
LEED – AN ASSESSMENT

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Canadian Home Builders' Association

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INTRODUCTION

The LEED initiative (**L**eadership in **E**nergy and **E**nvironmental **D**esign) is intended to promote “green building” practices. Started in the United States, it has also been introduced in Canada.

LEED involves a series of voluntary standards that address a wide range of environmental, energy efficiency and other factors in the design and operation of buildings and communities.

To date, LEED has focused primarily on new construction in the industrial, commercial and institutional sector of the industry, with some involvement in large multi-residential construction. LEED initiatives are also being considered for introduction into other areas, including single-family homes and community development.

With the expansion of LEED into all areas of residential construction, it is important that members of the home building industry, and those associated with the regulation of housing, gain a full understanding of how LEED works.

In the US, the current LEED certification programs include:

- New Commercial Construction and Major Renovation projects
- Existing Building Operations and Maintenance
- Commercial Interiors projects
- Core and Shell Development projects
- Homes
- Neighborhood Development
- Guidelines for Multiple Buildings and On-Campus Building Projects
- LEED for Schools
- LEED for Retail

In the development phase are:

- LEED for Healthcare, and
- LEED for Labs.

Interest has been expressed by some in mandating LEED certification as a regulatory requirement through provisions in local development approval and zoning procedures. This would have the effect of creating building regulations outside of the accepted Canadian Code and Standard processes. At the same time, it is evident that there is very limited understanding of the details or potential impacts of LEED, including within the regulatory community.

LEED in Canada is operated by the Canada Green Building Council (CaGBC), a non-profit group based in Ottawa, Ontario.

CaGBC offers LEED under license from the US Green Building Council (USGBC).

The fundamental purpose of LEED – to promote the construction of environmentally appropriate, energy efficient buildings – is not unique, but is shared by virtually every organization involved in the building industry in Canada. What is unique about LEED is the scope of measures encouraged by the program, and the certification process associated with it.

The goals of the Canada Green Building Council, as outlined on their website, are to:

- Change industry standards
- Develop best design practices and guidelines
- Advocate for green buildings and
- Develop educational tools to support its members in implementing sustainable design and construction practices.

THE LEED CERTIFICATION PROCESS

To date, the principal LEED rating program in use in Canada has been LEED Canada - NC. This initiative applies to large buildings, as defined by Part Three of the National Building Code of Canada (NBCC). LEED - NC uses a point system for determining the level of certification. The commentary on LEED presented in this paper is based on LEED – NC.

The LEED process operates as follows. A project is initially registered with the CaGBC and is designated as LEED - Registered. At the completion of the project, based on the number of points attained, the building is certified at one of four levels: Certified, Silver, Gold or Platinum.

LEED points are awarded mainly on a prescriptive list of requirements. Points are awarded in each of five principal categories, as follows:

- Sustainable Sites - maximum 14 points
- Water Efficiency - maximum 5 points
- Energy and Atmosphere - maximum 17 points
- Materials and Resources - maximum 14 points
- Indoor Environmental Quality - maximum 15 points

Each category has a maximum number of achievable points, with one point assigned to each specific requirement within a category.

A sixth category, Innovation & Design Process, allows for up to five additional points for special innovations, not addressed in the five primary categories. One of these points is reserved for having a LEED Accredited Professional as a principal involved in the design team.

Of the total of 70 points available, the following number of points are required to reach the various levels under LEED Canada - NC:

- Certified - 26 points
- Silver - 33 points
- Gold - 39 points
- Platinum - 52 points

CONCERNS WITH LEED

Point System

As described above, LEED certification is based on a point system. Points are awarded for up to 65 specific, predefined requirements, with up to five additional potential points in the Innovation & Design Process category. Points are awarded on a pass/fail basis, with no relative weighting of the points awarded. Building designers essentially choose from the prescribed requirements to attain the level of certification desired.

The CaGBC provides no explanation or rationale for the way in which LEED points are assigned among categories or within the categories themselves.

Most of the 65 points in the regular categories are prescriptive in nature. Critics of LEED have observed that the prescriptive point system leads building designers to look at individual issues in isolation, rather than looking at integrated design strategies. As well, there is a strong incentive for designers to “chase” points by selecting requirements that are easily achieved at low cost, rather than requirements that will yield the best overall building performance for occupants.

Design Innovation

LEED’s prescriptive approach leaves very limited room for gaining credits for real design innovation.

Although the Innovation & Design Process category offers credit for innovative and integrated design strategies, a cursory analysis of sample LEED certified projects shows that a high percentage of projects achieve the maximum available points in the category for initiatives that are, arguably, not particularly innovative.

