# Three Things You Need To Know About Energy Data and LEED

Published on **6 Sep 2012** | Written by **Chris Pyke** | Posted in **LEED**

LEED projects receive credit for meeting energy demands with low-carbon means, like wind power

Reducing the costs and environmental impacts of excessive energy use is the focus of owners, investors, occupants, policy makers, and many other stakeholders.

Sometimes, we are asked about where "the" energy data is for LEED projects. The truth is that energy data is complex and multi-faceted, and LEED has evolved to target key pieces of data for each stage in the lifecycle of a green building project. As a result, we have a growing ecosystem of energy information that is intimately related to market transformation opportunities available to various project types.

LEED always asks project teams to consider each of the fundamental components of energy use: demand, efficiency, and supply. Demand refers to the absolute level of energy consumption, such as the amount of electricity a building consumes for air conditioning on a hot summer day. Efficiency describes how productively energy is transformed into useful work, such as the amount of fuel needed to raise the temperature in the building by one degree. Supply reflects the characteristics of energy generation and distribution, such as amount of air pollutants produced per unit energy delivered. LEED projects are recognized for taking action in each area. For example, projects receive credit for:

- Reducing demand by limiting lighting power density or participating in utility demand response programs
- Demonstrating energy efficiency by designing to exceed energy code or achieving an Energy Star benchmark score in the top 30% of all U.S. commercial buildings
- Meeting energy needs with clean, low-carbon supplies such as on-site photovoltaics or off-site wind power

These performance-based criteria are supplemented by performance evaluation and risk management practices, including commissioning, sub-metering, monitoring and evaluation. There are whole careers in any of these areas, but there are three things that every green building practitioner should know about energy data and LEED.

**1. Energy efficiency in LEED for New Construction**

LEED for New Construction recognizes leadership in the design and engineering process. It encourages projects to use whole-building approaches to lower operational energy costs. –The LEED for New Construction rating system uses energy code as a baseline and rewards projects based on their intended reduction in operational energy costs. For LEED 2009, the most common baseline is the ASHRAE 90.1-2007 energy code. The use of codes as a baseline helps address the reality that most building projects are essentially unique - no other project is constructed at that time, at that location, with that specific programming. Codes like ASHRAE 90.1 are used to create an appropriate, site-specific baseline that can be used to evaluate relative improvements resulting from design and engineering decisions. Some stakeholders may not be aware that for many projects, using these advanced codes is, in itself, an act of leadership as they are more stringent than current code in 14 states. With certain exceptions, LEED for New Construction projects are required to provide operational performance data for a five year period post-construction.

**2. Energy efficiency in LEED for Existing Buildings: Operations & Maintenance**

LEED for Existing Buildings: Operation & Maintenance addresses a different phase in the lifecycle of a green building and uses a different performance metric. LEED for Existing Buildings: O&M compares a singular project to other

existing buildings using the EPA Portfolio Manager benchmarking tool. Portfolio Manager takes into account a number of factors, such as weather and occupancy factors, to assign a zero to 100 score based on a year's worth of operational energy use data. In Portfolio Manager, a score of 100 represents the best performing commercial buildings in the U.S., while a score of zero represents the worst. Projects participating in the LEED for Existing Buildings: O&M rating system must achieve a minimum of 69 points, and most projects achieve much higher levels of performance – the average is 86 points.

**3. Opportunities with the Building Performance Partnership**

Consideration for energy efficiency does not end with certification. In fact, this is just one important moment in the life of a building. USGBC's Building Performance Partnership (BPP) is a voluntary program that helps projects understand and improve energy efficiency over time. BPP participants use the EPA Portfolio Manager system to store monthly energy consumption data. USGBC uses this information to compare project performance to other LEED projects and relevant national averages, thus helping a project team put their building's performance into context. BPP supplements these comparisons with tools that interpret patterns of seasonal energy demand to analyze different sources of energy demand, such as heating, cooling, and water heating. All this information is summarized in an annual energy report. Most annual energy reports are used privately by project teams, but a few leaders have shared their information.

**What's Next?**

Energy performance and energy data are central to LEED and the green building practice. Green building practitioners are increasingly recognizing that efforts to improve energy efficiency do not equate to a singular event. Rather, these efforts form a process that span the entire lifecycle of a building. Data feeds this process by providing the basis for management action. Today, this data flows between a myriad of sensors, points, and systems within a building. In the near future, data will flow between buildings providing context and comparative performance information. They will help stakeholders benchmark, compare, and analyze performance and identify prospective solutions. This will feed iterative cycles of planning, improvement, monitoring, and analysis, punctuated by opportunities for recertification and recognition for performance gains. Ultimately, this will drive continuous improvements in energy efficiency, reduced operating costs, and benefits for people and the environment.

**Chris Pyke**

**Chief Operating Officer for GRESB.com / Vice President for Research, USGBC**

U.S. Green Building Council

USGBC staff


USGBC Articles can be accessed in the USGBC app for iOS or Android on your iPhone, iPad or Android device.

1 comment

Leave a comment

**Jonathan Ware**

Project Manager, Gray Construction

3 years 5 weeks ago

Thanks for the article. Has there been much discussion around the appropriateness of ASHRAE 90.1 for certain building types. Sort of a square peg and round hold kinda deal. In particular, the standard was not designed to address manufacturing facilities. Has USGBC considered creating attachments to the base document to account for this?

Leave a comment

Don't have an account? Create one

You must be signed in to leave a comment.

Email

Password

SIGN IN

1-800-795-1747

**Outside the United States:**
1-202-742-3792



© 2012-2015 U.S. Green Building Council