

## Energy Use in Hotels

### Hotels Using Portfolio Manager

8,426 Properties

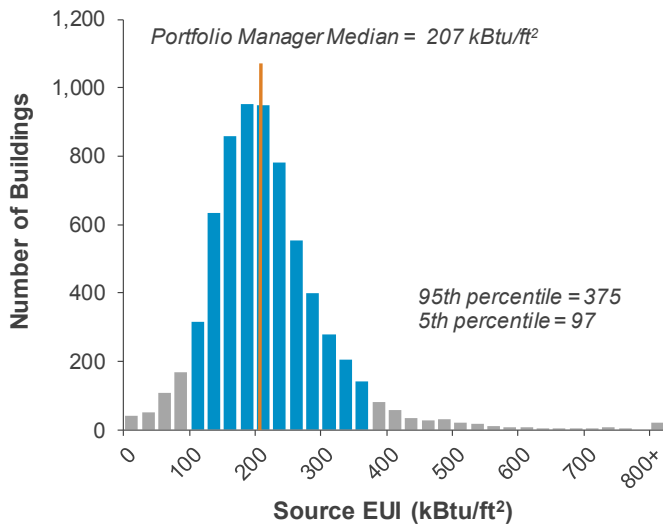
1.7 Billion ft<sup>2</sup>

49 Average ENERGY STAR Score

The U.S. Environmental Protection Agency's (EPA) ENERGY STAR Portfolio Manager is changing the way organizations track and manage energy. Because of this widespread market adoption, EPA has prepared the DataTrends series to examine benchmarking and trends in energy and water consumption in Portfolio Manager. To learn more, visit [www.energystar.gov/DataTrends](http://www.energystar.gov/DataTrends).

### What is a typical operating profile?

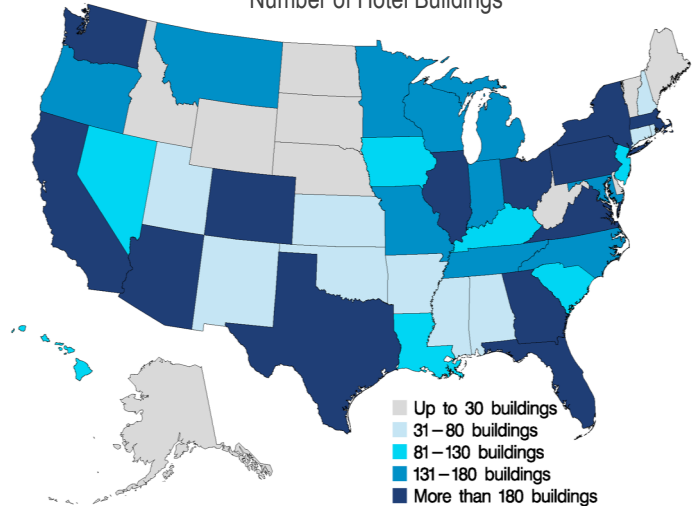
Energy use intensity (EUI) ranges from less than 100 to more than 800 kBtu/ft<sup>2</sup> across all hotel buildings, with those at the 95th percentile using almost 4 times the energy of those at the 5th percentile. The distribution has a negative skew, which means the most energy intensive buildings are much further away from the median than the most efficient. Buildings may use more or less energy for many reasons, including variable equipment efficiency and energy management practices, as well as variations in climate and business activities.



The median hotel building in Portfolio Manager is 75,000 square feet and has about 1.8 rooms per thousand square feet. But the typical building use patterns observed in Portfolio Manager vary just as much as energy. As you can see, there are hotels of all shapes and sizes benchmarking in Portfolio Manager.

### Benchmarking by State

Number of Hotel Buildings

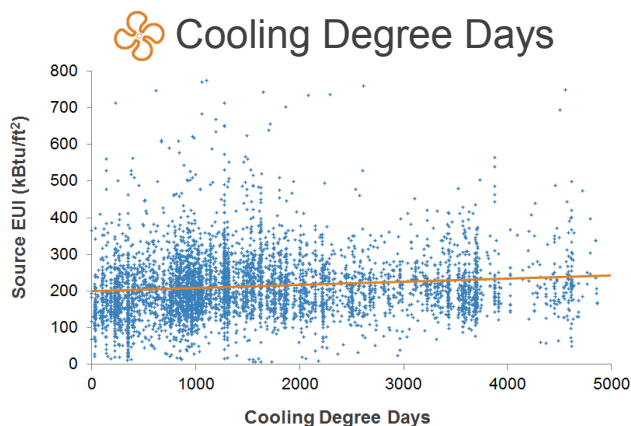
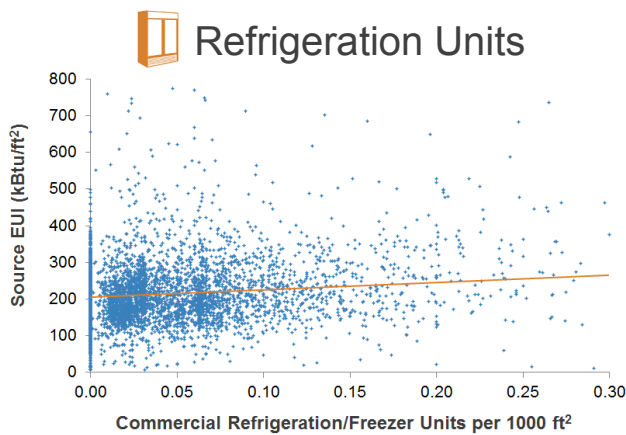
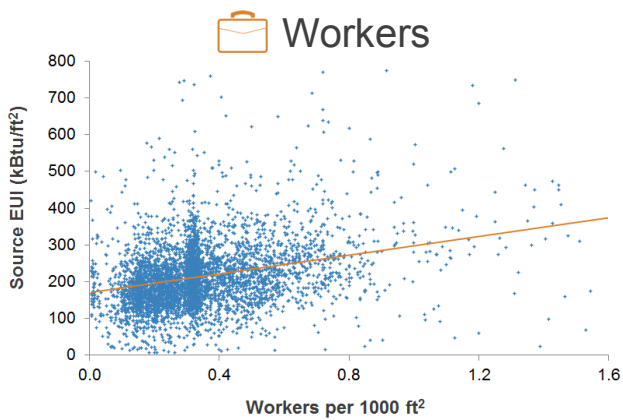


