

To: Mayor and Members of Council

From: Development Approval & Planning Policy Department

Meeting: 2012-11-13

Subject: Caledon's Corporate Green Building Standard for municipal facilities

RECOMMENDATIONS

That Report DP-2012-0110 regarding Caledon's Corporate Green Building Standard for municipal facilities, be received; and

That Council direct Staff to adhere the Town of Caledon's Green Building Standard; and,

That the 2013 Purchasing By-law amendment include a section requiring Staff's adherence of the Corporate Green Building Standard for all applicable new municipal buildings and major renovations; and,

That the incremental cost associated with adhering to the Town of Caledon's Corporate Green Building Standard for all applicable new municipal buildings and major renovations be incorporated into the 10 year capital forecast update in 2013.

ORIGIN/BACKGROUND

In 2010, Caledon Council endorsed the Caledon Corporate Energy Management Plan which provided a road map for the Town's corporate energy needs. This Plan has a series of actions which include the development of a Corporate Green Building Standard. A Corporate Green Building Standard is also an action that has been recommended through the Council endorsed Caledon Community-Based Strategic Plan and the Peel Climate Change Strategy.

In 2011, the Town retained Light House Consulting to assist with the development of a Corporate Green Building Standard (CGBS). Prior to developing the CGBS Light House completed a background study which included a municipal scan of building standards and interviews with Caledon Staff. The results of this review were presented at the October 17, 2011, Council workshop.

On January 17, 2012, a second workshop was held to provide additional information on what Leadership in Energy and Environmental Design (LEED) certification entailed. Light House expressed to Caledon Council that a LEED Silver Certification was the standard most appropriate to meet the Town's Corporate Green Building Standard objectives. This is a respectable certification level that would be recognized by the construction industry and those within Caledon community. The updating and verification of LEED Certification is completed by the Canadian Green Building Council. Therefore, limited Staff resources would not be required to address these responsibilities. It was also determined that a LEED Silver Certification would provide Staff with the flexibility to select the LEED credits that are best for specific sites. Council made Staff aware of priority LEED credits that should be pursued within the CGBS. Council also highlighted gaps within LEED that should be addressed through the CGBS.



This report will provide an overview of what is being recommended as Caledon's Corporate Green Building Standard.

DISCUSSION

Corporate Green Building Standard Objective

The Town of Caledon Corporate Green Building Standard sets out the Town of Caledon's commitment to incorporate sustainable building design principles into the planning, design, and construction of new municipal buildings and major renovations of existing buildings. Sustainable building design can lead to monetary savings, reduced environmental impact and a healthier and a more productive working environment.

A Town of Caledon Corporate Green Building Standards (CGBS) would also provide leadership and guidance to Caledon Staff and the community. It would outline expectations and provide Staff with guidance on how these expectations can be met. It would also show those building within the Caledon community that the Town supports and implements sustainable development practices within our Town facilities.

Overview of the Standard

The development of the CGBS was a joint effort between Development Approval and Planning Policy and Corporate Services. When developing the CGBS staff ensured that issues surrounding project applicability, criteria requirements, municipal precedence, and frequency of review were considered. To ensure the CGBS was feasible staff worked with Light House Consulting on the development of implementation procedures. These procedures outline roles and responsibilities, timelines, estimated costs, and language for procurement documents. It is expected that these procedures will assist staff in meeting the objectives of the CGBS.

Corporate Green Building Standard

The Town of Caledon's Corporate Green Building Standard will require that all buildings commit to achieving a certification level of silver based on the most current version of Leadership in Energy and Environmental Design for New Construction (LEED-NC) program. There will be specific LEED credits that these buildings will be required to pursue. The CGBS has also captured requirements that fall outside of LEED-NC (See Schedule A for Corporate Green Building Standard).

Applicability

Due to LEED's set criteria not all buildings can achieve LEED-NC Silver Certification. The Town is also limited by the role staff have in the construction of some Town facilities. Recognizing these constraints the following criteria outlines what buildings will be subject to the CGBS;

- a) Facility must be owned wholly by the Town of Caledon;
- a) Facility must be new building or a major renovation project that is tendered following Council's endorsement of Caledon's Corporate Green Building Standard;
- Facility must have greater than 10,000 square feet of covered and heated space; and.



a) Any other eligible corporate project that the Town of Caledon Council deems to be subject to the Green Building Standard.

