LEED +
District Energy

The USGBC and Why It Matters to You

Tim Griffin, PE, IDEA USGBC Liaison

Editor's Note: *"LEED + District Energy" is a new column for* District Energy *magazine. It will appear each issue to provide you with information about the U.S. Green Building Council's LEED rating system and how it applies to buildings served by district energy systems.*

If you are in construction or a related business, you are likely somewhat familiar with the impact of the U.S. Green Building Council (USGBC) and its popular LEED® (Leadership in Energy and Environmental Design) Green Building Rating System™. But who are these guys, where did they come from and, most important, as a member of the district energy industry, why should you care?

The USGBC is a nonprofit community of leaders working to make green buildings accessible to everyone within a generation. Its stated goal is to coordinate "the establishment and evolution of a national consensus effort to provide the industry with tools necessary to design, build, and operate buildings that deliver high performance inside and out." Within the USGBC's own literature, the group claims to be "the leading organization that represents the entire building industry on environmental building matters. The council's unique perspective and collective power provides its members with enormous 'opportunity' to effect change in the way buildings are designed, built, operated and maintained."

And what an opportunity the USGBC has captured: Today it is rare to find a building that is not pursuing some form of LEED certification or at least claiming to be following LEED guidelines.

Already a Dominant Force

Yet, the entire LEED rating system is voluntary. The USGBC itself is a nongovernmental organization with no direct power to legislate compliance. Even so, its LEED rating system has become a 'brand' that has value. Whether you are the landlord of a high-rise office building in Manhattan seeking to charge higher rents; a Fortune 500 company wanting to show stockholders, employees and customers your efforts to be green; or a university trying to attract high-caliber students that are now considering a campus's green rating in their decision-making process, a LEED certification can have tremendous value.

> Today it is rare to find a building that is not pursuing some form of LEED certification or at least claiming to be following LEED guidelines.

As such, the USGBC is making a significant impact toward meeting its goals, and all within a relatively short time frame. Consider the following:

- The USGBC was established in 1993.
- It first decided to develop guidelines in 1994.
- Its first rating system, LEED for New Construction (or LEED-NC) Version 1.0, was issued in 1998.
- LEED-NC 2.0 was issued in 2000.
- Current LEED-NC 2.2 was issued in June 2007.
- The new LEED-NC 3.0, also called LEED-NC 2009, is scheduled to be released this spring.

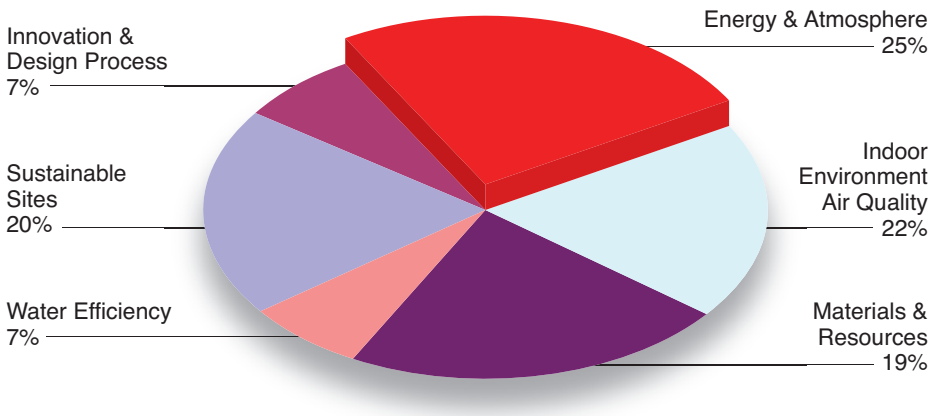
> Less than 15 years after its establishment and 10 years after releasing the first guideline, the USGBC has become a dominant force in the U.S. construction industry and beyond.

So, less than 15 years after its establishment and 10 years after releasing the first guideline, the USGBC has become a dominant force in the U.S. construction industry and beyond. It has done so by using a committee-based, member-driven, consensus-focused process to try to provide a rating system designed to reduce the overall negative impact of building construction and operation on the total environment.

Growing Recognition of Energy's Role

Since its introduction, the LEED rating system has further evolved to include separate guidelines for a variety of projects. The most popular, LEED-NC, now encompasses new construction and major renovations. In addition, the USGBC has established more specific rating options for new construction such as LEED for Labs, LEED Core & Shell and LEED for Schools. LEED for Existing Buildings: Operations & Maintenance (LEED-EB) applies to existing facilities that wish to pursue LEED certification. Within each of these rating categories, there exist four levels of certification: Certified, Silver, Gold and Platinum. Each level requires a greater number of points and thus

Figure 1. LEED for New Construction 2.2, Distribution of Scoring Points by Assessment Category.



Source: Created based on USGBC's guidelines for points for LEED-NC 2.2.

becomes more challenging, and expensive, to obtain.

The LEED-NC rating system is divided into six different categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design process, which is an extra credit category designed to account for unique approaches. The relative scoring weight given to each of these categories in LEED-NC 2.2, in use for nearly two years, is shown in figure 1.

Most of the categories deal with issues that have little to no impact on a building's energy use and, in some cases, may even have a negative impact. For instance, additional points can be achieved within the indoor environmental quality category by increasing the amount of outside air beyond ASHRAE 62 minimum recommendations, which increases building energy consumption. However, as anyone involved in the construction business is well aware, there are many tradeoffs in the design of a building. The USGBC uses its rating system to encourage the design team to find the best balance of those tradeoffs.

