

Another Shade of Green



By *Keith Lindemulder*

The Energy and Atmosphere section of the LEED – NC Green Building Program is all about how a building relates to the environment once it's complete and operational. This section is quite important to the LEED program since it contains three rigorous requirements and since it accounts for nearly 25% of the total points available. In the updated LEED 2009 program currently in development the total points available rises to nearly 32% of all LEED points available.

As mentioned before, buildings consume approximately 37% of the energy and 68% of the electricity produced in the US annually. Careful planning and energy efficient design can result in significant savings for many years during the life-span of the structure. Likewise, reducing the energy and electrical requirements of the building can help the environment by reducing the need to use fossil fuel based sources of electricity. This section focuses on improving the impact two ways – by reducing the amount of energy required and by encouraging the use of more environmentally friendly sources of electricity.

Optimizing the energy performance of a building is far and away the most daunting of this section. There are several ways to determine the expected energy usage of the building but the end result is a comparison between the planned energy requirements of the building to a benchmark which represents a typical building of the same size. In other words, for example, if the proposed building would cost 25% less to operate (or require 25% less energy) than the baseline building, the project would awarded 5 LEED points.

So the question is how can building designers find energy savings? One of the more common methods to determine energy savings is what's called the "performance path". Very specific performance guidelines are available from ASHRAE (American Society of Heating, Refrigeration and Air-Conditioning Engineers) in their publication called Standard 90.1. Standard 90.1 is referenced in the building code and has established the minimum requirements for energy-efficient design of commercial buildings. It can also be used to study the trade-offs you may consider in the design.

Last week I mentioned that Cold-Formed Steel can influence some of the credits in this section. Part of Standard 90.1 includes various requirements specifically dealing with how to insulate a structure depending on what materials are chosen for the structure. Since CFS assemblies have different thermal properties than wood or concrete the Standard tries find ways to make them functionally equivalent. Sometimes, depending on where the building is built and a long list of other factors, CFS assemblies are insulated differently than others. The Steel Framing Alliance's Thermal Task Group works very hard to understand the requirements and to maintain competitive position for Cold-Formed Steel.



Other prerequisites and credits in this section deal with on-site renewable energy like solar and geothermal energy. Also, a LEED point is available if the building can use other 'green power' available on the electrical grid such as wind or solar power.

One important requirement of the Energy and Atmosphere section includes commissioning of the buildings systems. There's no sense planning a highly efficient building if the people that use it don't know how to take advantage of the decisions made at design time. A detailed commission plan is developed to be followed by the owner, occupants and maintenance personnel of the building.

The next section in the LEED program is Materials and Resources. I'm going to skip that section for a week so we can look at Indoor Environmental Quality first. Have a SAFE and Sustainable week!

Reduce!

Reuse!

Recycle!



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IS THE NEW GREEN.



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