

## Section 4. Intensities for Other End Uses

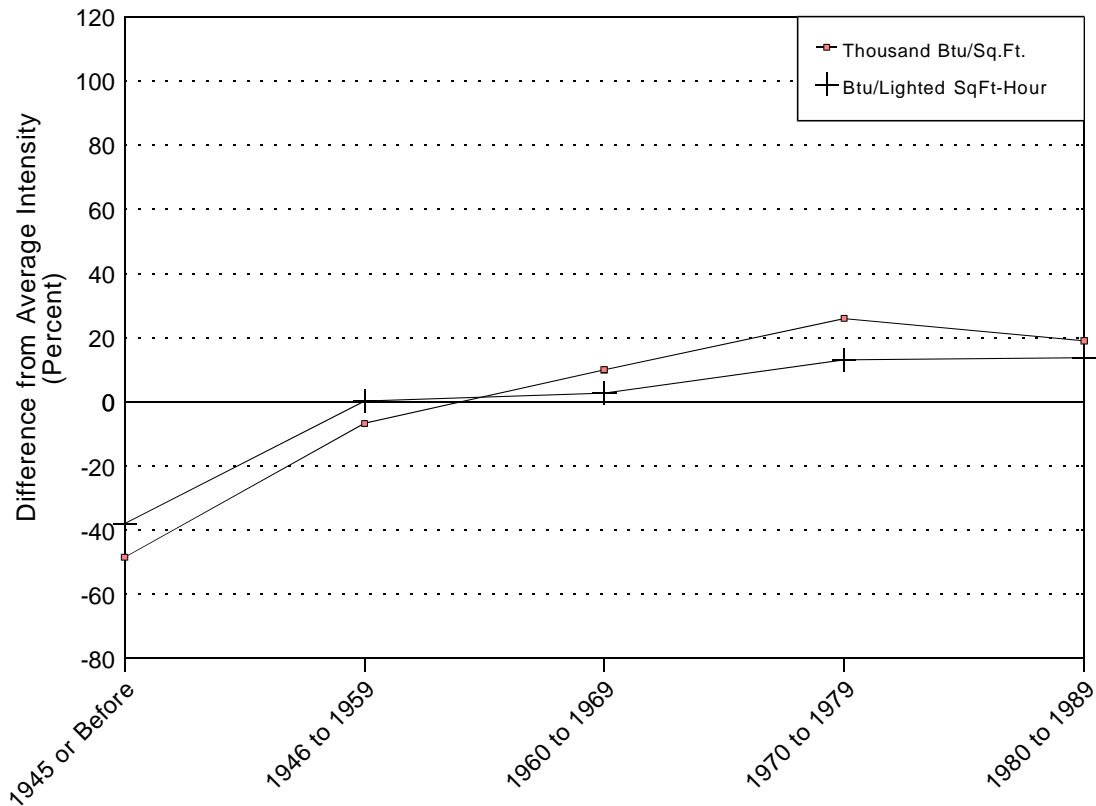
*The purpose of this section is to provide information on intensities for end uses other than space conditioning, including lighting, water heating, cooking, refrigeration, office equipment, and miscellaneous uses. These other end uses accounted for 55 percent of all energy consumed in commercial buildings in 1989. This section shows lighting intensities by year of construction, floorspace, and principal building activity. It also shows intensities for natural gas water heating and cooking and for electric refrigeration, by principal building activity. In addition, it shows electric intensities for office equipment.*

Key findings of this section include:

- The oldest buildings had the lowest lighting intensity, defined either as (1) the ratio of the amount of energy consumed for lighting to the square footage of building floorspace or (2) the ratio of the amount of energy consumed for lighting to the square footage of lighted floorspace (Figure 21).
- Buildings constructed during the 1970's and 1980's had the highest lighting intensities (Figure 21).
- Office buildings had the highest lighting intensities per lighted square foot-hour (Figure 23).
- Food service and health care buildings had the highest water-heating intensities per square foot--more than five times the average for all buildings (Figure 24).
- Food sales and food service buildings had the highest energy intensities for cooking and refrigeration (Figure 24).
- Office buildings had the highest intensities for office-equipment energy use (Figure 25).
- Buildings constructed during the 1980's had the highest intensities for office-equipment energy use (Figure 25).

