



2012 GREEN BUILDING PROMOTION PROGRAM

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TABLE OF CONTENTS

1. Background.....	3
2. Purpose of the program and strategic alignment.....	3
2.1 Purpose of the program	3
2.2 Strategic alignment	4
3. Green Building Promotion Program: Results To Date	4
3.1 Knowledge transfer, capacity building and staff training.....	4
3.2 Promotion and online resources.....	5
3.3 Ottawa Green Building Showcase.....	6
3.4 Sustainable Design Checklist.....	6
3.5 Research	7
3.6 Affordable housing.....	7
3.7 Participation in the review of the Ontario Building Code.....	7
4. Municipal Approaches to Green Building Promotion.....	7
4.1 Prescriptive/regulatory approaches.....	8
4.2 Incentive-based approaches	8
4.3 Educational/promotional approaches	9
4.4 Hybrid approaches: The Toronto Green (Development) Standard	10
4.5 Summary of lessons learned from best practice review	12
5. Legal and Regulatory Tools	13
5.1 Building Code, <i>Building Code Act</i> and building permits.....	13
5.2 Official Plan and Site Plan Control By-law.....	14
5.3 Conditional zoning under the <i>Planning Act</i> , Section 34(16).....	15
5.4 Section 37 agreements (density and height bonusing).....	16
5.5 Community Improvement Plans	17
6. Proposed Green Building Promotion Program.....	17
6.1 Develop and implement a Green Express Lane providing improved development approvals service to projects that incorporate green building techniques.....	17
6.2 Capacity building and information resources.....	19
6.3 Explore financial incentives for green building.....	21
6.4 Ottawa Green Roof Program	23
6.5 Ottawa Green Development Standard (OGS)	24
6.6 Pursue opportunities to green the existing building stock.....	25
Appendix A: Summary of 2012 Green Building Promotion Program Activities.....	27

2012 GREEN BUILDING PROMOTION PROGRAM

1. Background

In April 2009 Council approved the original Green Building Promotion Program (GBPP) as a pilot to increase the number of green building projects in the private sector, particularly those that provide public benefits and reduce demand on City infrastructure. ([ACS2009-ICS-ECO-0001.](#)) The program's main objectives were to create and foster an integrated approvals process and understanding of green building projects among development review staff; to promote green building in the broader community; and to recommend an overall ongoing program and constructive role for the City to play in promoting and assisting green building projects and integrated green design processes.

The 2012 Green Building Promotion Program builds on these initiatives by recommending a variety of activities that the City of Ottawa can undertake to further promote green building construction in the city.

2. Purpose of the program and strategic alignment

2.1 Purpose of the program

The Green Building Promotion Program (GBPP) is first and foremost an environmental initiative. In 2008, buildings accounted for 57.4%% of greenhouse gas emissions in Ottawa.¹ Green construction and site design represent an enormous opportunity to reduce environmental impacts from the building sector by:

- reducing energy use and CO2 emissions;
- improving air quality;
- reducing the quantities of, and improving the quality of, stormwater run-off;
- reducing the urban heat island effect;
- reducing demand for potable water; and,
- reducing waste

From a City services perspective, the design and construction of buildings affects the load on municipal infrastructure including stormwater management facilities, treatment and distribution of potable water and sewage treatment. With an emphasis on re-using and recycling building materials, green building practices also reduce the amount of construction and demolition waste being sent to landfills.

However, the benefits of the program go beyond the environment. Rising energy prices have implications both for the community's economic prosperity and for the City's cost base. Higher energy costs are borne directly by Ottawa residents, in the form of higher heating, air conditioning and power costs. As a rough estimate, the building sector consumes on the order of \$800 million dollars worth of energy a year.² Most of that money exits the city, leaving less

¹ *Framing our Future: An Energy & Emissions Plan for Canada's Capital Region, 2012.*

² This is a very rough order-of-magnitude figure based on energy consumption numbers for 2008 and using 2011 prices for the various fuels.

wealth to support the local economy. By promoting greater building efficiency, the Program reduces our economy's exposure both to higher prices and to instability in energy costs.

Higher fuel costs also echo through the City's operations, driving up the cost of maintaining infrastructure, collecting garbage, treating and distributing water, and other essential services. In this respect, reducing the burden on City services and infrastructure becomes even more critical.

Since the improved productivity of workers in green buildings is now well established, greener buildings, especially in a predominantly white-collar economy such as Ottawa's, are essential to maintaining the region's economic competitiveness.

2.2 Strategic alignment

2011-2014 Term of Council Priorities

The Green Building Promotion Program is identified as a specific [2011-2014 Term of Council](#) deliverable, under the Planning Committee's responsibility, to further Strategic Objective ES3 (Reduce Environmental Impact.) The GBPP (Strategic Initiative #29) directs staff to *"foster green building development in the private building sector by creating a green checklist for builders, training staff on green buildings, creating Web-based information and recognition, establishing a facilitated development approvals process, and providing a report on potential incentive programs."*

Beyond reducing environmental impact, the Program supports a number of Council's stated objectives and goals, including Strategic Objective ES1 (Improve Stormwater Management) and Strategic Objective HC3 (Improve Social and Affordable Housing.) The goals of economic prosperity, healthy and caring communities, financial responsibility, sustainable choices and service excellence are all supported by different elements of the Green Building Promotion Program.

Relationship to other initiatives

The GBPP also complements the City's Corporate Green Building Policy which demonstrates leadership by establishing standards for new City construction based on the Leadership in Energy and Environmental Design (LEED) green building rating system.

3. Green Building Promotion Program: Results To Date

The Green Building Promotion Program has made significant progress since being approved in April 2009. The following section discusses the main program activities and results.

3.1 Knowledge transfer, capacity building and staff training

Retrofit - Sustainability for the Future Conference

In May 2010, the City of Ottawa partnered with the Canada Green Building Council and Carleton University to hold a conference with the theme of building sustainability through the retrofitting of buildings. With over a hundred participants, seventeen conference sessions and thirteen sponsors, the conference was an enormous success and did much to spread knowledge and interest in green building practices in Ottawa.

Workshops

A series of three workshops were held to introduce City staff to the principles of sustainable design. The third and most recent of these was held in November 2010, with a local developer (Minto Developments) providing one of their planned developments as a "guinea pig" on which to explore a variety of sustainable development approaches. The workshop attracted a full house of nearly forty staff members.

In May 2011, a specialized workshop on the Ontario Building Code was held to build staff knowledge of the upcoming changes to the building code, especially with respect to energy efficiency standards. Elisabeth Girgis of the Canadian Codes Centre (National Research Council) gave a detailed presentation on the Ontario Building Code to a group of a dozen planners and building officials.