Buildings that are not eligible or cannot achieve the required LEED credits to participate in the LEED for new construction program shall strive to incorporate applicable LEED features. Staff must inform Caledon Council that the building will not be built to the Town of Caledon's Corporate Green Building Standard. To reduce the number of ineligible facilities it is important to consider LEED's sustainable site criteria when selecting a site.

Requirements

LEED Certification provides the builder with a selection of approved credits. To help ensure that Caledon's environmental priorities are being addressed the CGBS has included required LEED credits that must be pursued in addition to the LEED prerequisites. It was also determined that some of Caledon's environmental priorities were not adequately addressed through LEED so the CGBS has included a series of LEED+ criteria which captures these unmet needs. The following are credits and criteria that must be pursued for all applicable projects.

Additional Caledon Corporate Green Building Standard LEED credits

- Alternative Fuel Vehicles (SSc4.3)
- Stormwater Design Credits
 - o Quantity Control (SS6.1)
 - Quality Control (SS6.2)
- Water Efficiency (WE) (points from two of three option)
 - Water Efficient Landscaping (WE.1)
 - Innovative Wastewater Technologies (WE.2)
 - Water Use Reduction (WE.3)
- Enhanced Commissioning (EA3)

(Please see Schedule B for "Additional CGBS LEED credits" details.)

LEED+ Credits

Measurement and Verification

Measurement and verification is a priority highlighted by Council. LEED has a credit that accounts for measurement and verification (M&V), however, it is resource intensive. The CGBS recommends that the Town of Caledon pursue the LEED M&V credit when resources allow for it, but that the Town also develop its own internal M&V procedures that will assist in assessing the effectiveness of the CGBS.

Solar Readiness

All new municipal buildings must meet the structural and electrical requirements for the future installation of solar photovoltaic and solar thermal structures.

Electric Vehicle Readiness



All new parking lots should be roughed-in to allow for future electric vehicle infrastructure.

Stormwater

All new municipal buildings must consider and pursue where possible, the most current version of the Toronto and Region Conservation Authority and Credit Valley Conservation's stormwater management guidelines.

Dedicated Water Filling Station

All buildings will have dedicated water-filling stations to ensure that drinking water is readily accessible to occupants at all times. Stations will be required to include features allowing for the filling of refillable water bottles.

Education

All new building and major renovation projects must incorporate, where possible, at least two of the CGBS's listed educational elements into the building's design and operation (See Schedule A, Section 1.6.2.6). These educational elements collectively will allow the Town to qualify for a LEED "Innovation in Design" credit. At least one element must involve active learning opportunities where building occupants and visitors are engaged to take action on the basis of information received.

Integrated Project Delivery

To have system integration that will allow for optimal building performance, all building projects shall follow an Integrated Project Delivery (IPD) approach. This will be initiated during the pre-design phase of the project. The IPD is a holistic process that considers the many disparate parts of a building's construction or renovation, and examines the interaction between design, construction and operations to optimize the energy and environmental performance of the project. From the outset of the project the IPD will bring together all of the project's design professionals, consultants, and municipal representatives. It will allow the Town to complete the project's LEED Checklist at the initiation of the project. The IPD will ensure that the life-cycle cost of a project is considered. This holistic approach to building will also help improve the budgeting process for a project, optimize synergies, and avoid costly change orders.

Resource Implications of a Corporate Green Building Standard

In addition to assisting with the development of a CGBS Light House Consulting was responsible for completing a CGBS cost analysis. This analysis involved the review of LEED costing studies and a high level LEED cost analysis. The outcome of this review was that the Town could anticipate an initial cost premium of 5% to achieve the objectives of Caledon CGBS. It was noted that this premium could vary depending on the LEED credits the building qualifies for and the function of the building. This cost analysis was prefaced with the importance of having an accurate budget from the onset. It was also noted that it does not account for the cost avoidance that should be achieved by holding an IPD at the onset of the project. Lastly, as 'green' building practices become more prevalent the cost associated with these practices will likely go down. Likewise, as the costs of resources go up the return on investment will continue to improve. For instance, studies have shown that 'green' buildings achieve between 20%-30% energy savings. In addition to energy savings multiple studies have cited a relations hip between a 'green' building, productivity, and reduced sick days. Studies have



quantified this productivity improvement to be in the range of 5%.