## Lighting

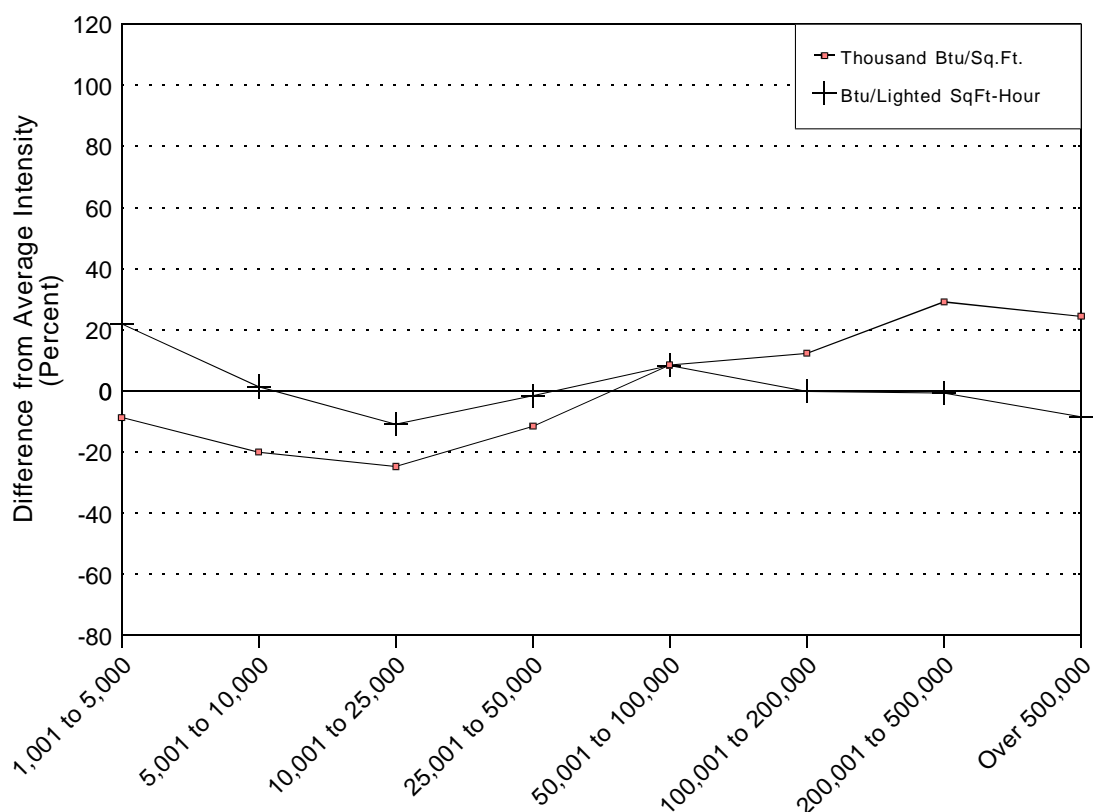
Figure 21. Lighting Intensities, by Year Constructed, 1989



Sources: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey and statistically adjusted engineering end-use estimates.

- Lighting intensity can be defined either as (1) the ratio of the amount of energy consumed for lighting to the square footage of building floorspace or (2) the ratio of the amount of energy consumed for lighting to the product of the square footage of lighted floorspace and the operating hours.
- Figure 21 shows that the oldest buildings had the lowest lighting intensity.
- Buildings constructed during the 1970's and 1980's had the highest lighting intensities.
- Lighting intensity per lighted square foot-hour was lower than intensity per square foot among the more recently constructed buildings. This indicates that the rise in intensity per square foot can be partly explained by increasing operating hours.