LEED training and accreditation

In late 2010, one planner received LEED Green Associate training as a pilot activity. This was done to build staff capacity in the green buildings and energy portfolio and to assess the content of the Green Associate program. This certification is aimed at providing government, real-estate and other development-related professionals with a basic familiarity with green building and the LEED system.

Based on a positive initial experience, a LEED Green Associate course was subsequently held on June 15-16, 2011. The course was attended by development review planners and infrastructure approvals staff from each geographic approvals area, as well as building officials. The course was coordinated by staff through a contract with the Canada Green Building Council (CaGBC.) A group discount allowed 22 staff members to be trained at a substantial cost savings—about 45% less than it would have cost to send staff individually.

3.2 Promotion and online resources

The City's [Green Buildings](#) portal on Ottawa.ca has been updated and expanded to provide a one-stop shop for information, case studies and resources on green building, including these features:

Green Buildings in the Community

This portal profiles green buildings undertaken in Ottawa by the private and institutional sectors. The site now features seventeen projects, with more being posted periodically.

http://ottawa.ca/en/env_water/green_living/community/green_building/private/index.html

Benefits of Building Green

The Benefits of Building Green site provides summaries and links to a growing body of research on the economics and cost-benefit analysis of green building. The research increasingly finds that while green buildings may cost more up-front, these higher capital costs are often more than offset by operational savings during the building's life cycle.

http://ottawa.ca/en/env_water/green_living/community/green_building/benefits/index.html

Green Building Resources

The Green Building Resource Portal directs users to third-party information on leading green building practices and systems, as well as to conservation programs and incentives offered by the major energy utilities.

http://ottawa.ca/en/env_water/green_living/community/green_building/resources/index.html

Online guidelines for permit applications

The Building Code Services branch has begun developing online guidelines for permit applications involving the more common and approved green building technologies. Guidelines governing solar hot water heaters and photovoltaic systems have been completed and posted; updates dealing with storm- and greywater re-use systems and wind turbine support structures are in development. Building Code Services currently expects to develop and post two such guidelines per year.

http://ottawa.ca/en/licence_permit/building_code/perm_reg/projects/green/index.html

3.3 Ottawa Green Building Showcase

On November 10, 2011, more than 160 builders, developers, and industry specialists attended the first Ottawa Green Building Showcase and Better Buildings Breakfast in Jean Pigott Hall. The Showcase was organized in association with the Canada Green Building Council and the real estate industry. The event featured a presentation by the City of Ottawa's Design and Construction unit on the City's green building accomplishments. The event's keynote speaker was Franklin Holtforster, a project manager with extensive experience in green building and LEED projects, including the Algonquin College Centre for Construction Excellence. Mr. Holtforster's address on the economics of sustainability emphasized that quite aside from the environmental benefits, building green makes sense for the bottom line--fast becoming something industry can't afford *not* to do.

The Showcase also included an exhibit of seventeen display panels profiling LEED-certified and BOMA BEST buildings in Ottawa. The panels represent a diverse range of building scales, owners and purposes—from single-detached private houses to high-rise office buildings to fire stations to industrial kitchens. Following their initial display period in the foyer of City Hall, the panels have been on display at various City facilities.

3.4 Sustainable Design Checklist

A Sustainable Design Checklist has been developed by Planning and Growth Management staff, as an information-gathering tool to track green building measures being proposed and constructed in Ottawa. One benefit of the Checklist will be to identify innovative green development features that are most often proposed by developers, thereby allowing the City to arrange for additional training to approvals staff on these technologies and techniques as part of the Green Express Lane.

The Sustainable Design Checklist has been created in consultation with green building professionals and presented to the development industry for comment and refinement. The Checklist has been finalized and introduced on a pilot basis for twelve months starting in 2012, and will be applied to all major development (i.e., those requiring public consultation).

3.5 Research

Natural Resources Canada and sustainable energy planning

The Environmental Sustainability Branch is participating in a joint research project led by Natural Resources Canada entitled System-wide Methodology for Optimising Renewable Energy Solutions or SMORES. SMORES is intended to develop models for sustainable energy planning and management at the neighbourhood scale; the project uses a neighbourhood in the west end of Ottawa as its study area. The City's main contribution to the project has been to organize and facilitate focus groups with homeowners in the study area, with the goal of providing insight into the economic issues, attitudes and behavioural factors influencing peoples' decisions to make energy-efficient retrofits to their homes. These findings also informed the Framing our Future "Regional Energy and Emissions Plan" received by Council in February 2011.

Review of green building initiatives in other cities

Over the summer of 2011, the Environmental Sustainability staff undertook a review of the approaches used in other Ontario jurisdictions to encourage and promote green building practices. A summary of the research can be found in the next section, *Municipal Approaches to Green Building Promotion*.

3.6 Affordable housing

Staff are working with the Affordable Housing Unit to identify a planned affordable housing project which could benefit from green design assistance, as directed in the April 2009 report. Once a suitable project has been found, financial assistance of up to \$15,000 will be provided from the existing Green Buildings capital account to assist in assessing measures applicable in affordable housing.

3.7 Participation in the review of the Ontario Building Code

In March 2011, the Ontario Ministry of Municipal Affairs and Housing (MMAH) held consultations on its proposed update to the Building Code, with the resulting changes expected to take effect over several years starting in 2015. (These changes are over and above the higher energy efficiency standards which came into force on December 31, 2011.) Many of the changes related directly to sustainability concerns, particularly with regards to energy and water efficiency. MMAH invited comments from stakeholders on the proposed changes.

In response, the Environmental Sustainability Branch provided detailed comments on twenty-one of the proposed changes relating to Council's stated priority areas with respect to green building, i.e. energy efficiency, water consumption and impact on municipal drainage.

4. Municipal Approaches to Green Building Promotion

In a review of best practices, staff concentrated on towns and cities in Ontario. Except for Toronto, these jurisdictions work under the same enabling legislation as Ottawa, so their experience would be most relevant to Ottawa's program.

The programs and initiatives can generally be grouped into three approaches: the prescriptive or regulatory approach, the incentive-based approach, and the promotional/educational

approach. Some municipalities (notably Toronto, with its two-tier Green Standard) have combined two or all three of these approaches.

4.1 Prescriptive/regulatory approaches

The regulatory or prescriptive approach involves setting rules requiring development be built to meet a specified level of environmental performance or certification under a third-party rating system. Meeting the specified standard becomes a condition of receiving a building permit, zoning amendment and/or development approval.

Prescriptive approaches are comparatively rare. The *Building Code Act* does not allow cities to require higher energy efficiency, water efficiency etc. than the standard specified in the Ontario Building Code.

A notable exception is Toronto's Green Roof By-law, which requires that non-residential development over a certain scale incorporate a green roof. However, Toronto's power to do this is enabled by a unique provision in the *City of Toronto Act* which is not available to other Ontario municipalities.