One category, energy and atmosphere, is very focused on the issues we are involved with on a daily basis. On the energy side, the focus is simply the reduction of energy use. On the atmosphere side, the focus is reducing the actual, or even potential, release of compounds that promote global warming, ozone depletion and/or general air pollution.

For years, I have heard professionals claim that you can get a building LEED-certified while ignoring energy altogether by installing bicycle racks and the like. While to some degree that may have been true with basic LEED certification, it has always been difficult to achieve a higher rating (Silver, Gold and Platinum) by ignoring energy altogether.

In fact, in June 2007 the USGBC increased the minimum prerequisite for total building energy efficiency from just meeting the requirements of ASHRAE 90.1-2004 to having to achieve a 7.5 percent energy reduction over this standard's requirement. With the release this spring of LEED-NC 3.0, the minimum hurdle has been increased to 10 percent. In addition, the points associated with the energy and atmosphere category have increased from one-fourth of the total to almost one-third, as shown in figure 2. I believe this shows a growing recognition of the primary importance reducing a building's energy use has on helping the USGBC achieve its goals. A new category for Regional Bonus Credits rewards projects that address issues of specific concern in a project's region.

> The points associated with the energy and atmosphere category in the upcoming LEED-NC 3.0 have increased compared to earlier versions.

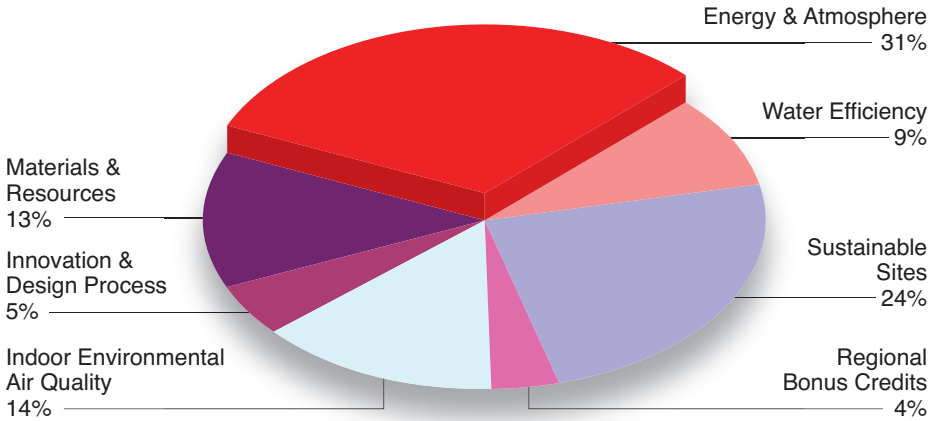
Working With USGBC

So, what is the USGBC's philosophy for reducing building energy and what are its thoughts on various energy sources? Here's a sampling of some of the organization's own written statements in areas that have direct impact on district energy systems:

- "The LEED guidelines are designed to accelerate the removal of environmentally destructive products and inefficient systems."
- "Buildings consume approximately 37% of the energy and 68% of the electricity produced in the U.S. annually, according to DOE."
- "Coal-fired electric utilities emit almost one-third of the country's anthropogenic nitrogen oxide, the key element in smog, and two-thirds the sulfur dioxide, a key element in acid rain. They also emit more fine particulate material than any other activity in the United States. Natural gas, nuclear fission and hydroelectric generators all have adverse environmental impacts as well."
- "Green buildings address these issues in two primary ways: by reducing the amount of energy required, and by using more benign forms."

Why does this matter to you? Some building designers are telling their clients that connecting their projects into district

Figure 2. LEED for New Construction 3.0, Distribution of Scoring Points by Assessment Category.



Source: Created based on the USGBC's draft of guidelines for points for LEED-NC 3.0.

energy will cost them potential points, often due to a lack of understanding of how to properly account for district energy within the LEED rating system. In addition, some equipment providers are producing and marketing equipment – such as small chillers with variable-speed drives and mini-combined heat and power plants – that is aimed to maximize the level of points achievable. These actions are creating forces that are pushing district energy customers away.

This needn't be the case, as district energy systems offer many potential benefits that can help USGBC reach its goals, such as reducing total energy use through

- better equipment sequencing through load aggregation,
- larger equipment with higher efficiency,
- increased cycle efficiency through CHP, and
- better operation and maintenance.

In addition, technologies such as thermal energy storage that shift power off the grid during peak hours allow electric utilities to utilize their most efficient production equipment for power generation and help expand the existing grid capacity.

> We are working with the USGBC now to help take the 'LEEDese' out of the guidance documents.

This is just the tip of the iceberg, but how do we ensure that these benefits are considered on a level playing field? Here is our opportunity: The USGBC has a goal of making the LEED rating system comprehensive (covering all possible system options in all possible climates) yet simple. These goals very much compete with each other because nothing about comparing energy savings between systems, fuels sources, regions, etc., is simple.

Actually, this is where IDEA comes in. We are working with the USGBC now to help take the 'LEEDese' (a term the USGBC uses to describe its own tendency to speak in language difficult to understand) out of the guidance documents that pertain to applying LEED standards to projects using district energy. In the next issue's column, I'll highlight IDEA's efforts to date and update you on the LEED resources available to you within IDEA.

Tim Griffin, PE, is IDEA's liaison with the U.S. Green Building Council. He is a principal and division manager with RMF Engineering Inc., a firm specializing in district energy system design and commissioning. A registered engineer and a LEED Accredited Professional, Griffin has a bachelor of science degree in mechanical engineering from North Carolina State University and a master of business administration degree from Colorado State University. He authored the book *Winning With Millennials: How to Attract, Retain, and Empower Today's Generation of Design Professionals*. He may be reached at tgriffin@rmf.com.