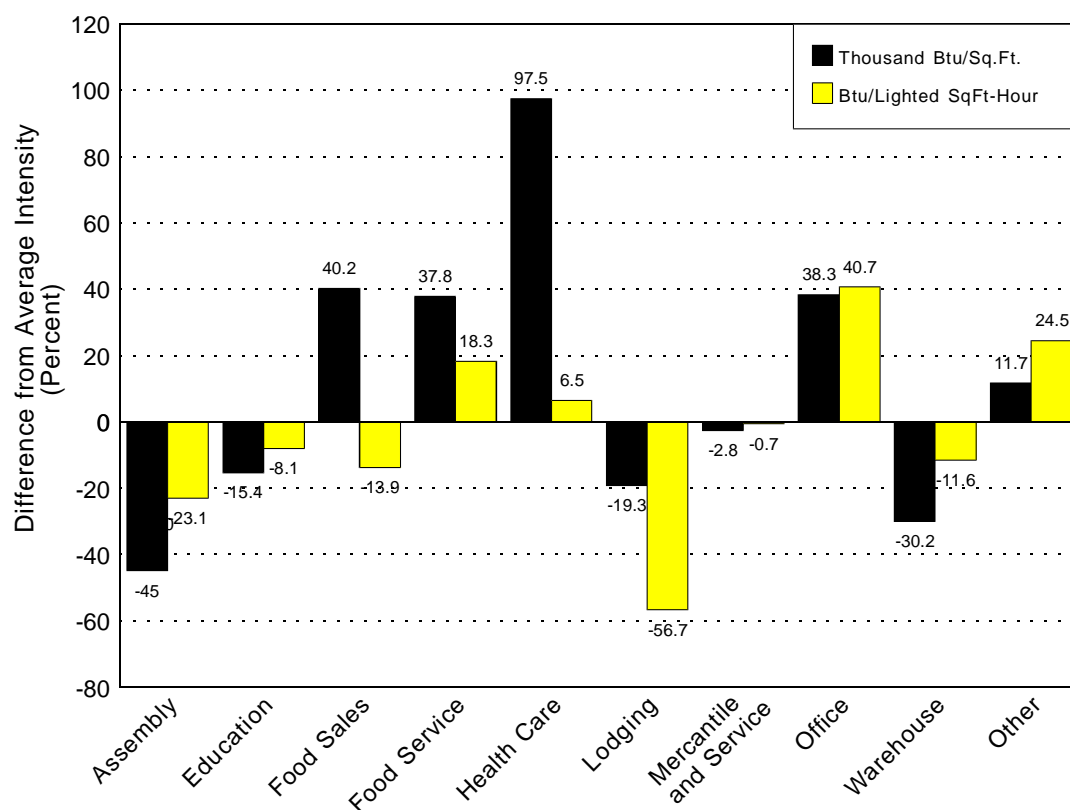
Figure 22. Lighting Intensities, by Floorspace, 1989



Sources: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey and statistically adjusted engineering end-use estimates.

- Figure 22 shows that lighting intensity per lighted square foot-hour remained relatively constant for all sizes of buildings.
- Lighting intensity per square foot was relatively low for the smaller buildings, and relatively high for larger buildings, reflecting the general tendency for smaller buildings to have shorter operating hours than larger buildings.

