
</table>

|                |                      |           |                           |             |          |           |        |
| Desert/Mountain| 138                 | 61        | 0                         | 6,892       | 51       | 2,190     | 10,002 |
| Valley         | 90                  | 25        | 13                        | 5,602       | 8        | 1,352     | 7,803  |
| Coastal        | 516                 | 76        | 0                         | 9,191       | 315      | 9,729     | 20,377 |
| Hill           | 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

<table>
<thead>
<tr>
<th></th>
<th>Electric Resistance</th>
<th>Heat Pump</th>
<th>Electric Furnace w/Boiler</th>
<th>Gas Furnace</th>
<th>Gas Unit</th>
<th>Gas Boiler</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offices</td>
<td>4.3%</td>
<td>0.5%</td>
<td>0.0%</td>
<td>60.0%</td>
<td>2.1%</td>
<td>4.1%</td>
<td>69.7%</td>
</tr>
<tr>
<td>Restaurants</td>
<td>5.5%</td>
<td>0.5%</td>
<td>0.0%</td>
<td>51.9%</td>
<td>0.0%</td>
<td>0.4%</td>
<td>63.8%</td>
</tr>
<tr>
<td>Retail</td>
<td>11.3%</td>
<td>0.8%</td>
<td>0.6%</td>
<td>40.9%</td>
<td>5.8%</td>
<td>0.5%</td>
<td>60.3%</td>
</tr>
<tr>
<td>Grocery</td>
<td>11.1%</td>
<td>0.7%</td>
<td>0.0%</td>
<td>24.6%</td>
<td>0.0%</td>
<td>0.3%</td>
<td>37.1%</td>
</tr>
<tr>
<td>Refrig. Warehouse</td>
<td>22.8%</td>
<td>3.4%</td>
<td>0.0%</td>
<td>27.8%</td>
<td>0.0%</td>
<td>3.8%</td>
<td>53.6%</td>
</tr>
<tr>
<td>Warehouse</td>
<td>15.4%</td>
<td>0.2%</td>
<td>0.0%</td>
<td>34.3%</td>
<td>1.6%</td>
<td>0.4%</td>
<td>52.7%</td>
</tr>
<tr>
<td>Schools</td>
<td>1.2%</td>
<td>8.9%</td>
<td>0.0%</td>
<td>58.2%</td>
<td>0.0%</td>
<td>38.2%</td>
<td>96.3%</td>
</tr>
<tr>
<td>Colleges</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>38.9%</td>
<td>1.4%</td>
<td>25.2%</td>
<td>54.5%</td>
</tr>
<tr>
<td>Hospitals</td>
<td>13.6%</td>
<td>1.2%</td>
<td>0.0%</td>
<td>61.3%</td>
<td>0.0%</td>
<td>19.7%</td>
<td>77.0%</td>
</tr>
<tr>
<td>Lodging</td>
<td>15.8%</td>
<td>1.5%</td>
<td>0.0%</td>
<td>40.7%</td>
<td>0.0%</td>
<td>8.2%</td>
<td>71.0%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>3.1%</td>
<td>2.5%</td>
<td>0.0%</td>
<td>34.2%</td>
<td>2.2%</td>
<td>1.8%</td>
<td>43.6%</td>
</tr>
</tbody>
</table>

|                |                      |           |                           |             |          |           |        |
| Desert/Mountain| 17.2%               | 1.1%      | 0.0%                      | 51.6%       | 0.4%     | 2.5%      | 71.7%  |
| Valley         | 6.5%                | 0.9%      | 1.0%                      | 57.7%       | 2.0%     | 1.5%      | 77.9%  |
| Coastal        | 6.2%                | 0.5%      | 0.0%                      | 32.3%       | 5.5%     | 2.9%      | 46.9%  |
| Hill           | 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 13 - Cooling Capacity (thousand tons)

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

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

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

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)

<table>
<thead>
<tr>
<th></th>
<th>Incandescent</th>
<th>Compact Fluorescent</th>
<th>Fluorescent Tube</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office</td>
<td>82.74</td>
<td>6.90</td>
<td>588.07</td>
<td>70.74</td>
<td>748.46</td>
</tr>
<tr>
<td>Restaurants</td>
<td>27.39</td>
<td>3.29</td>
<td>29.62</td>
<td>11.18</td>
<td>71.48</td>
</tr>
<tr>
<td>Retail</td>
<td>38.68</td>
<td>3.39</td>
<td>289.80</td>
<td>66.80</td>
<td>398.66</td>
</tr>
<tr>
<td>Grocery</td>
<td>3.19</td>
<td>0.21</td>
<td>63.82</td>
<td>3.90</td>
<td>71.13</td>
</tr>
<tr>
<td>Ref. Whse</td>
<td>0.20</td>
<td>0.01</td>
<td>6.17</td>
<td>11.19</td>
<td>17.56</td>
</tr>
<tr>
<td>Warehouse</td>
<td>22.89</td>
<td>0.29</td>
<td>98.09</td>
<td>21.93</td>
<td>143.20</td>
</tr>
<tr>
<td>Schools</td>
<td>4.71</td>
<td>1.19</td>
<td>177.93</td>
<td>8.58</td>
<td>192.41</td>
</tr>
<tr>
<td>Colleges</td>
<td>2.43</td>
<td>0.97</td>
<td>70.67</td>
<td>3.19</td>
<td>77.27</td>
</tr>
<tr>
<td>Hospitals</td>
<td>7.43</td>
<td>0.80</td>
<td>53.14</td>
<td>1.77</td>
<td>63.13</td>
</tr>
<tr>
<td>Lodging</td>
<td>60.96</td>
<td>2.67</td>
<td>28.64</td>
<td>4.67</td>
<td>96.94</td>
</tr>
<tr>
<td>Misc</td>
<td>32.92</td>
<td>0.56</td>
<td>98.72</td>
<td>25.49</td>
<td>157.69</td>
</tr>
</tbody>
</table>