FINANCIAL IMPLICATIONS

Subject to Council endorsement of the Caledon Corporate Green Building Standard, Town staff will review new facilities forecasted in the 10-year capital projection and make adjustments in 2013, as required, to include the estimated 5% premium to construct a LEED Silver facility.

Further, updates to Facility Master Plans and the Town's Development Charge Background Study will incorporate LEED Silver cost estimates as part of the cost of the facility. For example, a \$10M facility would have an estimated additional cost of \$500,000.

LEGAL IMPLICATIONS

Should Council approve the recommendations within this report, the CGBS will not form part of the Town's Purchasing Policy, namely By-law No. 2009-151, until such time as the necessary by-law is passed to amend the Purchasing Policy in that regard. The CGBS is not intended to take precedence over applicable law, and in the case of conflict between the CGBS and applicable law, the latter will prevail.

NEXT STEPS

- Finalize procedures for Corporate Green Building Standard
- Incorporate Corporate Green Building Standard into purchasing documents
- Educate key Staff on aspects of the Corporate Green Building Standard
- Develop a measurement and verification plan for the Corporate Green Building Standard

COMMUNITY BASED STRATEGIC PLAN

Strategic Objective Goal 1: PARTNER WITH LAND OWNERS AND COMMUNITY TO PRESERVE, PROTECT AND ENHANCE OUR ENVIRONMENT AND AGRICULTURAL RESOURCES AND NATURAL CAPITAL.

POLICIES/LEGISLATION

Corporate Energy Management Plan

CONSULTATIONS

Amedeo Valentino, Manager of Purchasing and Risk Management Rita Trudeau, Manager of Capital Projects & Project Management

ATTACHMENTS

Schedule A- "Caledon Corporate Green Building Standard"
Schedule B- "Additional Caledon Corporate Green Building Standard LEED Credits"



As a progressive and environmentally responsible municipality it is important that the Town continues to set a precedent for the community. The approval of a Corporate Green Building Standard would assist the Town in meeting this objective. Using an internationally recognized standard like Leadership in Energy and Environmental Design (LEED) gives credence to the CGBS by providing transparency and accountability. Including additional requirements that go beyond LEED displays the Town's commitment to being at the forefront of environmental leadership.

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Approver (L1): Jeremy Schembri

Approver (L2): Mary Hall

Approver (L3): Doug Barnes

Approver (L4):

Approver (L5):



Town of Caledon Corporate Green Building Standard

Submitted To:

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1. Green Building Standard¹

1.1 Policy Statement

The Town of Caledon Corporate Green Building Standard sets out the Town of Caledon's commitment to incorporate sustainable building design principles into the planning, design, construction and operation of new municipal buildings and major renovations of existing buildings. It will also provide internal and external guidance and leadership in the development and application of sustainable building practices.

As an action that has been listed in both the Town of Caledon' Corporate Energy Management Plan and the Environmental Progress Action Plan the Town of Caledon Corporate Green Building Standard is intended to assist the Town of Caledon in meeting its commitments to reducing greenhouse gas emissions, reducing consumption of fossil fuels and encouraging use of alternative renewable energy sources, reducing waste, and improving the overall impact of buildings on occupant health and the environment.

1.2 Purpose

The purpose of this Green Building Standard is to set minimum environmental requirements for the construction and performance of new municipal buildings, as well as major renovations of existing buildings, in the Town of Caledon, focused on six key areas:

- a) Site: location, site planning, landscaping, storm water management, construction and demolition recycling;
- b) Water Efficiency: efficient fixtures, wastewater reuse, and efficient irrigation;
- c) Energy & Atmosphere: energy efficiency, and clean/renewable energy;
- d) Materials & Resources: materials reuse, efficient building systems, and use of recycled and rapidly renewable materials;
- e) Indoor Environmental Quality: improved indoor air quality, increased natural lighting, and improved thermal comfort/control; and
- f) Education: experiential learning opportunities on green building principles and practices for Town staff and the general public.

