Sustainable Building

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Effective green building can benefit your bottom line by increasing productivity and reducing operating costs (i.e. using less energy and water). It will also help safeguard the health and safety of your occupants while reducing the environmental impacts. As a result, it is becoming increasingly important for new constructions and existing buildings to be 'green' certified using the **Leadership in Energy and Environmental Design (LEED®)** rating system. The flexibility of the LEED system allows for many different ways for your building to be green certified.

The recently introduced LEED for Existing Buildings – Operations and Maintenance presents an excellent opportunity for existing buildings to obtain LEED certification without undertaking major renovations or expense. This is particularly appropriate in today's economic climate. As discussed below, implementing a green cleaning program is one way in which existing buildings can work towards this certification.

1. Green Building Councils: CAGBC and USGBC

In Canada, the **Canada Green Building Council (CAGBC)** was created to accelerate sustainable building and development in Canada. The CAGBC's mission is to create buildings and communities that are environmentally responsible, profitable, and healthy places to live, work and play. The Council works towards changing industry standards, developing best design practices and guidelines, advocating for green buildings and developing educational tools to implement sustainable design and construction practices.

The rating system for green buildings in Canada was adapted from the **U.S. Green Building Council (USGBC)'s LEED rating system.** The USGBC is dedicated to expanding green building practices and education. Most notably, the Council developed the LEED® Green Building Rating System™, now an internationally recognized certification system.

2. LEED Green Building Rating System

2.1 LEED explained

LEED addresses all building types and emphasizes state-of-the-art strategies in five areas: (1) sustainable site development, (2) water savings, (3) energy efficiency, (4) materials and resources selection, and (5) indoor environmental quality. An additional category, Innovation & Design Process, addresses sustainable building expertise as well as design measures not covered under these five environmental categories. Certain rating systems include additional relevant categories. *LEED Canada for Homes*, for instance, includes a Location and Linkages category and an Awareness and Education category. (More information can be found in the LEED for Homes Section, below).

The Canadian rating system adapts the USGBC's LEED Green Building Rating System for Canadian climates, construction practices and regulations.

2.2 LEED CANADA Certifications

LEED CANADA for New Buildings:

The LEED Canada-NC 1.0 rating system applies to new construction and major renovations of commercial and institutional buildings. It also applies to retail, mid- and high-rise multi-unit residential buildings (MURBs), public assembly buildings, and manufacturing plants. Within LEED Canada-NC, it is possible to certify projects with some leased tenant space not yet fit-up. Provision is also made for up to 10% of the building floor area (20% in the case of mixed-use buildings) to be completely exempted. Applicants with space that is not fitted out at the time of certification (e.g., intended for future lease) may wish to consider LEED® Canada for Core & Shell. Core and shell covers base building elements such as structure, envelope and the HVAC system.

The thresholds for LEED Canada-NC 1.0 are:

Certified: 26 points
Silver: 33 points
Gold: 39 points
Platinum: 52 points
Total available: 70 points

For further information, download the rating system at
www.cagbc.org/leed/systems/new_construction/index.php

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LEED for Existing Buildings – Operations and Maintenance:

The LEED for Existing Buildings Rating System (**LEED EB: O&M**) helps building owners and operators measure operations, improvements and maintenance on a consistent scale with the goal of maximizing operational efficiency while minimizing environmental impacts. LEED for Existing Buildings addresses whole-building cleaning and maintenance issues (including chemical use), recycling programs, exterior maintenance programs, and systems upgrades. It can be applied to schools and to both existing buildings seeking LEED certification for the first time and to projects previously certified under LEED for New Construction (LEED NC). It can also be applied to Core & Shell (LEED CS).

> ***Note:*** *There is sometimes confusion regarding which LEED certification program is appropriate for a particular project. The general guideline is that if renovations are worth at least 50% of the building's value and impact the building envelope, LEED Canada NC is the most appropriate rating system. Otherwise, LEED EBOM should be applied.*

The Canada Green Building Council recently launched LEED® Canada for Existing Buildings: Operations and Maintenance (*LEED® Canada EB:O&M 2009*), with a similar goal as LEED EB: O&M, thereby creating additional opportunities for businesses to certify their environmental performance,

3. Green Cleaning - LEED for Existing Buildings – Operations and Maintenance

The products used and procedures involved in a Green Cleaning Program are key elements in fulfilling the requirements for LEED certification for Existing Buildings – Operations and Maintenance.

