

## Energy Use in Worship Facilities

### Worship Facilities Using Portfolio Manager



2,235 Properties



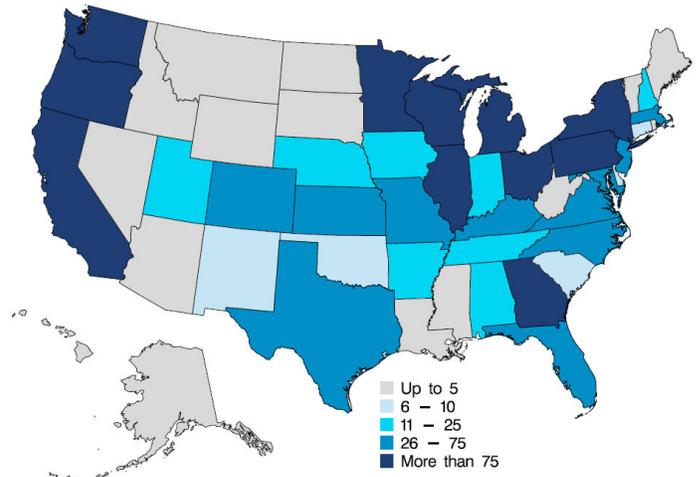
88 Million ft<sup>2</sup>



Average ENERGY STAR Score

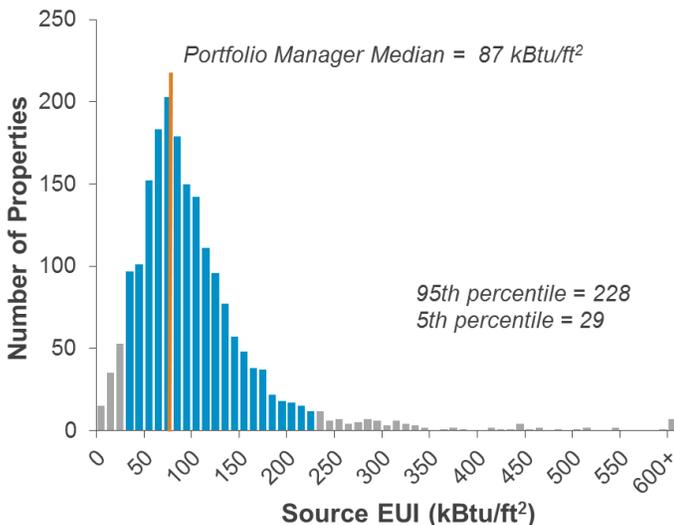
The U.S. Environmental Protection Agency's (EPA) ENERGY STAR Portfolio Manager is changing the way organizations track and manage energy. Because of this widespread market adoption, EPA has prepared the DataTrends series to examine benchmarking and trends in energy and water consumption in Portfolio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

### Benchmarking by State Number of Worship Facilities



### What is a typical operating profile?

Energy use intensity (EUI) ranges from less than 50 to more than 600 kBtu/ft<sup>2</sup> across all worship facilities, with those at the 95th percentile using almost 8 times the energy of those at the 5th percentile. The distribution has a negative skew, which means the most energy intensive properties are further away from the median than the most efficient. Properties may use more or less energy for many reasons, including variable equipment efficiency and energy management practices, as well as variations in climate and typical activities.



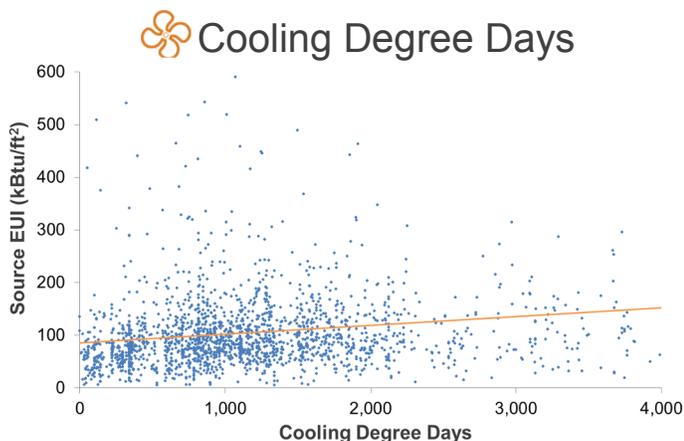
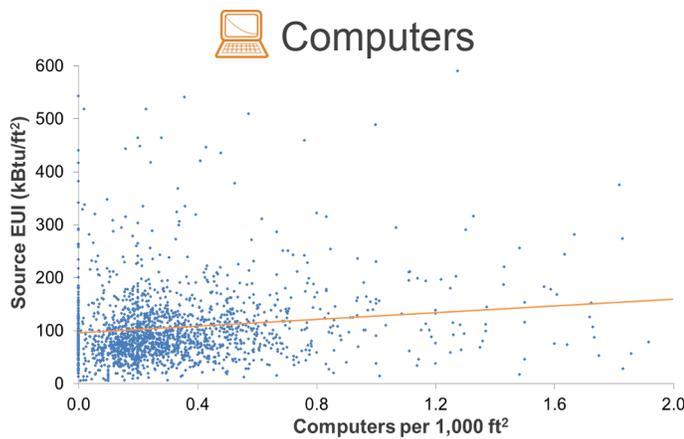
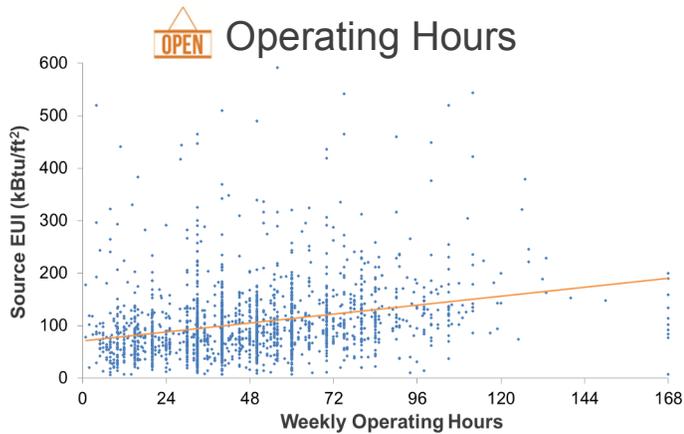
The median worship facility in Portfolio Manager is 23,000 square feet and operates 45 hours per week. But the typical property use patterns observed in Portfolio Manager vary just as much as energy. As you can see, worship facilities of all shapes and sizes benchmark using Portfolio Manager.