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

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

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

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.

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.

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

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

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

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

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.

<table>
<thead>
<tr>
<th></th>
<th>Electricity</th>
<th>PG&amp;E Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annual kWh</td>
<td>Customers</td>
</tr>
<tr>
<td>Office</td>
<td>8,112,308,400</td>
<td>90,900</td>
</tr>
<tr>
<td>Restaurants</td>
<td>2,173,946,300</td>
<td>25,300</td>
</tr>
<tr>
<td>Retail</td>
<td>3,787,198,300</td>
<td>72,900</td>
</tr>
<tr>
<td>Grocery</td>
<td>2,496,011,800</td>
<td>12,800</td>
</tr>
<tr>
<td>Ref. Warehouse</td>
<td>617,077,900</td>
<td>1,000</td>
</tr>
<tr>
<td>Warehouse</td>
<td>1,333,925,200</td>
<td>23,600</td>
</tr>
<tr>
<td>Schools</td>
<td>1,006,298,700</td>
<td>4,700</td>
</tr>
<tr>
<td>Colleges</td>
<td>633,614,000</td>
<td>600</td>
</tr>
<tr>
<td>Hospitals</td>
<td>1,243,704,600</td>
<td>1,400</td>
</tr>
<tr>
<td>Lodging</td>
<td>939,030,300</td>
<td>3,500</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1,722,736,900</td>
<td>40,600</td>
</tr>
<tr>
<td>Desert/Mountain</td>
<td>3,737,483,200</td>
<td>43,200</td>
</tr>
<tr>
<td>Valley</td>
<td>3,039,583,900</td>
<td>40,200</td>
</tr>
<tr>
<td>Coastal</td>
<td>8,007,571,000</td>
<td>105,400</td>
</tr>
<tr>
<td>Hill</td>
<td>9,281,214,300</td>
<td>88,500</td>
</tr>
<tr>
<td>Total</td>
<td>24,065,852,400</td>
<td>277,300</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th></th>
<th>Electric Usage (MWh)</th>
<th>Gas Usage (billion Btu)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First Quarter</td>
<td>Second Quarter</td>
</tr>
<tr>
<td>Office</td>
<td>1,846,465</td>
<td>2,051,332</td>
</tr>
<tr>
<td>Restaurants</td>
<td>483,938</td>
<td>561,674</td>
</tr>
<tr>
<td>Retail</td>
<td>839,004</td>
<td>952,881</td>
</tr>
<tr>
<td>Grocery</td>
<td>586,299</td>
<td>632,551</td>
</tr>
<tr>
<td>Ref Warehouse</td>
<td>124,130</td>
<td>154,405</td>
</tr>
<tr>
<td>Warehouse</td>
<td>309,827</td>
<td>333,378</td>
</tr>
<tr>
<td>Schools</td>
<td>259,404</td>
<td>262,993</td>
</tr>
<tr>
<td>Colleges</td>
<td>152,176</td>
<td>158,095</td>
</tr>
<tr>
<td>Hospitals</td>
<td>274,126</td>
<td>301,028</td>
</tr>
<tr>
<td>Lodging</td>
<td>219,030</td>
<td>230,847</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>382,935</td>
<td>450,563</td>
</tr>
<tr>
<td>Desert/Mountain</td>
<td>801,096</td>
<td>970,497</td>
</tr>
<tr>
<td>Valley</td>
<td>652,433</td>
<td>769,589</td>
</tr>
<tr>
<td>Coastal</td>
<td>1,911,092</td>
<td>1,998,292</td>
</tr>
<tr>
<td>Hill</td>
<td>2,112,713</td>
<td>2,351,369</td>
</tr>
<tr>
<td>Total</td>
<td>5,477,334</td>
<td>6,089,747</td>
</tr>
</tbody>
</table>

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)