More particularly, LEED-EB: O&M points are awarded in the following categories:

- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Environmental Quality
- Innovation in Upgrades, Operations and Maintenance

Implementing a Green Cleaning Program provides opportunities to earn points in the Water Efficiency (WE) and Indoor Environmental Quality (EQ) categories, and therefore greatly contribute towards obtaining LEED certification.

Putting strategies and systems in place to reduce indoor plumbing fixture potable water use is one way to improve water efficiency and earn points. For example, installation of auto-faucet fixtures can reduce water consumption by up to 70% per fixture. Installation of waterless urinals is another solution to reduce water use.

The category of Indoor Environmental Quality requires a green cleaning policy for the building and site, which includes requirements such as:

- Purchase of sustainable cleaning products and equipment
- Use of chemical concentrates with appropriate dilution systems to minimize chemical use wherever possible.
- Use of sustainable cleaning materials, products, equipment, janitorial paper products and trash bags
- Utilize entryway systems (grilles, grates, mats) to reduce the amount of dirt, dust, pollen and other particles entering the building at all entryways, and develop the associated cleaning strategies to maintain those entryway systems, as well as exterior walkways
- Establish standard operating procedures (SOPs)
- Strategies for promoting and improving hand hygiene
- Develop guidelines addressing the safe handling and storage of cleaning chemicals used in the building
- Develop requirements for staffing and training of maintenance personnel appropriate to the needs of the building.
- Train maintenance personnel in the hazards of use, disposal and recycling of cleaning chemicals, dispensing equipment and packaging
- Provision for collecting occupant feedback and continuous improvement to evaluate new technologies, procedures and processes.

To achieve LEED certification in the ***Indoor Environmental Quality***, buildings must meet all prerequisites in the Rating System and a minimum of 15 points. Example as shown below:

Indoor Environmental Quality – 15 possible points

- Prerequisite 1 Minimum IAQ Performance — Required
- Prerequisite 2 Environmental Tobacco Smoke (ETS) Control — Required
- Prerequisite 3 Green Cleaning Policy — Required
- Credit 1.1 IAQ Best Management Practices: IAQ Management Program — 1
- Credit 1.2 IAQ Best Management Practices: Outdoor Air Delivery Monitoring — 1
- Credit 1.3 IAQ Best Management Practices: Increased Ventilation — 1
- Credit 1.4 IAQ Best Management Practices: Reduce Particulates in Air Distribution — 1
- Credit 1.5 IAQ Best Management Practices: IAQ Management for Facility Alterations and Additions — 1
- Credit 2.1 Occupant Comfort: Occupant Survey — 1
- Credit 2.2 Controllability of Systems: Lighting — 1
- Credit 2.3 Occupant Comfort: Thermal Comfort Monitoring — 1
- Credit 2.4 Daylight and Views — 1
- Credit 3.1 Green Cleaning: High-Performance Cleaning Program — 1
- Credit 3.2 Green Cleaning: Custodial Effectiveness Assessment — 1
- Credit 3.3 Green Cleaning: Purchase of Sustainable Cleaning Products and Materials — 1
- Credit 3.4 Green Cleaning: Sustainable Cleaning Equipment — 1
- Credit 3.5 Green Cleaning: Indoor Chemical & Pollutant Source Control — 1
- Credit 3.6 Green Cleaning: Indoor Integrated Pest Management — 1

The thresholds for *LEED Canada EB:O&M 2009* are:

Certified: 40 points
Silver: 50 points
Gold: 60 points
Platinum: 80 points
Total available: 110 points

For further information, go to www.cagbc.org/leed/systems/existing_buildings/index.php

3. **Green Cleaning - Commercial Interiors**

LEED Canada for Commercial Interiors is the green benchmark for the tenant improvement market. It is the recognized system for certifying high-performance green interiors that are healthy, productive places to work; are less costly to operate and maintain; and have a reduced environmental footprint. LEED Canada CI gives the power to make sustainable choices to tenants and designers, who do not always have control over whole building operations. The LEED Canada CI rating system is applicable to tenant improvements of new or existing office space. It is important to note that LEED Canada CI applies to both tenants' and base building owner's work associated with the commercial interiors improvements project.