1.3 Applicability

This Green Building Standard applies to all projects that are:

¹ This document does not constitute legal advice. The Town of Caledon is strongly advised to have this draft Standard reviewed by legal counsel prior to final approval. Light House Sustainable Building Centre assumes no responsibility or liability arising from the interpretation or implementation of this standard whatsoever.

- a) Facility must be owned wholly by the Town of Caledon;
- Facility must be new building or a major renovation project that is tendered following Council's approval of Caledon's Corporate Green Building Standard;
- c) Facility must have greater than 10,000 square feet of covered and heated space; and,
- d) Any other eligible corporate project that the Town of Caledon Council deems to be subject to the Corporate Green Building Standard.

1.4 Definitions

For the purposes of this Corporate Green Building Standard, the following words and phrases are defined as follows:

"Building" refers to any structure with a floor area in excess of 10,000 square feet.

"CaGBC" refers to the Canada Green Building Council.

"Leadership in Energy and Environmental Design (LEED®)" means "a rating system put forth by the U.S. Green Building Council and administered in Canada by the CaGBC that is the nationally accepted benchmark for the design, construction and operation of high performance green buildings." For the purposes of this Standard, reference to "LEED" refers to version LEED NC 2009 for new buildings and for major renovations.

"Life cycle costing" means "the sum of all recurring and one-time (non-recurring) costs over the full life span or a specified period of a good, service, structure, or system. It includes purchase price, installation cost, operating costs, maintenance and upgrade costs, and remaining (residual or salvage) value at the end of ownership or its useful life."

"Major renovation" means a extensive alteration work in addition to work on the exterior shell of the building and/or primary structural components and/or the core and peripheral MEP (mechanical – electrical – plumbing). Typically, the extent and nature of the work is such that the primary function space cannot be used for its intended purpose while the work is in progress and where a new certificate of occupancy is required before the work area can be reoccupied.

"Model National Energy Code for Buildings (MNECB)" means a model, which outlines minimum requirements for energy efficiency in new buildings and additions greater than 10 square metres in area.

1.5 Responsibilities

The following sets out the responsibilities of various municipal departments with regards to the implementation and review of the Corporate Green Building Standard²:

- a) Overseeing regular review of the Corporate Green Building Standard and Leadership in Energy and Environmental Design Standard.
- b) Ensuring consistency between Town processes and policies to accord with the Corporate Green Building Standard.
- c) Ensuring procurement documents contain necessary requirements to retain the designers, contractors and building consultants with the appropriate LEED designations to satisfy the requirements under the Corporate Green Building Standard.
- d) Coordinating an integrated project delivery at the commencement of the preliminary design phase of a project.
- Ensuring that project budgets account for funding requirements that incorporate compliance costs associated with the Corporate Green Building Standard.
- f) Conducting life-cycle costing analysis prior to tendering for all construction and retrofit projects subject to the Corporate Green Building Standard.
- g) Tracking and reporting on budget adherence (including any overages or savings) associated with achievement of the Corporate Green Building Standard.
- h) Providing support in the interpretation of the Corporate Green Building Standard
- i) Ensuring municipal buildings integrate and comply with the requirements of the Corporate Green Building Standard.
- j) Coordinating performance review of buildings built pursuant to the Corporate Green Building Standard.
- Recognizing achievements realized as a result of the Corporate Green Building Standard.
- Encouraging the development of incentives to encourage private sector adoption of green building practices under the Corporate Green Building Standard.

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² Caledon to assign tasks listed below to the respective departments: Planning & Development, Recreation & Property Services, Public Works & Engineering and Corporate Services.

1.6 Corporate Green Building Requirement

The Town of Caledon's Corporate Green Building Standard will require that all buildings commit to achieving a certification level of silver based on the most current version of LEED-NC. There will be specific LEED credits that these buildings will be required to pursue. The CGBS has also captured requirements that fall outside of LEED-NC 1.6.1 LEED Performance Requirements.