The Town of East Gwillimbury is widely cited as having implemented mandatory green building requirements for private development. The Town's web site announces resolutions of Council "directing" all new non-residential development applications to achieve a LEED Silver certification³, and all new residential developments to meet an Energy Star rating.⁴ This prescriptive approach appears to rely on a non-binding, or *informal* agreement among a very small development community. Based on staff's research, no permit has been refused on the basis of these council resolutions and East Gwillimbury's prescriptive approach has not been challenged before the Ontario Municipal Board. However, given the lack of clear legislative authority, this approach is not recommended.

Changes to the *Planning Act* in 2006 enabled municipalities to require "sustainable design features" on buildings, but "only to the extent that it is a matter of exterior design," as part of site plan approval. This change has opened up opportunities to green the building stock through Official Plan policies and development review. These provisions are gradually being incorporated into municipalities' Official Plans, including Ottawa through its recent OP Amendment #76.

4.2 Incentive-based approaches

The incentive-based approach involves providing bonuses, subsidies, or other incentives that make green building more attractive or feasible to a prospective developer, while stopping short of actually making it a requirement. Stakeholder consultations in Burlington and Toronto acknowledged that one of the foremost reasons that the larger development community did not embrace green building practices voluntarily was financial concerns.

³ Town of East Gwillimbury web site. http://www.eastgwillimbury.ca/Environment/Thinking_Green_Initiatives/LEED.htm. Accessed June 14, 2011.

⁴ Town of East Gwillimbury web site. http://www.eastgwillimbury.ca/Environment/Thinking_Green_Initiatives/Energy_Star.htm. Accessed June 14, 2011.

Financial incentives

A number of municipalities in Ontario offer financial incentives to developers of green buildings, including LEED certification:

- The Town of Caledon offers a 5%-10% reduction in Development Charges (DC) for developments implementing specified energy-efficiency measures. LEED certification qualifies for DC reductions of between 20% - 27.5% for commercial development and 30%-44.5% for industrial development (depending on the LEED rating achieved.)⁵
- Caledon also offers grants for energy-efficiency retrofits through a Community Improvement Plan. Grants to industrial, commercial or mixed use buildings may be offered to a total of 25% of the retrofit costs; grants are capped at a maximum of \$7,500 for commercial and mixed-use buildings, and \$15,000 for industrial buildings.⁶
- The City of Kitchener's Green Housing Incentive Program offers outright grants of up to \$5,000 for houses built and certified under LEED.⁷
- The City of Toronto offers a 20% reduction in Development Charges for buildings that achieve both Tier 1 and Tier 2 of the Toronto Green Standard (discussed below.)
- Toronto has also provided grants of \$50 per square metre of green roof, and between \$2 and \$5 per square metre of cool roof, under its Eco-Roof program.⁸

Fast-tracked development approvals for green development

Numerous consultations and background studies found great support for fast-tracking green building project approvals, and several Canadian cities have resolved to look into fast-tracking (e.g. Toronto and Markham in Ontario, and Burnaby and Vancouver in British Columbia.) However, no municipalities in Ontario to date have actually implemented a fast-track development approvals process, and Toronto's extensive background studies on the Green Development Standard could find no such precedent in Canada. Consideration of how a fast-tracked green approvals stream would work in practice suggests that it involves some challenges, which may account for the lack of implementation.

4.3 Educational/promotional approaches

Educational and promotional approaches are widespread and include:

- web pages dedicated to promoting municipal environmental and energy efficiency initiatives (most municipalities,) corporate LEED buildings (e.g. Hamilton,⁹) and green buildings in the community (e.g. Oakville¹⁰);
- web links to incentive programs offered by utilities and Provincial and Federal governments for home energy retrofits (e.g. Burlington¹¹, Hamilton¹², London¹³);

⁵ Town of Caledon Green Development Program.

http://www.caledon.ca/content/greendevelopment/Caledon_Green_Development_Brochure.pdf. Accessed October 6, 2011.

⁶ Town of Caledon. [Bolton Community Improvement Plan](#). Accessed September 28, 2011.

⁷ [Kitchener Energy and Water Efficiency for Land and Buildings CIP](#). Accessed June 15, 2011.

⁸ City of Toronto, "Live Green/Eco-Roof Incentive Program." http://www.toronto.ca/livegreen/greenbusiness_greenroofs_eco-roof.htm. Accessed October 7, 2011.

⁹ City of Burlington, "Energy Conservation" <http://cms.burlington.ca/Page2900.aspx>. Accessed June 28, 2011.

¹⁰ City of Mississauga, "Green Development Strategy." (<http://www6.mississauga.ca/onlinemaps/planbldg/UrbanDesign/5-GDS-Standards-website.pdf>) Accessed July 6, 2011

- hosting pilot projects with outside agencies such as London's 2006 LEEP/TAP (Local Energy Efficiency Partnership/Technology Adoption Pilot,) in which Enerquality partnered with the local homebuilders' association to review and test a number of innovative energy efficiency technologies on local "discovery homes"¹⁴;
- online information, guides and checklists to homebuilders and businesses to help explain the advantages of standards such as Energy Star, LEED, or EnerGuide (e.g. Kingston, Sudbury¹⁵) and practical information on how to improve home energy efficiency (e.g. Thunder Bay¹⁶);
- online calendars of local sustainability events and a directory of local businesses that provide goods and services such as recycled building materials, contractors who build green, and energy auditors, among others (e.g. London¹⁷);
- voluntary green development standards and guidelines intended to encourage developers to think about sustainability issues in their projects, though these voluntary standards in some cases are preludes to an eventual regulatory program (e.g. Mississauga¹⁸);
- research to identify obstacles to green building (e.g. Toronto¹⁹).

4.4 Hybrid approaches: The Toronto Green (Development) Standard

The Toronto Green Standard (TGS)²⁰ has attracted a great deal of attention as a means of promoting green development. The TGS and its related programs include a complementary set of prescriptive, incentive-based and educational/promotional elements, each applying to a different class of construction:

1. Low-rise non-residential construction;
2. Low-rise residential construction (i.e. up to three stories in height); and
3. Mid- and high-rise residential construction (i.e. four or more stories in height.)

¹¹ City of Burlington, "Energy Conservation." <http://cms.burlington.ca/Page2900.aspx>. Accessed June 28, 2011

¹² City of Hamilton, "Going Green." <http://www.investinhamilton.ca/incentive-programs/going-green.html>) Accessed June 29, 2011.

¹³ City of London, "London EnerGuide Partnership." <http://www.energuide.london.ca/>. Accessed June 29, 2011.

¹⁴ Enerquality LEEP/TAP. http://www.enerquality.ca/index.cfm?pagepath=LEEP_/TAP&id=18732. Accessed October 5, 2011.

¹⁵ Sudbury EarthCare Action Plan. <http://www.greatersudbury.ca/earthcare/actionplan/english/documents/GrnBldg.pdf>. Accessed June 28, 2011.