Property Characteristic	Range of Values		
	5th percentile	Median	95th percentile
Square Feet	5,136	23,000	110,000
Weekly Operating Hours	10	45	98
Computers per 1,000 ft <sup>2</sup>	0.0	0.2	0.9
Seats per 1,000 ft <sup>2</sup>	6	18	51
Open All 5 Weekdays?	72% say yes		
Cooking Facilities?	69% say yes		
Commercial Refrigeration Units per 1,000 ft <sup>2</sup>	0.00	0.02	0.20
Heating Degree Days	1,595	4,888	7,977
Cooling Degree Days	142	1,033	2,885

**What is Source Energy?** Source energy is the amount of raw fuel required to operate your property. 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 in worship facilities?

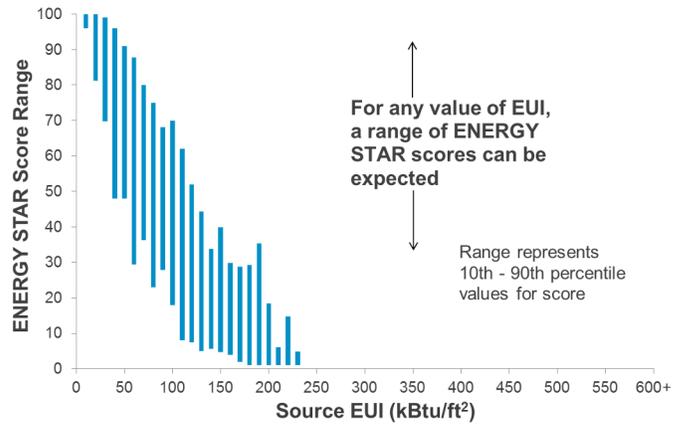
Facility activity and climate are often correlated with energy consumption. For example, worship facilities that have more weekly operating hours, more computers per square foot, and/or experience more cooling degree days (CDD) use more energy, on average. The orange trend lines in the graphs below show the impact of each characteristic on energy use. The steeper the line, the bigger the impact. While these trends hold true on average, the blue dots demonstrate that for any given value of hours, computers, and CDD, a broad range in energy use is observed. Similar trends can be seen for other indicators of business activity, such as seats per 1,000 square feet.



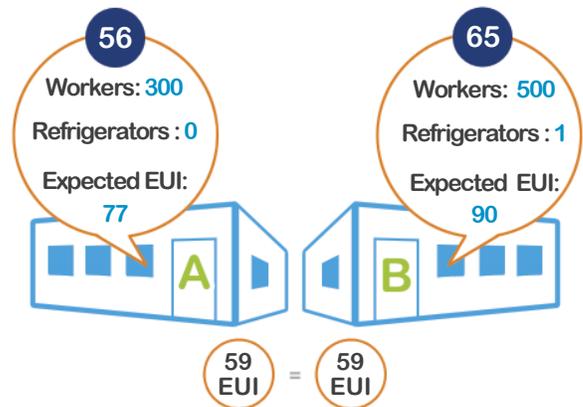
# How does EPA's ENERGY STAR score vary with energy use?

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

## Score Range for Worship Facilities



Let's look at two worship facilities, Facility A and Facility B. They have the same EUI of 59 kBtu per square foot, and are identical except that Facility B has more workers per square foot and more refrigerators per square foot. Because Facility B has more intensive activities, it is expected to have a higher EUI than Facility A, based on ENERGY STAR scoring models. Since Facility B is *expected* to use more energy, but *actually* uses the same energy, it earns a higher score.



**Note:** Total number and floor area of properties benchmarked reflects cumulative data through 2013. Analysis of energy use and operational characteristics includes 1,952 properties benchmarked in the most recent 5 years. 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).