In addition to LEED prerequisites, the following LEED credits are mandatory for all projects:

- Electric vehicle plug in stations
- Stormwater design credits
- · 2 water efficiency points
- Enhanced commissioning

Buildings that are either not eligible or cannot achieve the required LEED credits for new construction program due to form of development shall strive to incorporate applicable LEED features. This case must be made before Caledon Council and Council must pass a resolution recognizing that the building will not be built to the Town of Caledon's Corporate Green Building Standard.

This standard does not apply to social housing projects or major renovations of heritage designated buildings.

1.6.2 Additional Performance Requirements

In addition to compliance with LEED performance requirements section, all new buildings must meet the following mandatory requirements. Where these requirements conflict with LEED prerequisites and credits, the following requirements will take precedence.

1.6.2.1 Integrated Project Delivery

As part of budget development and to ensure optimal systems integration to achieve maximum building performance, all building projects shall incorporate an integrated project delivery (IPD) approach. This will be initiated during the predesign phase of the project. The IPD is a holistic process that considers the many disparate parts of a building's construction or renovation, and examines the interaction between design, construction and operations to optimize the energy and environmental performance of the project. From the outset of the project the IPD will bring together all of the project's design professionals, consultants, and municipal representatives. It will allow the Town to complete the project's LEED Checklist at the initiation of the project. This holistic approach to building will also help improve the budgeting process for a project, optimize synergies, and avoid costly change orders.

1.6.2.2 Life Cycle Costing

Life cycle cost analysis pursuant to ASTM Standard E917-05 (2010) (performing life cycle costing of buildings and building systems) should be completed for all applicable Corporate Green Building Standard projects.

1.6.2.3 Stormwater

All new municipal buildings must take into consideration the Toronto and Region Conservation Authority's stormwater management guidelines "Low Impact Development Stormwater Management Planning and Design Guide Version 1.0".

1.6.2.4 Solar Readiness

All new municipal buildings, when applicable, must include structural requirements necessary for future installation solar photovoltaics and/or thermal.

1.6.2.5 Dedicated Water-filling stations

All buildings will have dedicated water-filling stations to ensure that drinking water is readily accessible to occupants at all times.

1.6.2.6 Education

All new building and major renovation projects must incorporate at least two of the following educational elements into the building's design and operation which collectively qualify for a LEED Innovation In Design credit. At least one element must involve active learning opportunities where building occupants and visitors are engaged to take action on the basis of information received.

- a) Signage program detailing the building's green attributes (passive) and instructing the user on how to use a specific piece of technology (active).
- b) Brochure available to users on site detailing the green attributes of the building (passive).
- c) A detailed case study of the building incorporating images/graphs that serves as a knowledge bank for future building design accompanied by an outreach program to disseminate the case study to a wide audience (active).
- d) Guided or self-led tour of the green features of the building with accompanying script or brochure (active).
- e) Computer kiosk or website providing information about the building (passive) and interactive elements to test the user's knowledge (active).
- f) Windows to view energy-saving mechanical equipment incorporated into the building's design and construction (active).
- g) Digital screens showing real-time energy consumption or building performance data (passive/active).
- h) An educational outreach program on green building topics hosted in the building that engages occupants and/or the public (active).

1.7 Review

This Standard will be reviewed every four (4) years.

1.8 Precedence

Where applicable law conflicts with the Corporate Green Building Standard, the applicable law will prevail.