¹⁶ City of Mississauga, "Green Development Strategy." (<http://www6.mississauga.ca/onlinemaps/planbldg/UrbanDesign/5-GDS-Standards-website.pdf>) Accessed July 6, 2011.

¹⁷ ecoLIVING London. <http://www.ecolivinglondon.org/directory>. Accessed June 29, 2011.

¹⁸ City of Mississauga "Green Development Strategy" (<http://www6.mississauga.ca/onlinemaps/planbldg/UrbanDesign/5-GDS-Standards-website.pdf>) accessed July 6, 2011

¹⁹ TGS Discussion Paper 5. http://www.toronto.ca/planning/environment/pdf/gds_discussionpaper_5.pdf. Accessed June 28, 2011. This paper found that common obstacles include "shortage of knowledgeable consultants, municipal resistance when lack of familiarity (sic) with technology (esp re geothermal heating), uncertain risks (and) delayed construction"

²⁰ The Toronto Green Standard is sometimes referred to as the Green Development Standard, particularly in its early incarnations. However, the acronym TGS is the most widely-used and so for the sake of consistency we will refer to the Toronto Green Standard or TGS throughout.

Each set of standards comprises two tiers.

- Tier One of the TGS consists of prescriptive standards that are largely enabled under Site Plan Control provisions of the City of Toronto Act. Compliance with these standards is described as "required" in TGS documents.²¹ Support for these standards, and the sustainable design features to which they relate, is incorporated in Toronto's Official Plan.
- Tier Two of the TGS consists of further standards that are largely above and beyond that city's power to regulate. It focuses on standards of interior building design and construction (such as energy and water efficient fixtures, using recycled materials for construction, etc). However, a number of Tier Two criteria are performance enhancements for Tier One credits. Tier Two is driven by an incentive approach, whereby developments that meet the requirements of both Tier One and Tier Two are eligible for a 20percent discount on their development charges. Additionally, projects that meet Tier Two may also apply for the Green Toronto Awards, where winning projects are showcased on the TGS website, along with a \$5,000 prize.²²

The TGS is complemented by a number of other efforts.

- Toronto offers the Toronto LEED Supplement which summarizes the similarities and differences between the TGS and LEED-NC 1.0, as well as which TGS criteria can count towards LEED credits.²³
- Toronto's Green Roof By-law requires commercial and institutional development over a certain size threshold to incorporate green roofs.
- For those buildings where a green roof is not required under the By-law, the City's Eco-Roof Incentive program offers up to \$50/m² to a maximum of \$100,000 for green roofs, and cool roofs for \$2-5/m² to a maximum of \$50,000. At \$50/ m², the program covers roughly 25% of the cost of installing a green roof.²⁴
- Development review and building permit officials are all trained in the TGS generally and then given a full-day technical training session on green roofs. The full day session consists of an introduction to general principles of green roofs, an overview of the Green Roof Bylaw, and the Toronto Green Roof Construction Standard, followed by a session on implementation of the requirements.²⁵
- The city is also currently working with the University of Toronto and other research partners to find complementary technologies to enhance the performance of green roofs (water management, energy efficiency, etc). They are also planning more workshops and presentations for the public in 2012.²⁶

Key lessons from the Toronto Green Standard include:

²¹ TGS Checklist. http://www.toronto.ca/planning/environment/pdf/checklist_mid-high.pdf. Accessed October 6, 2011.

²² Green Toronto Awards. <http://www.toronto.ca/greentorontoawards/index.htm>. Accessed June 16, 2011.

²³ Toronto LEED Supplement. http://www.toronto.ca/planning/environment/pdf/leed_supplement.pdf. Accessed June 28, 2011.

²⁴ City of Toronto Eco-Roof Incentive Program. http://www.toronto.ca/livegreen/greenbusiness_greenroofs_eco-roof.htm. Accessed June 17, 2011.

²⁵ City of Toronto, Office of the Chief Building Official. Phone interview, June 21, 2011.

²⁶ City of Toronto Environment Office. Phone interview, June 21, 2011.

- A combination of mandatory requirements, financial incentives for exceptionally high performance, and education and capacity building is likely to be more effective than any of these measures taken individually.
- Mandatory standards should be consistent with the municipality's existing powers, requiring only such sustainable design elements as can be imposed under the appropriate enabling legislation.
- If a given standard is described as mandatory, policy support should be established through an Official Plan amendment that gives clear direction to planning officials who have to implement the standard.
- The idea that Toronto enjoys unique development control powers through the City of Toronto Act appears to have been overstated. Toronto does have a few unique legal tools in terms of regulating building design, notably the authority to require green roofs through a by-law. But these are the exception, not the rule. Most of the planning controls relating to green building design and site planning are in fact available to other Ontario municipalities under the *Planning Act*.
- Most of the standards in the TGS echo or are consistent with corresponding standards in LEED. Effectively this means that a building that meets the TGS in one respect, will also qualify for the corresponding LEED credit. This congruence may have the effect of encouraging more LEED buildings.

4.5 Summary of lessons learned from best practice review

Best practice has indicated a number of principles that can inform the City's approach to promoting green building.

- ***Integrate green as early as possible in the design and development process.*** Attempting to add green features to a project once it is substantially underway is more expensive and less effective than if environmental performance is dealt with from the beginning, through an integrated design process.²⁷ Many (though by no means all) green building issues are purely a matter of the building's design and construction, and therefore become an issue at the building permit stage. Nonetheless, waiting until the building permit stage to begin considering green measures misses an enormous opportunity.

In 2010 Planning and Growth Management introduced a "pre-consultation" opportunity at which developers would schedule a discussion with development approvals staff, in order to identify any major issues prior to making an actual development application. This established pre-consultation step offers an ideal point of entry for green building discussion.

- ***LEED remains a useful tool for promoting green building, at least in the short-medium term.*** Green building goes beyond specific rating systems such as LEED; however, these systems do provide a useful framework for considering green building generally. LEED's market visibility, established certification infrastructure and ongoing improvement provide a useful lens for considering specific measures to encourage

²⁷ "The best and most economical sustainable designs are the ones in which the features are incorporated at an early stage into the project." From *Costing Green: A Comprehensive Cost Database and Budgeting Methodology*. Davis Langdon, 2004. p.15

green building. In the longer term, it may be more worthwhile to develop a "made in Ottawa" green standard that complements and builds upon the LEED system.