One point is reserved for having at least one LEED Accredited Professional as a principal member of the design team, even though this would seem to be a necessary prerequisite for a project seeking LEED accreditation.

This leaves four points, or six percent of the total points, available for innovation.

These additional four points can be achieved for non-specific *“exceptional performance above the requirements set by the LEED Green Building Rating System, and/or innovative performance in Green Building Categories not specifically addressed by the LEED Green Building Rating System”*.

Points can be achieved for a fairly standard list of “innovations” that have little to do with the building’s design or construction, such as:

- Green education program
- Low emitting furniture and seating
- Green housekeeping program
- Purchasing a two-year contract for 100 percent green power

Once the points are gained for items such as those listed above, there are no further credits available for approaches to design that are actually innovative.

Designing for credits

As described, the LEED point system essentially offers up to 65 points in five main categories, plus up to 5 points in the sixth category for innovation and design process.

Recognition in the lowest LEED category, LEED Certified, requires a minimum of 26 points. Buildings that are far from innovative and not particularly energy efficient can meet this minimum level if the designer carefully selects measures that are easy and inexpensive to achieve. This has been described by some as “picking the low-hanging fruit” or “point-chasing”.

A project could potentially achieve the required points for certification in just two of the six categories, achieving no points at all in the other four categories.

Some LEED projects listed on the CaGBC website attained LEED Certified and Silver levels with virtually no credits in the Energy and Atmosphere category. One Silver project had a score of zero in this area, indicating that no measures to increase energy efficiency had been included.

Another LEED Silver project had a score of one in this category, based on a two-year contract to purchase green power.

Of the 17 points available in the Energy and Atmosphere category, the Certified projects achieved an average of 3.5, and the Silver projects achieved an average of 5.0. Even the Gold level projects achieved an average score of only 9.1.

LEED points can be attained, even if the particular measure selected is not relevant to the building project. For example, credits are available for the reduction of the heat island effect. While this can be an important issue in many urban settings, it is less significant, or irrelevant, in suburban and rural settings. LEED makes no distinction in terms of location when granting this credit, so it can be gained by projects where it is of no real value or application.

Anomalies

A significant concern with the LEED process is that designing a building to meet the needs of the occupant is not the primary consideration. A number of LEED points can be gained for items that have no effect on the actual building, its impact on the environment or its suitability to meet the needs of the occupants.

An example is the credit given for development on previously contaminated land. Although the reclamation of contaminated sites is a worthy goal, it has no bearing on the performance of a building. However, points gained in this way will lead to a higher rating, giving a false impression of increased building performance.

LEED also provides for points when a building is located in close proximity to public transport. A point is awarded if the building is located within 800 metres of a commuter rail, light rail or subway station, or within 400 metres of at least two bus routes with frequent service. The distance criteria and the requirement for service from at least two bus routes are rather arbitrary. For example, it is unclear why service by one well-connected bus route is less desirable than service by several less convenient routes.

Additionally, a point can be achieved if the amount of parking provided for the building does not exceed the minimum local zoning requirements. Although this is intended to encourage the use of public transit, it could as easily create more demand for on-street parking, or lead to people having to be dropped off and picked up from work. This requirement, while well-intentioned, does not ensure a reduction in environmental impact.

In most cases, when a building is designed, there is an expectation that it will have a useful life span of fifty or more years. There are a number of LEED points available, however, for commitments of as little as two years. Examples of these short-term commitments include:

- If three percent of the building occupants are supplied with high efficiency hybrid or alternate fuel vehicles with a two-year lease agreement, a LEED point can be achieved.

- A LEED point can be achieved if a two-year contract is signed for purchasing green power from the electrical grid.

These short-term requirements have no bearing on the long-term performance of the building, nor does the CAGBC require any commitment by building operators to maintain these services beyond the initial two-year period.

LEED points can also be achieved for higher density developments, while at the same time LEED points are offered for minimizing the footprint of development on a site. In many cases, these two requirements will be contradictory.

Cost of Compliance

Compliance costs for LEED certification are significant. There are additional construction costs associated with the items included in the project for which LEED points are obtained. There are also soft costs associated with the LEED compliance process. Particularly with respect to the soft costs, a variety of factors will affect the financial impact of compliance, including the LEED experience of the design team, and the size of the project.

A number of studies have been undertaken to determine the costs associated with LEED compliance. These studies generally conclude that LEED-related soft costs are in the range of three to five percent of the total project cost, with this percentage being significantly higher for small projects.

The soft costs include additional design fees, commissioning costs, documentation costs and LEED fees. The documentation cost and LEED fees are generally in the range of one third of these costs.