Building Characteristic	Range of Values		
	5th percentile	Median	95th percentile
Square Feet	19,681	75,000	646,199
Rooms per 1000 ft <sup>2</sup>	0.78	1.77	3.72
Workers per 1000 ft <sup>2</sup>	0.13	0.32	0.72
Commercial Refrigeration Units per 1000 ft <sup>2</sup>	0.00	0.03	0.14
Cooking?	--	51% say yes	--
Heating Degree Days	387	3,427	6,699
Cooling Degree Days	188	1,273	3,918

**What is Source Energy?** Source energy is the amount of raw fuel required to operate your building. In addition to what you use on-site, source energy includes losses from generation, transmission, and distribution of energy. Source energy enables the most complete and equitable energy assessment. Learn more at: [www.energystar.gov/SourceEnergy](http://www.energystar.gov/SourceEnergy).

## What characteristics affect energy use?

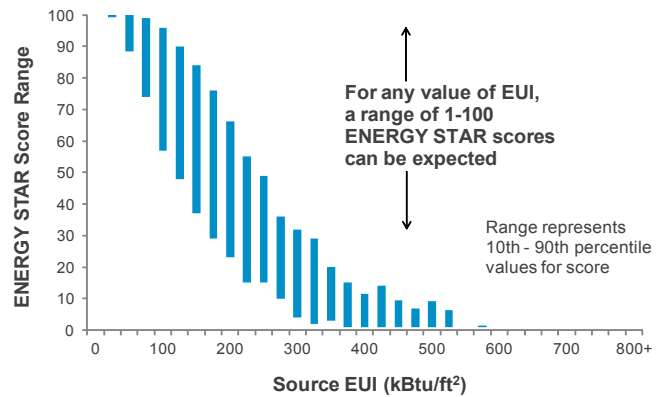
Business activity and climate are often correlated with energy consumption. For example, hotels that have more workers per square foot, more commercial refrigeration units per square foot, and/or experience more cooling degree days (CDD) use more energy, on average. The orange trend line in the graphs below is the steepest for workers, meaning that workers has a stronger effect on energy than CDD or refrigeration units. While these trends hold true on average, two buildings with the same number of workers could have very different energy, as shown by the range in the blue dots. Similar trends can be seen for other indicators of business activity, such as number of rooms.



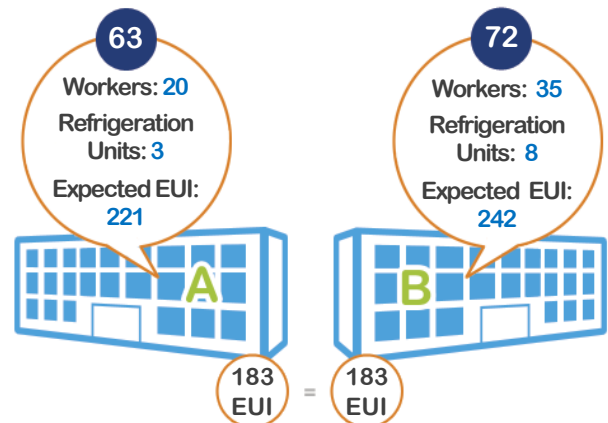
## How does EPA's ENERGY STAR score vary with energy use?

EPA's ENERGY STAR score normalizes for the effects of operation. While buildings with lower EUI generally earn higher scores on the 1-100 scale, an individual building's result depends on its business activities. For any given EUI, a range of scores is possible.

### ENERGY STAR Score Range



Let's look at two hotel buildings, Hotel A and Hotel B. They have the same EUI of 183 kBtu per square foot, and are identical except that Hotel B has more workers per square foot and more commercial refrigeration units per square foot. Because Hotel B has more intensive activities, it is expected to have a higher EUI than Hotel A, based on ENERGY STAR scoring models. Since Hotel B is *expected* to use more energy, but *actually* uses the same energy, it earns a higher score.



**Note:** Number and floor area of buildings benchmarked includes cumulative data through 2011. Analysis of energy use and business activity includes buildings benchmarked between 2006 and 2012. The data is self reported and has been filtered to exclude outliers, incomplete records, and test facilities. Portfolio Manager is not a randomly selected sample and is not the basis of the ENERGY STAR score. To learn more, visit: [www.energystar.gov/DataTrends](http://www.energystar.gov/DataTrends).