- ***The City's legal authority to influence some aspects of green building is limited.*** Municipalities in Ontario are not empowered to require higher energy efficiency, water efficiency, or indoor air quality measures as part of building permit process. As a result, many of the most obvious "green building measures" are beyond the City's ability to regulate. Other limitations include a lack of enabling regulation to permit conditional rezonings under the *Planning Act*.
- ***The City should fully use the tools that are available.*** Many aspects of green building, including directing development to transit-friendly locations, site planning, and orientation and exterior design of buildings, fall squarely within the City's responsibilities under the *Planning Act*. Many of these powers are purely regulatory and allow the City, either directly through by-law or indirectly through the planning authority delegated to staff, to require more sustainable planning. Other provisions allow for negotiation with developers, in which certain sustainable design features may be provided in exchange for additional height and density or reduced permit and development charge fees – an appropriate and effective green building program should consider all the available tools.
- ***Broader enabling legislation would allow the City to more effectively promote green building.*** The Province has a role to play and should be consistently engaged in the green building program in the long term. The City could have greater influence over the built environment with some changes to Provincial enabling legislation and regulation. One example would be to pass a regulation under Section 34(16) of the *Planning Act*, which would allow municipalities to make conditional rezoning agreements. Another would be amendments to the *Planning Act* and *Building Code Act* to allow the City to require building performance above and beyond the minimum established by the building code. Yet another would be regulatory changes, such as those proposed by the David Suzuki Foundation, which would allow the City to use Local Improvement Charge mechanisms to fund energy efficiency retrofits.²⁸

5. Legal and Regulatory Tools

The following is a discussion of some of the major enabling legislation available to the City to influence and green the built environment.

5.1 Building Code, *Building Code Act* and building permits

The most obvious regulatory tool to secure green buildings would be some set of standards (higher energy- and water efficiency, improved indoor air quality, green roofs etc.) that would be conditions for obtaining a building permit.

However, as mentioned, at this time Provincial law *does not allow* municipalities to require building performance standards above the minimum set out in the Ontario Building Code. This fact removes a wide range of strategies from consideration, including some that have been implemented in jurisdictions outside of Ontario. The Ontario Building Code will include higher energy-efficiency standards starting in 2012, and further increases are contemplated to come into effect, in subsequent years.

²⁸ Persram, Sonja. "Property Assessed Payments for Energy Retrofits." David Suzuki Foundation and Sustainable Alternatives Consulting Inc. March 2011.

At the same time, green building measures go beyond the building itself to encompass the entire site; and there are numerous tools available to require higher environmental performance at the site scale.

5.2 Official Plan and Site Plan Control By-law

The *Planning Act*, Section 41, allows a municipality to designate all or part of its territory as a site plan control area. In Ottawa's case, the entire area within the city's boundaries comprises the defined Site Plan Control area.²⁹ Within this area, the City may require developers to provide certain plan elements or facilities as a condition of approval. Site plan control is generally administered by Development Review staff, to whom the task of development approvals has been delegated by Council.³⁰ Site plan control is the most common kind of development application in Ottawa, accounting for between one-third and one-half of all applications in any given year.

Under S.41(7), a property owner may be required to "*provide to the satisfaction of and at no expense to the municipality any or all of the following:*"

- Off-street vehicular loading and parking facilities, either covered or uncovered, access driveways, including driveways for emergency vehicles, and the surfacing of such areas and driveways;
- Walkways and walkway ramps, including the surfacing thereof, and all other means of pedestrian access;
- Facilities for the lighting, including floodlighting, of the land or of any buildings or structures thereon;
- Walls, fences, hedges, trees, shrubs or other groundcover or facilities for the landscaping of the lands or the protection of adjoining lands;
- Vaults, central storage and collection areas and other facilities and enclosures for the storage of garbage and other waste material;
- Easements conveyed to the municipality for the construction, maintenance or improvement of watercourses, ditches, land drainage works, sanitary sewage facilities and other public utilities of the municipality or local board thereof on the land;
- Grading or alteration in elevation or contour of the land and provision for the disposal of storm, surface and waste water from the land and from any buildings or structures thereon."

The Act goes on to specifically exclude certain matters from site plan control, including "*interior design, the layout of interior areas, and the manner and standards of construction.*"

Site plan control can be an effective tool for greening development at the site level and, to a lesser extent, at the building level. Changes to the *Planning Act* in 2006 through Bill 51 expanded a municipality's ability to use site plan control to secure sustainable design features, not only at the site level, but in certain aspects of the building itself. S.41(4)(2) enables the municipality to tie development approvals to

²⁹ There are, however, a number of small-scale land uses (such as single-unit and duplex dwellings) that are exempt from the site plan control process.

³⁰ In certain cases delegated authority may be withdrawn by the Ward Councillor and transferred to the Planning Committee. This is typically only done on very controversial planning applications.

*"...drawings showing plan, elevation and cross-section views for each building to be erected...which drawings are sufficient to display (among other things) **matters relating to exterior design**, including without limitation the character, scale, appearance and design features of buildings, **and their sustainable design**, but only to the extent that it is a matter of exterior design, if an official plan and a by-law passed under subsection (2) that both contain provisions relating to such matters are in effect in the municipality."* (emphasis added.)

Decisions on site plan approval are made with regard for the will of Council as expressed by the City's Official Plan (OP) Ottawa's Official Plan already supports the regular use of some of these provisions to secure certain green development practices through site plan control, notably pedestrian connectivity, stormwater control and some control of outdoor lighting. The OP also includes more general support for other sustainable design features, including:

- permeable paving surfaces to control stormwater runoff quality and quantity;
- passive solar building orientation (where feasible);
- advanced water conservation and efficiency measures; and,
- measures to reduce the urban heat island effect, including green roofs.

More recent experience in other cities suggests that these provisions could be built upon further. The City of Toronto's Official Plan includes explicit directions that such sustainable design features may be secured specifically through site plan control. It also includes, as matters for site plan control,

- *"energy efficient exterior cladding and window treatments... to improve energy efficiency and reduce greenhouse gases;"*
- *"energy efficient... outdoor lighting;"*
- *"bio-retention swales;" and*
- *"bird friendly glass treatment to ensure that risk for migratory bird collisions is minimized."*

5.3 Conditional zoning under the *Planning Act*, Section 34(16)

Property owners often approach Council to have the zoning on their property changed, generally to enable a higher and more profitable use. If Council were to require green building features as a condition to granting the rezoning, this could be viewed as an incentive.

Amendments to the *Planning Act* in 2006 enable Council, when granting a rezoning application, to impose conditions on the rezoning and to secure those conditions through an agreement to be registered on title. From the *Planning Act*, S.34:

" (16) If the official plan in effect in a municipality contains policies relating to zoning with conditions, the council of the municipality may, in a by-law passed under this section, permit a use of land or the erection, location or use of buildings or structures and impose one or more prescribed conditions on the use, erection or location.

