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LEED and Local Biodiversity

(Notes prepared by Ryan Gardner, Biodiversity Intern, Hudsonia Ltd., 2009)

What is LEED?

LEED (leadership in environmental design) is a widely used standard in “green” or sustainable building design and construction. LEED was created by the U.S. Green Building Council (USGBC), a not-for-profit made up of 15,000 organizations including builders, environmentalists, corporations, nonprofit organizations, elected officials, concerned citizens, teachers and students. The goal was to advance the building of environmentally responsible, healthy, and profitable structures. The USGBC reports that buildings in the United States are responsible for 39% of CO₂ emissions, 40% of energy consumption, and 13% of water consumption per year, making green buildings an area of vast possible improvement. A 2005 LEED case study has reported energy efficiency increases of 60% in a silver-certified building over a similar but conventional building.

In April 2009 the newly updated LEED V3 model was brought into use. This new version of LEED was designed to better address energy efficiency and CO₂ emissions, two areas that have been identified as the most important sectors of green building. The point system has been revamped and some credits are weighted more heavily than others based upon their overall environmental impacts. LEED remains a point-based system where buildings accumulate points in several categories to gain different levels of certification. The certification is facilitated by LEED Accredited Professionals (APs) who are tested and certified by the Green Building Certification Institute. With V3 comes a new certification process and three levels of certification for LEED APs. The APs are responsible for keeping a project on task and moving through the certification process. Assessment categories range from site selection to energy efficiency to the kinds of materials a project uses. Four levels of certification are given based on the number of points accumulated by a project.

“Certified” (40-49 points), **“Silver”** (50-59 points), **“Gold”** (60-79 points), **“Platinum”** 80-110 points

But what does a platinum-certified building offer to the local environment over a conventional building? It is important to understand the LEED point system when determining how effective a LEED building is at preserving biodiversity and local ecosystems.

The Point System

The point system can be summarized as follows:

Sustainable site	26 points
Water efficiency	10 points
Energy and atmosphere	35 points
Materials and resources	14 points
Indoor environmental quality	15 points
	= 100 base points
Innovation and design	6 points
Regional priority	4 points
	= 10 innovation and regional points

Materials used in the structure and design aspects that help increase the efficiency and overall sustainability of the structure are well accounted for by LEED, with special consideration for more sustainable energy use and lower CO₂ emissions. Points are gained in these categories by selecting sustainable materials such as fast-growing woods or recycled products, non-toxic paint, energy-efficient windows and appliances, and energy-efficient designs such as passive solar heating.

There are also 26 points given for what is called “sustainable sites.” Many of these points are geared toward the attributes of a selected site, such as distance from town centers, number of parking spaces, efficient transportation, storm water control, and construction pollution prevention. It is these points that most directly affect biodiversity in an area. However, with the new V3 model actual site selection has become even less important; it is only worth 1 point out of 110 possible points. On the other hand, the 5 points awarded for community connectivity can play an important role in keeping a new building near a city center and away from important habitats.

What does LEED certification mean for the local environment?

LEED gives a total of 19 points for credits that in some way pertain to the local environment:

Site selection, 1 point - Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site. This includes maintaining a no-build buffer zone of 100 ft around a federal or state regulated wetland.

Community connectivity and development density, 5 points— Construct or renovate a building on a previously developed site AND in a community with a minimum density of 60,000 ft²/acre net. The density calculation is based on a typical two-story downtown development and must include the area of the project being built. Or, the project must be within 1/2 mile of 10 basic services.

Brownfields, 1 point- Rehabilitate damaged sites where development is complicated by environmental contamination, reducing pressure on undeveloped land.

Alternative transportation, 6 points - Locate the project within 1/2-mile walking distance (measured from a main building entrance) of an existing or planned and funded commuter rail, light rail or subway station. Or Locate the project within 1/4 mile walking distance (measured from a main building entrance) of 1 or more stops for 2 or more public, campus, or private bus lines usable by building occupants.

Parking size, 2 points - Minimize parking lot/garage size. Consider sharing parking facilities with adjacent buildings. Consider alternatives that will limit the use of single-occupancy vehicles.

