

# CITY OF VICTORIA

## Committee of the Whole Report

**Date:** August 15, 2007      **From:** Sierd Hortsing, Manager, Facilities  
**Subject:** Civic Facilities: Green Buildings Policy

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### Executive Summary

The purpose of this report is to implement a Green Buildings Policy for civic facilities owned and operated by the City of Victoria. The development of such a policy is consistent with the City of Victoria's vision is to be the most liveable city in Canada. The Corporate Strategic Plan (2007 to 2009) has as one of its objectives: "The environment is sustained and enhanced through sound leadership and stewardship of natural resources."

With this focus on the environment in City plans and practices, a policy on green municipal buildings would demonstrate the City of Victoria's commitment to: addressing environmental, economic, and social stewardship (triple bottom line), yielding cost savings to the City's taxpayers through reduced operating costs, providing healthy work environments for staff and Council, and contributing to the City's goals of protecting, conserving, and enhancing our civic infrastructure. Additionally, the City is in a position to join with others in setting a consistent regional standard for green building practices.

As a consequence of the wide variety of buildings and program activities across the organization, a number of specific issues need to be addressed to ensure that a green building policy is effective and encompasses all aspects of City facility construction and building operations, including custodial practices. The analysis demonstrates that a municipal Green Buildings Policy governing new civic capital construction projects and renovations, as well as operations of existing civic buildings are subject to the policy, and that the policy should be implemented in two phases. The first phase would include all the City's new facility construction projects and the second would expand to include existing civic facilities. Further, the analysis suggests that the widely recognized Leadership in Energy and Environmental Design™ (LEED™) Green Building Rating System be adopted as the verifiable standard for measuring the implementation of green building practices.

### Recommendations:

1. That City Council endorse a Green Buildings Policy for municipal facilities that would meet the minimum requirement of LEED™-NC Silver, with a goal of Gold, including, where appropriate, full registration and certification under the Canada Green Building Council for all new construction and additions larger than 500 square meters; and
2. That City Council direct staff to prepare an implementation plan outlining the issues, strategies and costs associated with incorporating green building operating practices into municipal facilities of all sizes that are owned and managed by the City, utilizing LEED™-EB, or any other verifiable third party standard, and report back to Council.

Respectfully submitted

Sierd Hortsing  
Manager, Facilities

Peter Sparanese  
Director, Engineering

## **1. Purpose**

The purpose of this report is to implement a Green Buildings Policy for civic facilities owned and operated by the City of Victoria. The development of such a policy is consistent with the City of Victoria's vision is to be the most liveable city in Canada. The Corporate Strategic Plan (2007 to 2009) has as one of its objectives: "The environment is sustained and enhanced through sound leadership and stewardship of natural resources."

With this focus on the environment in City plans and practices, a policy on green municipal buildings would demonstrate the City of Victoria's commitment to: addressing environmental, economic, and social stewardship (triple bottom line), yielding cost savings to the City's taxpayers through reduced operating costs, providing healthy work environments for staff and Council, and contributing to the City's goals of protecting, conserving, and enhancing our civic infrastructure. Additionally, the City is in a position to join with others in setting a consistent regional standard for green building practices.

## **2. Background**

Buildings consume large amounts of resources (materials, water, and energy) and generate significant volumes of solid waste, sewage and air emissions throughout their existence. It is estimated that in Canada, buildings consume 35 to 40 per cent of secondary energy use and generate 30% of total Canadian greenhouse gas emissions. Construction and demolition waste is a major component of the solid waste stream, and accounts for approximately 17% of the tonnage at the regional Hartland landfill.

In 2004, the average residential user in Greater Victoria consumed 380 litres of water per day — higher than the Canadian average of 340 liters and more than twice the per capita European daily average.

A Green Buildings Policy would provide a framework and set of tools to construct in a more efficient, healthy and ecologically-responsible manner. Encouraging civic green building practices is in the public interest because they:

- conserve energy, water and other natural resources;
- result in cost savings through increased operation and maintenance efficiencies;
- improve indoor air quality and the health, well-being, and productivity of occupants;
- help reduce public infrastructure costs related to development;
- help minimize ecological degradation (habitat, air, water, soil); and
- support local economy and create new local jobs and industries.

The City has a number of so-called "green" initiatives that are part of current facility operations. They include on-going lighting and mechanical system retrofits, enhanced recycling programs in City buildings, and a switchover to green cleaning products. As for current construction projects, the Burnside Gorge Community Centre is targeting a LEED™ Gold certification that includes one of the largest publicly accessible green roofs in Canada.

