



EPA'S PORTFOLIO MANAGER®

UNDERSTANDING BUILDING ENERGY USE BENCHMARKS

BACKGROUND ON BUILDING ENERGY USE DATA

Every four years, the U.S. Department of Energy's Energy Information Administration (EIA) conducts a national survey to gather data on building characteristics and energy use from thousands of buildings across the United States. This [Commercial Building Energy Consumption Survey \(CBECS\)](#) is the only national-level source of data on the characteristics and energy use of commercial buildings. Most property types located in the United States, will consist of a building in a peer group that can be compared to those buildings in the CBECS survey.

Since about the year 2000, the EPA began a process of defining property metrics for ranking a building's energy use. To date, more than 25,000 buildings have earned EPA's Energy Star® Certification – a score of 75 or higher (scale 1 -100), indicating that it performs better than at least 75 percent of similar buildings nationwide – not an easy accomplishment without a good understanding of energy flow within a building.

ENERGY STAR

The Energy Star® icon is readily recognized today for high achievement in the continuous development and application of energy conservation measures (ECM) that have been certified to a quantifiable standard by a Licensed Professional. <http://www.energystar.gov/buildings/tools-and-resources/energy-star-guide-licensed-professionals>

PORTFOLIO MANAGER

Portfolio Manager® is the web based tool for defining investment priorities, identifying under-performing buildings, verifying efficiency improvements in addition to receiving EPA's recognition for superior energy efficiency.

Portfolio Manager® categorizes building types via descriptive definition with specific use properties. Since inception of this program, the listing of building types has grown considerably. <http://www.energystar.gov/buildings/tools-and-resources/list-portfolio-manager-property-types-definitions-and-use-details>.

To be ranked with an Energy Star Score, buildings of like function and property metrics, are required to meet defined criteria. <http://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager/understand-metrics/eligibility>.

Additionally, technical requirements are identified for each building type, this includes statistical analytical methods and processes for generating an Energy Score number (0 to 100). Common building types are ranked by repeatable building property characteristics and regional climate influences as the basis for scoring. <http://www.energystar.gov/buildings/bp-tr-resource-type/technical-documentation-0>

DATATRENDS OF ENERGY USE INTENSITY

The table to follow represents the summation of Energy Use Intensity for EPA's Portfolio Manager Datatrends http://www.energystar.gov/about/content/portfolio_manager%C2%AE_datatrends_now_available_16_property_types and the Commercial Building Energy Consumption Survey for US National Source and Site EUI's <http://www.energystar.gov/buildings/tools-and-resources/portfolio-manager-technical-reference-us-national-energy-use-intensity>

EPA Datatrends and CBECS* National Data – Building Properties that Influence Energy Use Intensity (EUI)

How Does the Building Compare to Portfolio Manager Data Trend Median Values?

US National Median Values?

EPA Portfolio Manager Building Types Reference: http://www.energystar.gov/buildings/about-us/research-and-reports/portfolio-manager-datatrends	Median Property Values for Different Facilities - The median value is the middle of the building population – half of buildings use more energy, half use less								
	Portfolio Mgr. Source EUI kBtus /sf	* U.S National Source EUI kBtu /sf	* US National Site EUI kBtus /sf	Building Square Foot Conditioned Space	Operating Hours	Workers/ 1000 sf	Computers /1000 sf	Heating Degree Days	Cooling Degree Days
Bank	266	253	87	4066	50	2.3	2	4334	1152
Courthouse	167	170	93	65000	55	1.8	1.9	4799	1103
Distribution Center <i>Walk-in Refrigerator 9% Y</i>	75	60	29	110431	60	0.4	N/A	4401	1136
Dormitory <i>Rooms/ksf - 2.1</i>	127	115	74	40844	N/A	N/A	2.1	4708	1024
Financial Office	238	148	67	128550	65	2.3	2.2	4788	1210
Hospital <i>MRIs/ksf-0.003; Staffed Beds/ksf - 0.5</i>	467	390	197	326000	N/A	2.6	N/A	4527	1146
Hotel <i>Refrig/ksf- 0.02 ; Rms/ksf-.8</i>	187	162	73	78000	N/A	0.3	N/A	3701	1262
K12 Schools <i>Walk-in Refrig/ksf-0.01; HighSch-19%-Y; Cooking.79%-Y</i>	114	141	58	74519	N/A	N/A	2.1	4710	1108
Medical Office Building	245	188	67	42636	65	2.2	N/A	3716	995
Non-Refrigerated Warehouse <i>Walk-in Refrigeration 3% Y</i>	81	60	29	36316	55	0.6	N/A	4483	1056
Office	184	148	67	63463	60	2.3	2.3	4215	1108
Retail <i>OP/CL Refr Case/ksf - 0.02; Cash Reg/ksf - 0.3</i>	192	114	47	14010	91	0.4	0.2	3965	1363
Senior Center <i>Com. Wash Mach/ksf-0.03; Rm Units/ksf-1.4; %Occupied-87%</i>	214	243	126	57774	N/A	0.8	0.3	4888	949
Supermarket <i>Walk-in Refrig/ksf - 0.2; Cooking Facil - 97% Y</i>	525	480	186	50090	126	0.9	N/A	4710	1059
Worship Facilities <i>Open 5 wkdays - 74% Y; Cooking Facil-69% Y; Com. Refrig/ksf - 0.02</i>	87	71	37	23000	45	Seats/ksf - 18	0.2	4888	1033
* http://www.energystar.gov/buildings/tools-and-resources/portfolio-manager-technical-reference-us-national-energy-use-intensity This web site will extend further detail for building uses and classification into more EUI values according to use.									
Additional Properties that Influence Energy Use shown in italics - Note: A higher number or an increased percentage represents more energy use. The reference web address goes into detail about datatrends and influences upon energy use within a particular building type									

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The EPA Datatrends provides a very useful overview and discussion of a preliminary look at median EUI values and specific property ranges relative to building operating parameters of energy influence.

CONSIDERATIONS FOR ENERGY CONSERVATION POTENTIAL

The first step in determining energy conservation potential is to know how well or not so well energy is being consumed in a building – electricity, natural gas, propane, etc. The first three columns (EUI) are the median energy benchmark references to establish such a trend. The next six columns are contributing energy use data (exception - building square footage) listed in each of the respective building types of EPA Portfolio Manager Datatrends and represent median values of the trends. It is interesting to note that EPA Portfolio Manager has in many instances higher EUI values than the US National averages compiled by the CBECS. This is because many of the entries in Portfolio Manager are from building owners beginning of a process to reduce building energy use. Higher building benchmarks and a poor EUI number indicates a concern for energy intensity performance and a further need for improvement. Many entries in Portfolio Manager are by Building Energy Managers that are setting up their Portfolio Manager detailed data entry for tracking energy use and improvements for Energy Star scoring over an extended period of time.

Initial Questions for Property Manager

- ♦ What is the median EUI for this building and which side of the benchmark EUI hurdle does this building reside?
- ♦ Do we remain open longer than the reference and what is off when the building is unoccupied?
- ♦ What is our occupancy and worker population?
- ♦ How many of the computers do we have in the building and what is the energy use position when the building is unoccupied?
- ♦ Do we cook, have walk-in-refrigeration, other energy consuming plug in equipment that contribute to the EUI?
- ♦ What is the climate region (Heating and Cooling degree Days) of the building's zip code -a major contributor to EUI ranking.
- ♦ EPA Portfolio Manager Datatrends is a useful tool to begin the journey of building energy conservation.

About This Fact Sheet

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