Protect or restore habitat, 1 point - Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity. On greenfield sites (natural habitats), limit all site disturbance to 40 feet beyond the building perimeter; 10 feet beyond surface walkways, patios, surface parking and utilities less than 12 inches in diameter; 15 feet beyond primary roadway curbs and main utility branch trenches; and 25 feet beyond constructed areas with permeable surfaces.

Open space, 1 point - Provide a high ratio of open space to development footprint to promote biodiversity. Exceed open space code by 25% or that of the building footprint if no code exists.

Stormwater quantity control, 1 point - Limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, reducing or eliminating pollution from storm-water runoff, and eliminating contaminants. Must control the storm-water from a 2—year/-24 – hour storm.

Stormwater quality control, 1 point - Limit disruption and pollution of natural water flows by managing stormwater runoff. Must clean 80% of post-development total suspended solids.

These credits can all help a building be less destructive to the environment. However, it is possible to gain a platinum certification without achieving any of these credits. In fact there is no way to assess the effects on local biodiversity just by the LEED certification level. LEED has drawn criticism due to this problem and others.

Problems with LEED?

Prior to the unveiling of LEED V3, the LEED system was criticized for its oversimplified points system in which including a bike storage room was awarded with the same 1 point credit as building on a grayfield, including photovoltaics, or incorporating a \$1.3 million eco-friendly heating system. LEED V3 has attempted to address this problem by weighing the more influential credits more heavily. However, these new changes still do not adequately address biodiversity conservation.

The "site selection" category (which is worth one point) forbids the use of “land specifically identified as habitat for any species on federal or state threatened or endangered lists,” but provides no standard for assessing whether a particular area is being used by one of these species. Who makes the judgment? A trained ecologist? An engineer? An "environmental consultant"? Is a field survey required? Does the field worker know how to assess habitat or conduct a rare species survey? Because LEED sets forth no standard for assessment, this credit could be easily exploited. Furthermore, LEED takes no account of habitats that are critical to certain rare species during limited parts of the year such as for drought refuge or overwintering sites. On top of these shortcomings the site selection credit is only worth one point.

Destroying the habitat of a threatened species scarcely affects your chances of gaining a platinum rating. Indeed, ecological health seems to be treated as a side effect rather than an intended result. Credits such as those awarded for community connectivity or availability of public transportation may help ease the strain on open spaces, though only indirectly.

The USGBC's fees for LEED registration range from \$750 to \$3,750, and certification fees run from \$1,500 to \$7,500 or more depending on the size of the project. Also, LEED certification can take months to complete. Many developers decide to spend this cash on more eco-friendly features such as photovoltaics or other special components. For instance the Mayor of Park City, UT, stated "On the Park City Ice Arena [\$4.8 million project cost], we built it according to LEED criteria, but then we realized that [certification] was going to cost \$27,500. So we ordered three small wind turbines instead that will power the arena's Zamboni."

The bottom line

The LEED system is one of the most well known green building certifications in the world, and has played an immense role in turning green development into an internationally recognized movement. The LEED label certifies that a building is more sustainable than average, and it gives owners a selling point that cannot be underestimated. However, a LEED certification does not necessarily mean that a building's impact on the local environment has even been assessed. A LEED building placed with no consideration for the natural setting could be as harmful for local biodiversity as any conventional building. A building placed in an upland forest/vernal pool habitat complex, for example, could extinguish the local pool-breeding amphibian populations, regardless of the LEED certification level. LEED was not designed to reduce damage to local ecosystems, and is no substitute for knowledge of local biodiversity and good conservation planning.

A new project called the Sustainable Sites Initiative (SSI), is currently underway and is backed by the USGBC. The SSI is slated to be in use by 2010 and will offer a more ecosystem-based look at the development design and construction process. No system will be able to guarantee, however, that a building does not harm the local environment, and all projects should be reviewed according to local standards. While LEED or SSI certification may be important factors in the environmental review of a project they should not be considered a substitute for a detailed assessment of local impacts to biological resources.

Sources

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