Credit	Requirement
Alternative Fuel	Option 1: Install alternative-fuel refueling stations for 3% of the total vehicle
Vehicles	parking capacity of the site.
	Liquid or gaseous fuelling facilities must be separately ventilated or located outdoors.
	Option 2: Provide low-emitting and fuel-efficient vehicles for 3% of full-time equivalent (FTE) occupants.
	Provide preferred parking for these vehicles.
	Option 3: Provide building occupants access to a low-emitting and fuelefficient vehicle-sharing program. The following requirements must be met: • One low-emitting or fuel-efficient vehicle must be provided per 3% of FTE occupants, assuming that 1 shared vehicle can carry 8 people (i.e., 1 vehicle per 267 FTE occupants). For buildings with fewer than 267 FTE occupants, at least one fuel-efficient vehicle must be provided. • The vehicle sharing contract must demonstrate an agreement of at least 2 years.
	 The estimated number of customers served per vehicle must be supported by documentation. A narrative explaining the vehicle-sharing program and its administration must be submitted.
	 Parking for low-emitting and fuel-efficient vehicles must be located in the nearest available spaces in the nearest available parking area. Provide a site plan or area map clearly highlighting the walking path from the parking area to the project site and noting the distance.
Stormwater Quantity	CASE 1. SITES WITH EXISTING IMPERVIOUSNESS 50% OR LESS
Control	Option 1:Implement a stormwater management plan that prevents the post-development peak discharge rate and quantity from exceeding the predevelopment peak discharge rate and quantity for the 1 and 2-year 24-hour design storms.
	Option 2: Implement a stormwater management plan that protects receiving waterways from excessive erosion by implementing velocity and quantity control strategies.
	CASE 2. SITES WITH EXISTING IMPERVIOUSNESS GREATER THAN 50% Implement a stormwater management plan that results in a 25% decrease in the rate and volume of stormwater runoff from the 2-year 24-hour design storms.
Stormwater Quality	Implement a stormwater management plan that reduces impervious cover, promotes infiltration and captures and treats the stormwater runoff from 90%

SCHEDULE B- REQUIRED LEED CREDITS

Control	of the average annual rainfall using acceptable best management practices
	(BMPs). BMPs used to treat runoff must be capable of removing 80% of the
	average annual post-development total suspended solids (TSS) load. BMPs are
	considered to meet these criteria if they are designed in accordance with
	standards and specifications from a provincial, territorial, or local program that
	has adopted these performance standards. Implement a management plan to
	minimize pollution and eutrophication of waterways from excess nutrient
	pollutants such as nitrogen and phosphorus, often found in cleaning agents
	and fertilizers.
Water Efficient	Option 1: REDUCE BY 50% (2 points)
Landscaping	or
	Option 2: No potable water use for irrigation (4 points)
Innovative	Option 1: Reduce potable water use for building sewage conveyance by 50%
Wastewater	through the use of water conserving fixtures (e.g., water closets, urinals) or
Technologies	non-potable water (e.g., captured rainwater, recycled greywater, and on-site
	or municipally treated wastewater).
	Option 2: Treat 50% of wastewater on-site to tertiary standards. Treated water
	must be infiltrated or used on-site.
Water Use Reduction	Employ strategies that in aggregate use less water than the water use baseline
	calculated for the building (not including irrigation).
	The minimum water savings percentage for each point threshold is as follows:
	30%= 2 points
	35%= 3 points
	40%= 4 points

Implement, or have a contract in place to implement, the following additional commissioning process activities in addition to the requirements of EA Prerequisite 1: Fundamental Commissioning of Building Energy System:

- 1. Prior to the start of the construction documents phase, designate an independent Commissioning Authority (CxA) to lead, review, and oversee the completion of all commissioning process activities.
- a. The CxA must have documented commissioning authority experience in at least 2 building projects.
- b. The individual serving as the CxA:
 - i. Must be independent of the work of design and construction.
- ii. Must not be an employee of, or contracted through the design firm (engineering firm of record).
- iii. Must not be an employee of, or contracted through a contractor or construction manager holding construction contracts.
- iv. May be a qualified employee or consultant of the owner.
- c. The CxA must report results, findings and recommendations directly to the owner.
- 2. The CxA must conduct, at a minimum, 1 commissioning design review of the owner's project requirements basis of design, and design documents prior to mid-construction documents phase and back-check the review comments in the subsequent design submission.
- 3. The CxA must review contractor submittals applicable to systems being commissioned for compliance with the owner's project requirements and basis of design. This review must be concurrent with the review of the architect or engineer of record and submitted to the design team and the owner.
- 4. The CxA or other project team members must develop a systems manual that provides future operating staff the information needed to understand and optimally operate the commissioned systems.
- 5. The CxA or other project team members must verify that the requirements for training operating personnel and building occupants are completed
- 6. The CxA must be involved in reviewing the operation of the building with operations and maintenance (O&M) staff and occupants within 10 months after substantial completion. A plan for resolving outstanding commissioning-related issues must be included.