## **3. Issues**

As a consequence of the wide variety of buildings and program activities across the organization, a number of specific issues need to be addressed to ensure that a green building policy is effective and encompasses all aspects of City building construction and operations, including custodial practices. The issues requiring resolution include:

- What construction and maintenance activities might be covered;

- What type and size of civic buildings should be subject to the policy;
- What is an acceptable standard for environmentally friendly buildings;
- How will a municipal Green Building Policy be implemented; and
- What are the costs of implementing a green building policy?

#### **4. Analysis**

##### ***What should be included?***

The City of Victoria is the custodian of over 100,000 square meters of public facilities, including a large number of operational buildings used to deliver public services. The City of Victoria also funds capital projects for new or renovated civic facilities. It is recommended that the Green Buildings Policy apply to all civic buildings, including new and existing facilities and that the Policy be applied and implemented in two phases as recommended below.

##### ***What's the Standard?***

As a result of our review of various green building methodologies, it is recommended that the City of Victoria adopt the LEED™ Green Building Rating System as the verifiable standard for measuring the implementation of green building practices. Leadership in Energy and Environmental Design™ (LEED™) is a voluntary, consensus-based rating system for high-performance, green buildings. A Canadian version of the rating system has been developed and is being administered by the Canada Green Building Council (CaGBC). The City of Victoria has been a member of the CaGBC since its inception.

Though there are a number of other industry green building standards, LEED™ is the market leader and has been adopted by a number of neighbouring jurisdictions in Canada and the U.S., including Saanich, Vancouver, White Rock, Surrey, Whistler, Calgary, Seattle, King County WA, Clark County WA, Portland, Eugene, Sacramento and Boulder. As such, LEED™ provides a complete framework for assessing building performance and meeting sustainability goals. Based on well-founded scientific and industry standards, LEED™ emphasizes state of the art strategies for green site development, water savings, energy efficiency, materials selection, and indoor environmental quality. A suite of rating systems has been developed, each addressing a different type of building construction, including new construction (LEED™-NC), commercial core and shell construction (LEED™-CS), tenant infill of an existing shell (LEED™-CI) and others.

Early investigation suggests that the rating system recommended for the operation and maintenance of the City's existing building inventory is LEED™-EB. The purpose of LEED™-EB is to maximize operational efficiency and work-place environmental quality while minimizing environmental impacts. Rather than a one-time rating, LEED™-EB provides a continuing, performance-based benchmark for building owners and operators to measure current conditions and improvements covering chemical use, recycling programs, exterior maintenance programs, and systems upgrades to meet green building energy, water, indoor air quality, and lighting performance standards.

With respect to all the rating systems in the LEED™ portfolio, there is consistency in the nomenclature and application of credits, and the methodology of achieving certification for both new and existing buildings, thereby simplifying the overall policy implementation. In addition, a number of City staff are familiar with the rating systems and there are a significant number of

qualified industry professionals in Victoria and elsewhere in British Columbia available to assist the City in achieving the standards.

**What should the standard apply to?**

For new construction or additions of 500 square meters or larger, it is recommended that the City achieve LEED™-NC Silver as the minimum standard, with a goal of Gold (or even Platinum) where a LEED™ audit and/or lifecycle assessment warrants it. A review by a third party consultant has confirmed that the trend is rapidly shifting towards LEED™ Gold, from Silver, due to the significant growth of green building in general, the rapid development of expertise throughout the buildings industry, and concurrent changes to building codes. The 500 square meter cutoff is also consistent with neighbouring communities in the Cascadia region (British Columbia, Washington and Oregon). To put this building area into context, buildings of 500 square meters or larger account for over 80% of City-owned and managed space.

For new buildings under 500 square meters it is recommended LEED™-NC be used as a guide in the planning, design and execution of the project. The ability of a renovation project to incorporate green features can be significantly dependent on the character of the building or the nature of the renovation. Each renovation project is a unique situation, and the feasibility of incorporating green features should be evaluated for certification on a case-by-case basis.

**How much will implementing the policy cost?**

The cost of meeting a green policy standard will vary due to a number of factors, based on the certification target level. These factors will include building type, specification flexibility, project size, local green market maturity, climate conditions and project team experience. Based on local B.C. conditions, the accompanying graph shows that capital costs increases associated with LEED certification are relatively minor.

the stats...