**Figure 23. Lighting Intensities, by Principal Building Activity, 1989**

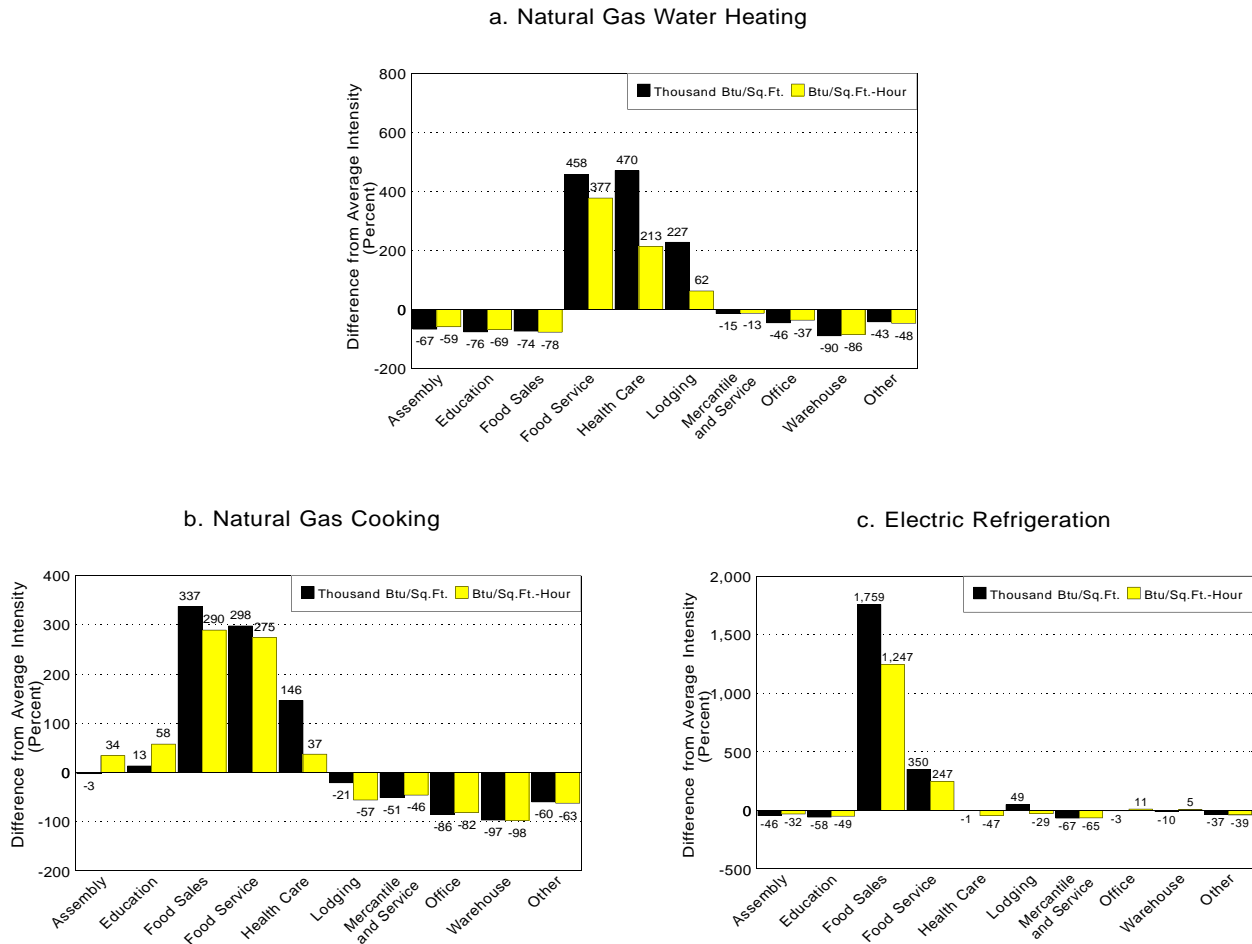


Sources: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey and statistically adjusted engineering end-use estimates.

- Figure 23 shows that office buildings had the highest lighting intensities per lighted square foot-hour. Food service and "other" buildings also had high intensities.
- Although health care buildings had the highest lighting intensity per square foot, their intensity per lighted square foot-hour was only slightly above average. Health care buildings' high intensity per square foot resulted from relatively long operating hours.