(16.2) When a prescribed condition is imposed under subsection (16),

- (a) the municipality may require an owner of land to which the by-law applies to enter into an agreement with the municipality relating to the condition;*
- (b) the agreement may be registered against the land to which it applies; and*

(c) *the municipality may enforce the agreement against the owner and, subject to the Registry Act and the Land Titles Act, any and all subsequent owners of the land.*"

As of October 2011, the powers under 34(16) are not yet available to the City, as the necessary Provincial regulation that would prescribe the range of conditions has not been adopted. At this time it is not known if or when the regulation will be passed, nor whether matters related to environmental performance and green building will be among the prescribed conditions.

5.4 Section 37 agreements

The *Planning Act*, Section 37, allows municipalities *"to authorize increases in the height and density of development otherwise permitted by the by-law that will be permitted in return for the provision of such facilities, services or matters as are set out in the by-law."* The increased height or density is enabled by passing an amendment to the Zoning By-law; the facilities, services or matters must be laid out in the Official Plan.

The City of Ottawa Official Plan, section 5.2.11(8)(j) identifies *"energy conservation and environmental performance measures"* as community benefits appropriate for consideration under Section 37. Thus the basic legislative and policy framework is in place to allow the City to negotiate increases in development potential in exchange for the greening of the proposed building.

The City of Ottawa's draft guidelines for the implementation of Section 37 lay out several principles, of which the most relevant to green buildings are:

- *"Amenities should benefit the area where the development is located..."*
- *"There should be a reasonable planning relationship between the secured community benefits and the increase in height and/or density in the contributing development. At a minimum, this planning relationship includes an appropriate geographic relationship and the addressing of planning issues associated with the development...."*

These principles imply a number of opportunities and limitations for the use of Section 37 to promote green building.

- Requiring a project to achieve LEED or some other third-party certification per se, as a condition for increased height/density, is *not appropriate* under the guidelines. There are many paths to certification involving a wide variety and combinations of environmental improvements. While some of the improvements may be appropriate under Section 37 agreements, others may not, and so it is impossible to evaluate e.g. LEED certification in and of itself against the City's guiding principles.
- Measures to improve indoor air quality, daylighting and other aspects of indoor environmental quality are not appropriate matters for Section 37 agreements, as these benefits would be enjoyed exclusively by the building's occupants.
- Measures to reduce the urban heat island effect may be appropriate. These include green, solar and/or cool roofs and walls; high-SRI (Solar Reflectance Index) paving materials; and shading of parking areas. By reducing the heat island effect around the development, air conditioning demand is reduced and comfort increased for the surrounding properties.
- Green roofs could be particularly appropriate if these are designed to be accessible to the general public as a public amenity. (For instance, the rooftop garden area atop Rideau Centre.)

- Measures to reduce single-occupant automobile use and promote walking, cycling, transit and carpooling are clearly appropriate under Section 37. One of the most visible and undesirable impacts of any given large development--at least in terms of perception by the neighbours--is the increase in vehicular traffic. Since the planning relationship between increased height/ density and increased traffic is widely accepted there is a strong case to be made that such measures constitute community benefits and are appropriate for Section 37 agreements.

5.5 Community Improvement Plans

Under the *Planning Act* Part IV, a municipality may pass a Community Improvement Plan (CIP) for a designated area. Within such an area,

Council *"may make grants or loans... to registered owners, assessed owners and tenants of lands and buildings within the community improvement project area...to pay for the whole or any part of the eligible costs of the community improvement plan."* (*Planning Act* s. 28(7)).

Eligible costs under a CIP *"may include costs related to environmental site assessment, environmental remediation, development, redevelopment, construction and reconstruction of lands and buildings for rehabilitation purposes or for the provision of energy efficient uses, buildings, structures, works, improvements or facilities."* (*Planning Act* s. 28(7.1))

Loans made under a CIP *"may be added by the clerk of the municipality to the collector's roll and collected in like manner as municipal taxes over a period fixed by the council, and such amount and interest shall, until payment thereof, be a lien or charge upon the land in respect of which the loan has been made."* (*Planning Act* s.32(2))

The Community Improvement Plan mechanism is used by municipalities such as Caledon and Kitchener to establish grant programs to fund, among other things, green construction or retrofits. The City of Ottawa already uses this tool through its Brownfields Redevelopment Strategy, which provides grants and development-charge reductions to persons redeveloping contaminated sites. The CIP mechanism also allows loans to be made and tied to properties (as opposed to the owners) and made repayable through a special levy on the property tax bill, reducing the risk of default.

6. Proposed 2012-2013 Green Building Promotion Program

Based on the work to date, a number of activities are proposed for the remaining term of Council to continue to develop and evolve the Green Building Promotion Program. These activities provide both specific actions, and further assessment of medium-long term options.

6.1 Develop and implement a Green Express Lane providing improved development approvals service to projects that incorporate green building techniques

Staff's investigation into best practices in municipal green building programs paid particular attention to finding any instances where Ontario municipalities had instituted a fast-tracked development approvals processes for green buildings. However, despite widespread interest in the subject among municipal governments, no instance could be found of a city or town that had actually implemented such a process. It is therefore necessary for the City to develop its own Green Express Lane process.

Planning and Growth Management (PGM) design an improved service procedure aimed at green development. In recognition of the fact that major delays in green development approvals

can be attributed to a lack of familiarity with new green techniques, the initial stages of the Green Express Lane will rely heavily on staff training, improved communication, and getting the right information as early as possible in the development approvals process.

Proposed features of the Ottawa Green Express Lane include:

- **Completing staff accreditation in the LEED green rating system.** As previously mentioned, 22 staff (including thirteen development review planners, eight infrastructure approvals engineers and one building inspector) attended the LEED Green Associate (GA) course in June 2011. By mid-2012 these participants will complete the LEED GA exam and obtain their LEED credential. Equipped with the necessary skills and expertise to deal with innovative green projects, these trained planners and engineers will form the backbone of the Green Express Lane. When presented with an unusual development feature such as a bioswale or graywater filtering pond, the Green Express Lane staff will be familiar enough with the proposed technology, or will be able to identify issues and efficiently investigate. This will help to avoid delays due to a lack of familiarity with green development practices. (It should be noted that while the LEED Green Associate course put some of its focus on the LEED system, it also has broader relevance to the principles and techniques of green building generally.)
- **Credential maintenance training and continued training in emerging green building techniques.** Like most professional designations, the LEED Green Associate credential requires ongoing credential maintenance through continuous learning. To this end, the Canada Green Building Council (CaGBC) offers a wide range of professional development courses. Following the model used for the initial LEED training course, it is proposed to organize group training on selected green building topics through the CaGBC and other providers as appropriate. This approach will allow the Green Express Lane staff to maintain their credentials, as well as continually improving their knowledge and expertise in the latest green development principles and techniques. (The Green Development Checklist, scheduled to be piloted through 2012, will help to identify which green development features are most common and whether more in-depth training is needed.)
- **Extended LEED Green Associate training to ensure full coverage in all geographic approvals areas.** The first round of LEED training included at least one planner and one engineer from each of the eight development approvals areas. It is proposed to organize a second LEED Green Associate training course to ensure that at least two LEED-qualified planners are on hand in each geographic approvals area. This will help ensure that the Green Express Lane service is not interrupted by staff illness, vacations etc.
- **Promotion and outward visibility for the Green Express Lane.** For the Green Express Lane to work, it is important that it be easy to reach. A web site, accessible from the Development Review page on Ottawa.ca, would provide green developers with the names and direct contact information (phone extension and email) of the Green Express Lane planners for any given approvals area. Developers will then be able to contact the Green Express Lane planner directly for a pre-consultation, avoiding delays and extra steps in the process. Other steps to improved visibility include ensuring that Green Express Lane staff are identified as such on their business cards, including the LEED Green Associate logo.
- **Modified pre-consultation form to identify green projects up-front.** The online pre-application consultation form, currently used for all major development applications, has been modified to include questions on whether the proposed project will be pursuing