The Canadian version of LEED CI includes clarifications considered useful for Canadian projects during creation and review of the USGBC's LEED CI version 2.0 reference guide. Prerequisites and Credit intents and requirements were not changed from the USGBC version; but Submittals for initial certification review and audit submittals are explicitly listed in the Canadian version.

The thresholds for LEED Canada CI 1.0 are:

Certified: 21 points
Silver: 27 points
Gold: 32 points
Platinum: 42 points
Total available: 57 points

4. **Green Cleaning – Core and Shell**

LEED Canada for Core and Shell (CS) is a derivative of *LEED Canada NC* and applies to buildings where less than 50% of the building area will be fit-up to *LEED Canada NC* requirements prior to certification.

LEED Canada CS certification was made possible by the release of the *Application Guide for Core and Shell Buildings and Leased Tenant Spaces*, which not only provides details for achieving *LEED Canada CS* certification, but also provides flexibility and guidance in applying *LEED Canada NC 1.0* to leased tenant spaces. Specifically, it makes allowance for some leased tenant space that is not fit-up to NC requirements at the time of certification. Provision is also made for up to 10% of the building floor area (20% in the case of mixed-use buildings) to be completely exempted. The application guide, published in July 2008, applies retroactively to allow everyone to benefit from its flexibility. The thresholds for *LEED Canada CS* are identical to those for *LEED Canada NC*:

Certified: 26 points
Silver: 33 points
Gold: 39 points
Platinum: 52 points
Total available: 70 points

5. **Green Cleaning - LEED for Homes:**

LEED Canada for Homes is a rating system that promotes the design and construction of high-performance green homes. A green home uses less energy, water and natural resources; creates less waste; and is healthier and more comfortable for the occupants. Benefits of a LEED home include lower energy and water bills; reduced greenhouse gas emissions; and less exposure to mold, mildew and other indoor toxins. The net cost of owning a LEED home is comparable to that of owning a conventional home.

The *LEED® Canada for Homes Rating System* measures the overall performance of a home in eight categories:

1. **Innovation & Design Process (ID)**. Special design methods, unique regional credits, measures not currently addressed in the Rating System, and exemplary performance levels.
2. **Location & Linkages (LL)**. The placement of homes in socially and environmentally responsible ways in relation to the larger community.
3. **Sustainable Sites (SS)**. The use of the entire property so as to minimize the project's impact on the site.
4. **Water Efficiency (WE)**. Water-efficient practices, both indoor and outdoor.
5. **Energy & Atmosphere (EA)**. Energy efficiency, particularly in the building envelope and heating and cooling design.
6. **Materials & Resources (MR)**. Efficient utilization of materials, selection of environmentally preferable materials, and minimization of waste during construction.
7. **Indoor Environmental Quality (EQ)**. Improvement of indoor air quality by reducing the creation of and exposure to pollutants.
8. **Awareness & Education (AE)**. The education of the homeowner, tenant, and/or building manager about the operation and maintenance of the green features of a LEED® home.

The *LEED® Canada for Homes Rating System* works by requiring a minimum level of performance through prerequisites, and rewarding improved performance in each of the above categories. The level of performance is indicated by four performance tiers – Certified, Silver, Gold and Platinum – according to the number of points earned (Exhibit 1).

Exhibit 1 LEED® Canada for Homes Certification Levels

LEED Canada for for Homes Certification Levels	Number of LEED Canada for Homes Points Required
Certified	45—59
Silver	60—74
Gold	75—89
Platinum	90—136
Total available points	136

6. LEED Accredited Professionals:

More than 3,000 people have become LEED® Accredited Professionals (LEED® APs) in Canada since 2001. LEED® APs work in every sector of the building industry, and have demonstrated a thorough understanding of green building practices and principles and familiarity with LEED requirements, resources, and processes. For more information on how to become a LEED® Accredited Professional, go to www.cagbc.org/index.htm.

Conclusion

As explained above, there are many advantages to LEED® certification. These include:

- Gaining recognition for green building efforts
- Validating achievement through third party review
- Qualifying for a growing array of government incentives
- Contributing to a growing green building knowledge base
- Meeting the increased demand by tenants for green buildings

Although obtaining LEED certification may seem challenging, the many categories of LEED certification, along with the different levels of certification, make it attainable for you and your business.

For additional information, you can consult the CAGBC website at http://www.cagbc.org/index.htm or Paul Goldin at pgoldin@avmor.com.