## All Other End Uses

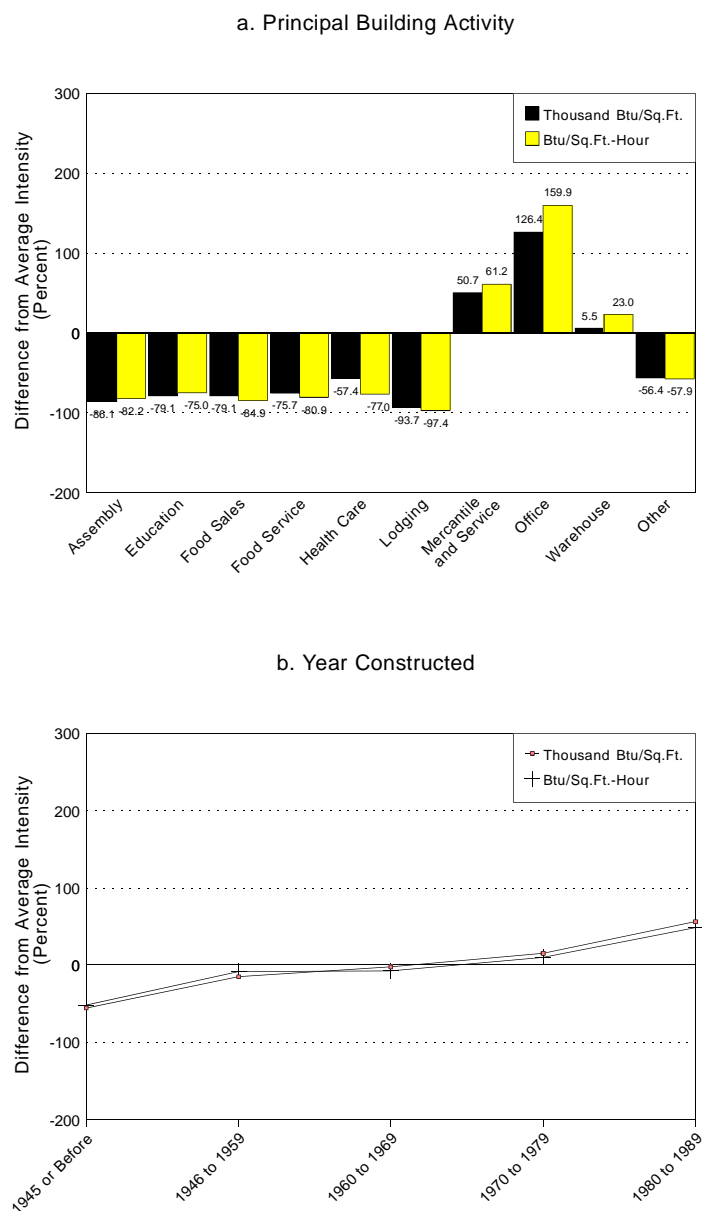
**Figure 24. Intensities for Natural Gas Water Heating and Cooking and for Electric Refrigeration, by Principal Building Activity, 1989**



Sources: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey and statistically adjusted engineering end-use estimates.

- Figure 24 shows that food service and health care buildings had the highest water-heating intensities per square foot, more than five times the average for all buildings. Lodging buildings were the third most intensive, with a water-heating intensity three times the average for all buildings.
- Food sales and food service buildings had the highest energy intensities for cooking.
- Food-related buildings dominated the refrigeration intensities. Food sales buildings had the highest refrigeration intensities by far, nearly 20 times the average intensity per square foot of all commercial buildings. Food service buildings also had high refrigeration intensities, over four times the average intensity per square foot of all buildings.

**Figure 25. Electricity Intensities for Office Equipment, by Principal Building Activity and by Year Constructed, 1989**



Sources: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-871A through F of the 1989 Commercial Buildings Energy Consumption Survey and statistically adjusted engineering end-use estimates.

- Figure 25 shows that office buildings had the highest energy intensities for office equipment.
- Mercantile and service buildings had the second highest intensities for office equipment.
- As with other electricity intensity patterns--such as cooling, ventilation, and lighting--the older buildings had relatively low intensities, with intensities increasing by vintage. Buildings constructed during the 1980's had the highest intensities.