certification under a third-party rating system and what green features or techniques are being contemplated. This change will ensure that program managers can assign green development applications to the Green Express Lane planner and engineer in their unit, as well as allowing the planner to do some research on the proposed feature or features in advance of the meeting.

- ***Improved coordination with Building Code Services.*** Where a new and unfamiliar building component is proposed as part of a development, it sometimes presents issues from a building code compliance standpoint. When this happens, it is much better for both the City and the applicant to know and address it sooner rather than later. Green Express Lane planners will call on Building Permit Officials as early as possible in the process (where appropriate, bringing them into the pre-application consultation meeting) to get their views on the proposed materials. As well, Building Permit Officials will be included in the internal circulation of Green Express Lane development applications. Applicants may be given contact information or directed to meet with Building Permit Officials to understand the process for getting the proposed materials or fixtures approved. By taking this action sooner rather than later, the process of resolving these issues can happen concurrently with the site plan approval process, avoiding unnecessary last-minute snags that would otherwise emerge only at the building permit stage.
- ***Trained staff resources are available to developers and builders seeking advice about green features, even if they are not pursuing a third-party certification such as LEED or Green Globes.*** The Green Express Lane is aimed at ensuring that qualified staff are on hand to deal with developments incorporating the many and varied green techniques common to third-party rating systems. However, it should be made clear that Green Express Lane service is available to help developers and builders whose projects incorporate one or more innovative green building techniques, even if they are not pursuing certification.

6.2 Capacity building and information resources

Staff training on utility energy conservation incentive programs

Hydro-Ottawa and Enbridge offer significant financial incentives for increased energy efficiency in both new and existing buildings. Some of the more substantial incentives include:

Enbridge

- Design Assistance Program for commercial, industrial and multi-residential buildings, which provides up to \$3,000 for design work to improve a building's energy and environmental performance;
- New Building Construction Program, which offers up to \$30,000 in rebates for energy-efficient construction;
- Custom Incentive Program for large commercial buildings, which includes free technical advice and up to \$100,000 in rebates.

Hydro-Ottawa

- High-Performance New Construction Program for industrial, commercial and institutional buildings, which offers up to \$10,000 for modelling energy performance plus up to \$400 per kilowatt of peak electricity demand reduced through energy-efficient design;
- New Home Construction Program including incentives of \$500 for a new house that achieves an Energuide 83 or 84 rating or \$1000 for an Energuide 85 rating;

- Demand Response programs that make significant payments to building owners who agree to curtail their electricity use at peak times.

By bringing these programs to a developer's attention during the preconsultation stage, and putting them in touch with the right people at the relevant utility, development review planners can ensure that every existing opportunity to reduce environmental impact is considered at an early stage.

Extend LEED Green Associate training opportunities to other departments

The LEED Green Associate courses will be re-offered in 2012 to further increase staff capacity, ensuring that at least two development review planners in each geographic approvals area have the LEED GA credential. Since there are substantial cost savings from training large numbers of participants at a time, this provides an opportunity to extend the training to other departments involved in green building development and operation (such as Design and Construction.)

Explore feasibility and cost/benefit of “LEED Sustainable Sites” information service

Certain credits under the LEED rating system are tied specifically to the location of a development. Once the site is identified, it is possible to determine with some confidence whether a project on that site would qualify for certain LEED credits and points. As it happens, some of the LEED credits for which this is possible are worth comparatively high point values:

- Site Selection (1 point) - avoid developing on sites that meet certain criteria e.g. prime farmland, on a flood plain, ecologically sensitive etc.;
- Development Density and Community Connectivity (3 or 5 points) - depends on distance from services, mix of land uses and density of development in the surrounding neighbourhood;
- Public Transit Access (3 or 6 points) - locating within a certain distance of a specified number of bus stops or rail stations;
- Brownfields (1 point) - locating a development on a property identified as a brownfield.

In principle, it is possible to determine whether a site qualifies for up to 13 points under LEED--one-third of the forty points required for LEED certification--simply on the basis of its location. Being able to convey this information to a prospective developer could confirm that his/her site is well on the way to LEED certification, even before any site planning or design decisions have been made. This information may encourage a developer to take the project to LEED certification. For a developer planning to do a LEED project, providing this information could greatly reduce the cost and effort currently required to document these LEED points.

In practice, the City has some but not all of the required data on hand. GIS data on public transit routes and site selection are readily available, as is the basic data to determine some but not all aspects of development density and community connectivity as defined by LEED. The main gap in the data appears to be building gross square footage (GFA). Some early explorations revealed that there is no single agency that consistently collects and maintains data on indoor floor area.

As a result, estimating the density of a community (expressed for LEED's purposes in total building square footage per unit land area) is problematic. It may be possible to integrate a better database of building square footage information from a variety of sources, and to develop a statistical model to estimate values for those properties with no available GFA data.

Given the utility of such a database for other planning purposes above and beyond the green building program, it is recommended that the City examine the work, costs and benefits involved in developing and operating such a service. The assessment would be funded from the existing Green Buildings capital account.

6.3 Explore financial incentives for green building

Explore financial incentives for green construction

Several municipalities in Ontario offer financial incentives to developers of green buildings. These range from development charge reductions of between 5% and 45%, to outright grants of up to \$5,000 for LEED homes, to grants of up to \$15,000 for energy efficiency retrofits for industrial or commercial buildings.

Incentives should bear a reasonable relationship to the benefit realized (or the costs avoided) by the public, as a result of someone building green. An ideal avoided-externality-cost approach would estimate the life-cycle costs, expressed as a dollar value, avoided by society through green construction (air pollution, infrastructure maintenance, expanding landfills etc.). The green developer would then be offered a grant based on these avoided costs; the avoided external cost becomes an internal financial benefit realized by the developer. In principle, it's an economically rational approach that produces a win-win for both society and the private sector.