In one example of a large project, calculations put the soft costs associated with LEED certification in the range of \$325,000 on a \$10,000,000 project, with a third of that cost being directly associated with producing the required documentation, and paying the LEED registration fees.

Beyond proving compliance with LEED requirements, the money spent on LEED documentation and registration fees is not available for investing in initiatives and features that actually improve the efficiency of the building and reduce its environmental impacts.

Lack of a Transparent Consensus Process

The CaGBC is governed by a Board of Directors elected by the membership at large.

Membership in the Council is open to groups as well as companies in various categories. Annual dues vary among categories and within categories based on

the size or business volume of the organization. Annual dues range from \$150 to \$3,500. The membership categories are:

- Real estate, managers, owners and tenants
- Retail, construction and products
- Professional firms
- Financial and support services
- Utilities
- Academia, research and policy
- Non-profit organizations and industry associations

The Board of Directors has the power to modify the membership categories and adjust the balance of representation on the Board of Directors.

Although industry representation is intended to be broad-based, there is no assurance in the by-laws that the Council will adequately represent the development and construction industry or other affected or interested parties. The Board of Directors reviews and approves membership applications.

The CaGBC is not an accredited standards organization. Further, the Council does not reference accredited standards as the basis for many of the LEED requirements or the evaluation processes. The development of LEED standards is in no way comparable to the rigorous, transparent and accountable processes in place for Canada's system of Codes and Standards. The CaGBC is accountable to its members only and not to those outside its membership, who may be impacted by its actions.

Evaluation criteria associated with particular LEED points are skewed toward certain products and systems without explanation.

Examples of specific criteria used for achieving LEED points include:

- Wood products certified by the Forest Stewardship Council (FSC).
- Adhesive, paint and other finishes listed by or meeting criteria set by Green Seal or the State of California's South Coast Air Quality Management District.

Although these organizations undoubtedly provide valuable rating and labeling services, their particular rating systems are by no means the only ones available. However, LEED points are achieved only on meeting the criteria set by the select few rating services recognized by the LEED program.

For example, in the case of wood products, only FSC-recognized products are accepted by LEED. Other standards, that are considered to be equally valid, are excluded. One example would be the Canadian Standards Association (CSA) CAN/CSA-Z809 - Standard for Sustainable Forest Management, which is not

accepted by LEED. This standard, however, is recognized by the Standards Council of Canada. There is currently almost as much forest area in Canada certified to the CSA standard as there are FSC-certified forests in the entire world.

The CaGBC provides no explanation for its choice of rating systems.

Quality Assurance

Quality assurance is the backbone of any valid certification process.

LEED relies on two elements for its quality assurance. The first is the involvement of a LEED Accredited Professional, and the second is the submission of documentation.

The LEED Accredited Professional

Although most jurisdictions in Canada require the involvement of architects and engineers in the design and construction of large buildings, the LEED process requires the use of LEED Accredited Professionals (LEED AP) to deal with the LEED aspects of a project.

A LEED AP is an individual that has passed a single exam, administered by the Canada Green Building Council. The exam centres almost entirely on the LEED process itself.

No educational or professional background, or experience, is necessary to write the exam and receive the designation as a LEED AP.

The value of accreditation as a LEED AP is dubious, based on the process associated with the awarding of this designation.

Documentation Submission

The LEED process requires the submission of very detailed documentation for a project, including documentation covering all prerequisites and points obtained. There is no information available on how this information is reviewed, or whether any third-party review process is used. In addition, there is no disclosure of any follow-up verification of either the construction or the actual performance of LEED projects.

Marketplace Confusion

In the residential sector, there are numerous well-established national and regional initiatives. R-2000, EnergyStar™ and Built Green™ are examples.

As currently evolving, LEED for Homes would likely approximate EnergyStar™ from an energy performance perspective.

Although being referred to as the “elite” program, from an energy performance standpoint, based on the current US LEED for Homes Program, LEED for Homes in Canada would not have any performance criteria that would set it apart from already established programs.

Considering the point system used in the US pilot of LEED for Homes, this initiative will not ensure the same standards of energy efficiency and environmental impact reduction as a program such as R-2000. Further LEED for Homes does not employ the “House as a System” approach to design, construction, and verification that has been the backbone for the R-2000 Initiative, and that is now used by production-oriented initiatives like EnergyStar™ and Built Green™.

The USGBC has set a target of 1,000,000 LEED homes by 2010. This would represent approximately a 20 percent average penetration of the US market in the years 2008 through 2010. Considering that, in the first nine months of 2007, a total of 336 homes were certified, achieving the 1,000,000 target by 2010 will require a massive market penetration in the latter part of the time period.

This level of penetration cannot be achieved unless either the standard is set very low or, at some level, the program is made mandatory by housing regulators.