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

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           |                 | 44.53            |
| Retail               | 29.15            | 13.52             | 9.40            | 372.67           | 21.78           | 130.43           | 48.94            |
| Grocery              | 22.10            | 74.70             | 62.10           | 44.53            |                 | 16.77            |
| Ref. Warehouse       | 9.85             | 404.20            | 0.64            | 16.77            | 62.10           | 48.94            |
| Warehouse            | 13.12            | 0.05              | 1,750.49        | 0.88             | 12.18           | 10.08            |
| Schools              | 20.30            | 3.43              | 20.37           | 35.25            | 0.22            | 35.25            |
| Colleges             | 14.04            | 29.05             | 3.90            | 54.29            | 0.22            | 64.81            |
| Hospitals            | 128.55           | 52.74             | 10.45           | 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 15 - Percent of Annual Grocery Electric Sales by End Use

- Heating: 17%
- Cooling: 3%
- Ventilation: 1%
- Water Heating: 1%
- Cooking: 3%
- Refrigeration: 8%
- Inside Lighting: 7%
- Exterior Lighting: <1%
- Office Equipment: <1%
- Other: 3%
- <1%: 2%
- Total: 58%

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

- Heating: 30%
- Cooling: 15%
- Ventilation: 53%
- Water Heating: 2%
- Cooking: 53%
- Refrigeration: 2%
- Inside Lighting: 16%
- Exterior Lighting: 1%
- Office Equipment: 9%
- Process: 1%
- Other: 90%
- Total: 100%

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

- Heating: 16%
- Cooling: 12%
- Ventilation: 1%
- Water Heating: 1%
- Cooking: 1%
- Refrigeration: 1%
- Inside Lighting: 1%
- Exterior Lighting: <1%
- Office Equipment: <1%
- Process: <1%
- Other: 67%
- Total: 100%

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

- Heating: 9%
- Cooling: 90%
- Ventilation: 1%
- Water Heating: 1%
- Cooking: 1%
- Refrigeration: 9%
- Inside Lighting: <1%
- Exterior Lighting: <1%
- Office Equipment: <1%
- Process: <1%
- Other: 1%
- Total: 100%
Figure 19 - Percent of Annual Warehouse Electric Sales by End Use

Heating  36%
Water Heating  4%
Inside Lighting  5%
Other  8%
Cooling  4%
Ventilation  1%
Inside Lighting  1%
Office Equipment  1%
Refrigeration  1%

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

Heating  28%
Water Heating  57%
Inside Lighting  7%
Other  8%
Cooling  4%
Process  1%
Office Equipment  1%
Refrigeration  1%

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

Heating  45%
Water Heating  4%
Inside Lighting  5%
Other  18%
Cooking  2%
Refrigeration  1%
Process  1%
Office Equipment  1%

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

Heating  39%
Water Heating  55%
Inside Lighting  6%
Other  5%
Cooling  1%
Process  1%
Office Equipment  1%
Refrigeration  1%
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: 11%
- Water Heating: 6%
- Inside Lighting: 4%
- Other: 27%
- Cooling: 1%
- Ventilation: 1%
- Exterior Lighting: 4%
- Office Equipment: 17%

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

- Heating: 3%
- Water Heating: 2%
- Inside Lighting: 26%
- Other: 32%
- Cooking: 27%
- Process: 4%
- Exterior Lighting: 3%
- Office Equipment: 22%

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

- Heating: 4%
- Water Heating: 3%
- Inside Lighting: 15%
- Other: 29%
- Cooling: 17%
- Ventilation: 7%
- Exterior Lighting: 1%
- Office Equipment: 5%

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

- Heating: 5%
- Water Heating: 10%
- Inside Lighting: 20%
- Other: 32%
- Cooking: 32%
- Process: 4%
- Exterior Lighting: 4%
- Office Equipment: 1%
Figure 35 - Percent of Annual Coastal Climate Zone Electric Sales by End Use

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

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

Figure 38 - Percent of Annual Hill Climate Zone Gas Sales by End Use
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>
<thead>
<tr>
<th>SIC Code Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office 4720, 4724, 4725, 4729, 6011-6799, 7311-7389, 8082-8099, 8111, 8322-8399, 8611-8699, 8711-8721, 8741-8748, 8999-9661</td>
</tr>
<tr>
<td>Restaurants 5812-5813</td>
</tr>
<tr>
<td>Retail 5211-5399, 5511-5736, 5912-5999, 7211-7299, 7622-7699</td>
</tr>
<tr>
<td>Grocery 5411-5499</td>
</tr>
<tr>
<td>Ref. Warehouse 4222, 5142-5144, 5146-5148</td>
</tr>
<tr>
<td>Warehouse 4221, 4225-4226, 5012-5141, 5149-5199</td>
</tr>
<tr>
<td>Schools 8211</td>
</tr>
<tr>
<td>Colleges 8221-8222, 8243-8299</td>
</tr>
<tr>
<td>Hospitals 8050-8079</td>
</tr>
<tr>
<td>Lodging 7011-7041</td>
</tr>
<tr>
<td>Miscellaneous 4311, 5145, 7513-7549, 7812-8099, 8231, 8412-8422, 8731-8734, 8811, 8999, 9711, 9721</td>
</tr>
</tbody>
</table>
**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*