- changes to capital cost with LEED\*
  - 0.6% certified
  - 1.2% silver
  - 2.0% gold
- operating reductions with LEED\*\*

	Energy savings	Water savings
certified	22%	15%
silver	31%	22%
gold	40%	27%
platinum	48%	27%
average	30%	20%

\*prepared by TBKG cost consultants using BC projects  
\*\*USGBC, Dec 2005

City construction projects though, tend to be non-typical of the general commercial construction industry, and include facilities such as fire stations, parking garages, maintenance buildings, pools, community centres and so on. The types of design and construction features may vary the costs somewhat from the typical factors noted above. Addressing the level of LEED™ performance during the budget approval process will ensure that any costs for LEED™ certification will be included in the project financing. However, as noted in the chart, many of these costs can be recovered through reduced consumption of energy, water and other consumables.

### ***How will the policy be implemented?***

It is recommended that the City's Green Buildings Policy applies immediately to all new civic capital construction projects as outlined. With respect to the City's existing facilities, further investigation is warranted. The City's existing building inventory (which includes buildings from 10 square meters to 13,000 square meters), ranges from simple works sheds and comfort stations to more complex buildings such as Victoria Police Headquarters and the Victoria Conference Centre. Also, the age of the City's current building stock may make a number of buildings ineligible for LEED™-EB certification without some basic retrofits for meeting minimum requirements for mechanical and electrical systems. Prior to making any significant commitment to meeting modern building performance standards it is recommended that the City invest some resources into identifying issues, strategies and costs associated with the adoption of verifiable green maintenance practices.

Regardless of whether individual projects obtain certification, it is recommended that green construction practices for all major construction and renovation projects include three basic elements during the project implementation and construction phase, these elements being: *integrated design*, *life cycle assessment* and *commissioning*. Successful green buildings depend on an *integrated* approach to design. Early on in the process, a cross-disciplinary design team, together with facility staff and users would work together at the pre-design phase by establishing environmental performance targets for the building. *Life cycle assessment* (LCA) evaluates the environmental impacts of the building through all stages of its life cycle. The goal of LCA is to achieve the highest, most cost-effective environmental performance possible over the life of the project. When integrated design and life cycle assessment are combined, better and more affordable development strategies emerge. The adoption of *commissioning* as a standard practice ensures that specific performance standards for building systems are included in the project specifications, and that a building's systems are meeting those performance criteria once a project is completed. Commissioning will decrease the long-term operating cost of a building's heating and cooling systems and overall energy use.

### ***What are the policy exemptions?***

No new buildings or major renovations on existing City-owned buildings should be exempt from the policy without a LEED™ audit that would support an exemption. As noted earlier, addressing the level of LEED™ performance during the budget process will ensure that any additional costs for LEED™ certification will be included in the project financing, as well as identify if achieving a given standard is impractical. The impracticality of applying LEED™ performance standards may be of particular relevance when considering projects associated with heritage structures such as City Hall.

#### **4.a. Options**

Options available to Council include implementing a higher certification standard, thereby incurring potentially increased costs; not certifying to a given standard, but use the standard as a benchmark, thereby incurring no certification costs; implementing both phases simultaneously (new construction and existing buildings) and providing appropriate staffing or consulting resources to implement.

#### **4.b. Resource Impacts**

Cost implications are noted in the foregoing analysis. It is recommended that the costs associated with implementing the Green Buildings Policy for new capital construction projects are identified and quantified as part of design development and reported at the appropriate time during the project approval process.

#### **4.c. Conclusions**

The City of Victoria's vision is to be the most liveable city in Canada, with the mission to enhance the vitality of the region through exceptional leadership and stewardship of our cultural, social, economic and environmental assets.

The Corporate Strategic Plan (2007 to 2009) has as one of its objectives:

“The environment is sustained and enhanced through sound leadership and stewardship of natural resources.”

The recommendations proposed are consistent with and support the priorities noted in the Corporate Strategic Plan.

#### **5. Recommendations:**

1. That City Council endorse a Green Buildings Policy for municipal facilities that would meet the requirement of LEED<sup>TM</sup>-NC Silver, with a goal of Gold, including, where appropriate, full registration and certification under the Canada Green Building Council for all new construction and additions larger than 500 square meters; and
2. That City Council direct staff to prepare an implementation plan outlining the issues, strategies and costs associated with incorporating green building operating practices into municipal facilities of all sizes that are owned and managed by the City, utilizing LEED<sup>TM</sup>-EB, or an other verifiable third party standard, and report back to Council.