

Buildings Performance Metrics Terminology

To clarify how the terms are used in the Department of Energy's Performance Metrics Research Project, a list of terms related to performance metrics are defined and include examples and comments. Visit www.commercialbuildings.energy.gov/performance_metrics.html to learn more.

Baseline — a standard reference case used as a basis for comparison

Examples: a simulation model of an ASHRAE 90.1 compliant building, control building, measurement of energy consumption prior to application of an energy conservation measure

Comments: Establishing a clearly defined baseline very important and is often the most difficult task. Defining a repeatable baseline is essential if the work is to be compared to results of other work.

Benchmark — a standardized performance level, problem, or test case that serves as a basis for evaluation or comparison

Examples: Measured data

Comments: A benchmark can be defined by measured data or by a desired goal set from theoretical calculations.

Benchmarking — the act of comparing a performance metric to a benchmark or baseline

Examples: ENERGY STAR[®] for buildings, LEED[®] energy credits

Comments: Consistent and repeatable benchmarking requires clearly defined performance metrics and protocols for developing a reference case to serve as a baseline.

Building Performance Index — a high-level indicator of building performance

Examples: BPI is sometimes used as a substitute for EUI (energy use intensity)

Comments: This term is sometimes used to refer to energy use intensity and sometimes used to combine several factors (energy, environmental, economic, etc.) into one term.

Design Guideline — a set of rules and strategies to help building designers meet certain performance criteria such as energy efficiency or sustainability

Examples: ASHRAE Advanced Energy Design Guides, ASHRAE Green Guide, LEED, and BREEAM

Comments: Although LEED and BREEAM are technically rating systems for new construction, they are often used as design guidelines for new buildings.

Energy Audit — a systemized approach to measuring, recording, and evaluating the operating performance of a building or building system with the intention of improving the performance

Examples: ASHRAE's Guide for Commercial Building Energy Analysis

Index — a number (as a ratio) derived from a series of observations and used as an indicator or measure

Examples: Consumer price index

Comments: An index is often taken as a percentage.

Indicator — a parameter, or a value derived from a set of parameters, that points to, provides information about, and/or describes the state of a phenomenon. It has significance beyond that directly associated with the parameter value (Flanders 2000).

Comments: Indicators are used to simplify complex information and communicate this in a way that is easily understood and facilitates tracking trends in performance.

Measurement and Verification — refers to the process of examining and providing the results of implementing energy and water conservation measures

Examples: International Measurement and Verification Protocol, ASHRAE Guideline 14

Metric — a standard of measurement (Merriam-Webster 2004)

Examples: area, insolation

Comments: area is a metric but it is not a performance metric; a performance metric is a metric of some performance characteristic; however, not all metrics are performance metrics.

Performance Goal — a specific statement of a desired level of achievement

Examples: Reduce annual building source energy consumption by 10% compared to year 2000.

Comments: Performance goals provide specific measurable targets. Performance metrics should be carefully chosen to measure progress toward performance goals.

Performance Index — a number (as a ratio) derived from a series of observations and used as an indicator or measure

Examples: Energy use intensity (EUI)

Comments: A performance index is a secondary level performance metric.

Performance Indicator — a high-level performance metric that is used to simplify complex information and point to the general state of a phenomenon.

Examples: Average Building Energy Use Intensity for all office buildings, Number of Buildings with Daylighting Controls

Comments: Performance indicators are used to communicate general trends and are often used on a program planning level to show progress toward goals. See the definition of **Indicator** for more discussion.

Performance Metric — a standard of measurement of a function or operation

Examples: Building Energy Use Intensity (BEUI), Net PV System Production, and Lighting Power Density

Comments: Performance Metrics should measure and communicate progress toward achieving

Performance Goals. There are different levels of performance metrics. The Performance Metrics Project is generally concerned with the primary level, which is the lowest level. Primary level performance metrics are applicable to a specific project, such as the BEUI and end use energy break down. Secondary performance metrics are often combinations of lower level performance metrics and other data, and are used to show performance of a group of buildings, or across an entire building category. An example of a secondary performance metric would be the gross energy intensity of a group of office buildings.

Performance Objective — a general statement of desired achievement

Examples: Reduce building energy consumption, Reduce emissions related to building operation

Comments: Performance objectives are general performance targets.

Procedure — a standard method or set of methods for determining one or more performance metrics

Examples: [Procedure for Measuring and Reporting Commercial Building Energy Performance](#), [Procedure for Measuring and Reporting the Performance of Photovoltaic Systems in Buildings](#)

Protocol — a detailed plan of a scientific or medical experiment, treatment, or procedure

Examples: International Performance Measurement & Verification Protocol

Comments: Protocol is often used interchangeably with procedure; however, protocol usually infers something that is officially recognized as a standard.

Rating System — a system of rules for comparing the performance of a whole building or building system to benchmarks

Examples: ENERGY STAR for Buildings, CalArch, LEED, and BREEAM

Comments: Some rating systems, such as ENERGY STAR, are designed to rate the measured energy performance of existing buildings, and some, such as LEED NC, are designed to rate the expected performance during the design stage. In addition, LEED and BREEAM are environmental rating systems; energy is only one part of the rating.

References

Flanders, L. (2000). Assistant Director (UN Division for SD) at the conference Sustainable Development of Coastal Zones and Instruments for its Evaluation, Germany, 23-26 Oct. 2000.

Merriam-Webster [On-Line Dictionary](#).