

Benchmarking Your Facilities for Greater Success



To get the best results quickly, your energy team should conduct an initial analysis of the targeted building stock to identify the best opportunities for large energy savings (before any detailed, on-site energy audits or studies are conducted). This process, known as benchmarking, is an effective way to determine which facilities deserve more detailed analysis and hold the greatest potential for energy savings. Good analysis work at this stage will also help your team to formulate initial estimates of potential energy savings and to manage its efforts effectively.

Focus on Energy Hogs

In planning the initial analysis efforts, bear in mind that the energy efficiency of a group of buildings can be heavily influenced by just a few of the largest energy users in the group. For instance, you may find that in a group of 100 buildings, just 10 of those buildings are responsible for 80 percent of all the energy used by the group. In that event, an average savings of 30 percent achieved in just those 10 buildings would mean a 24 percent savings for the entire stock ($0.30 \times 0.80 = 0.24$). Clearly, the buildings with the highest energy use can greatly influence your overall results and should receive the most attention. Initially focusing your efforts on a limited number of buildings with high energy use could also help lower the total costs for your energy efficiency program.

Reference Year

The annual energy use for your buildings is to be reduced in comparison to the energy use for a reference year, which may be, for example, fiscal year 2001 or calendar year 2001. The total energy use of your targeted facilities during the reference year is your reference year energy use.

Once the reference year is selected, the energy use of all your targeted facilities during the reference year should be obtained. The sum of all the energy used for all targeted facilities is the quantity that must be reduced. All facilities can be sorted according to the amount of energy used, highest to lowest, to assist in prioritizing for energy use reductions.

Initial Screening

The facilities using the most energy are the primary candidates for reductions. Unless the energy use for a good portion of these facilities can be reduced, meeting reduction requirements will be difficult. These high energy-using facilities should be the primary targets for additional quick assessments of potential for reducing energy use.

The annual electricity used for a building, kilowatt-hours (kWh) per year, divided by the gross floor area of the building, is one additional means of screening buildings initially. Electricity consumption per square footage for a variety of buildings, as developed from the 1999 Commercial Buildings Energy Consumption Survey data of the US Dept of Energy's Energy Information Administration, are shown below. Comparison with these national percentiles allows some indication of energy-saving potential, keeping in mind that energy use in buildings will vary based on regional climate conditions.

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Electricity Consumption and Expenditure Intensities

	Distribution of Building-Level Intensities (kWh/ft ²)			Electricity Expenditures	
	25th Percentile	Median	75th Percentile	\$ per ft ²	\$ per kWh
Principal Building Activity					
Education	4.1	6.6	9.3	\$0.67	\$0.077
Food Sales	39.2	58.9	122.1	\$3.38	\$0.069
Food Service	13.9	28.7	57.3	\$2.75	\$0.080
Health Care	5.8	11.3	15.5	\$1.46	\$0.063
Inpatient	15.5	21.5	29.3	\$1.58	\$0.058
Outpatient	5.4	9.7	15.0	\$1.25	\$0.075
Lodging	7.5	12.6	17.3	\$0.94	\$0.074
Mercantile	4.3	8.9	16.8	\$1.14	\$0.078
Retail (Other Than Mall)	4.1	8.0	15.3	\$1.08	\$0.080
Enclosed and Strip Malls	5.9	14.5	26.7	\$1.19	\$0.076
Office	6.0	11.7	17.9	\$1.30	\$0.070
Public Assembly	3.2	6.8	11.6	\$0.92	\$0.071
Public Order and Safety	1.8	4.1	9.6	\$0.78	\$0.068
Service	3.3	6.1	11.9	\$0.93	\$0.077
Warehouse and Storage	1.3	3.0	7.0	\$0.49	\$0.075
Other	3.3	13.8	22.0	\$1.69	\$0.069
Vacant	0.3	0.9	4.7	\$0.24	\$0.087

(Source: 1999 Commercial Buildings Energy Consumption Survey: Consumption and Expenditures Tables)

For more information contact the Rebuild America Clearinghouse at 252-459-4664 or visit www.rebuild.gov