Cost-benefit analysis is not an exact science. Many benefits and costs cannot readily be quantified. So while a cost-benefit analysis can shed some light on the range of possible values, the level of uncertainty means we should not expect a definitive "yes or no" answer to emerge from such an analysis.

Another component to consider with regards to third-party rating systems, are the "soft" overhead costs of achieving certification. In the case of LEED, these are costs such as commissioning, application fees, and producing and submitting documentation to the Canada Green Building Council.

Based on the above considerations and review of current municipal programs, financial incentives could be approached in several ways including simple reductions in fees, contributions to soft costs such as green building rating and certification, or complete reliance on the market to support green building rather than public contributions.

To make a fully informed decision, staff is suggesting that it is necessary to complete a focussed review of incentive options with a view to identifying those for which the cost/benefits suggest there may be a business case in the Ottawa context. Such a review would also need to assess the general feasibility of incentive any potential options for the City.

This approach would involve engaging a consultant to research and estimate the avoided external costs of building green and feasibility of incentive options. Several approaches would be assessed and compared within the context of public benefits and reduced infrastructure costs for the City. The resulting analysis would form the basis for considering any financial incentive program to encourage one or more specific green building measures.

This study would establish the business case (or lack thereof) on which financial assistance by the City could be considered in 2013 or later. This research could be undertaken by a consultant hired out of the existing Green Building Promotion capital budget

Potential application of incentives to existing buildings should be included in assessment of options discussed above. The April 2009 report noted that "*While new construction (the focus of this initiative) is important, the importance of addressing the existing building stock which represents the vast majority of buildings that will continue to provide housing or ICI use for the next 30 years*" should not be overlooked. For example, there has been ongoing interest in the community for funding programs to green existing buildings. The most recent proposal came in 2011 and is known variously as PAPER or PAYS³¹. The central feature of the proposal is the use of a Local Improvement Charge (LIC) under the Municipal Act to provide up-front financing at low interest rates to homeowners for energy retrofits.

The improvement costs would be associated with the property and repaid as a separate assessment on the property tax bill. If the property were sold, the new owner would assume the payments as well as the benefit of cost savings from reduced energy use.

The PAPER concept is not new to City staff. A 2007 survey by the City described a similar program in which property-attached low-interest loans, to be paid back on the property tax bill, would be made available for home energy retrofits. The survey found significant support among homeowners for such a program.

An initial problem with a Local Improvement Charge proposal is that the Municipal Act and regulations do not permit LIC's to be used to fund energy efficiency improvements in the manner described.

Recently, the Association of Municipalities of Ontario (AMO) submitted a letter to the Ministry of Municipal Affairs and Housing, supporting changes to the Municipal Act that would allow LIC's to be used in this manner. The Province has just responded by posting proposed changes in the legislation that would allow for broader application of LIC's so if these changes are made, this problem may be resolved. Conversely, a PAPER-like program could be instituted through a Community Improvement Plan under the *Planning Act*.

However, several risks must be fully addressed before a PAPER program can be considered. These include³²:

1. **Staff time and resources.** Any program to provide funding to owners and manage repayment will require additional staff time and resources. While there is potential for cost recovery once a program is established and a critical mass of participants involved, there would be considerable staff time and resources required to design and establish a program in the initial stages, as well as to administer a large number of individual loans over their lifetimes.
2. **Rate of uptake.** Previous research undertaken by the City has identified a high proportion of homeowners interested in taking advantage of funding under a PAPER-like scheme. 45% of homeowners surveyed that they would be willing to borrow money against their house to make energy efficiency improvements, if the savings for those improvements were enough to pay for the renovation. However, in reality expressing support or interest does not necessarily translate to actual participation, and thus the rate of uptake could be considerably lower.

³¹ Draft versions of the proposal have also used the term Pay As You Save or PAYS. Some documents on the subject, notably a submission from Ecology Ottawa dated January 5th, 2011, refer to PAYS. In the context of discussions with the City, the two terms have been used interchangeably; however, for the purposes of this document we will use PAPER.

³² This is not intended as an exhaustive list of concerns. A number of details, including the effect of certain types of bonds on a municipality's debt ceiling, or of local improvement charges on a homeowner's credit limit, are discussed in the two DSF papers.

3. **Scale of the project.** With about 250,000 single-, semi- and row houses in Ottawa, even a 5% uptake rate would result in retrofitting over 12,000 houses. This in turn raises the question of how much money the City is willing to borrow, manage and (possibly) have tied up in the program. The capacity of the local labour and contracting market to meet the resulting demand may also be an issue needing exploration.
4. **Risk to the City.** Although one of PAPER's points is the ability to tie loans to the property itself, minimizing the risk of an outright loss due to defaulted payments, default is not the only risk. For example, an owner might obtain a PAPER loan and begin renovations, only to find that obstacles or hazards (such as asbestos in older houses, or leaky oil tanks) lead to abandonment of half-completed renovations.
5. **Effect on the behaviour of the private mortgage market.** An important feature of the PAPER proposal is the priority lien status of the energy efficiency loan. The effect of introducing an obligation ahead of existing claims (most notably the mortgage) needs to be better understood.
6. **Appetite of the private market for buying debt issued under PAPER.** Part of the PAPER scheme involves selling obligations incurred under the program into the private market to repopulate a revolving loan fund. Any plan that proposes to use the City's borrowing power to provide low-interest loans to owners needs to be evaluated on the basis of current and expected market conditions.
7. **Relationship to existing programs.** A variety of incentives and subsidy programs for home energy retrofits are already offered by the provincial government, utility companies and other organizations. A greater understanding of how PAPER would complement, reinforce or undermine existing programs needs to be better understood if the City is to ensure that the program achieves its goals efficiently.

Some of these risks and obstacles to implementation could ultimately make PAPER unworkable in Ottawa. Conversely, if these risks could be overcome, the benefits in terms of improved building energy efficiency in Ottawa could be significant. The PAPER concept should be considered within the context of other financial mechanisms and approaches as noted above.

6.4 Ottawa Green Roof Program

There has been considerable interest in Ottawa in establishing a green roof program similar to Toronto's program. Toronto's program involves an educational component, a grant program and a mandatory component. Substantially the same approach could be taken in Ottawa, including a requirement for green roofs to be incorporated in certain developments through site plan control. (Ottawa differs somewhat from Toronto, as Toronto's unique enabling legislation allows it to pass a Green Roof By-law. However, changes to the *Planning Act* in 2006 now provide for site plan control applications to deal with "*matters relating to exterior design, including without limitation... the design features of buildings, and their sustainable design, but only to the extent that it is a matter of exterior design.*"³³ Consultation with the Legal Department confirms that this provision allows Ottawa to require a development to include a green roof.

It is proposed to begin work towards a program in Ottawa. The initial stages would consist of:

- a) an education and promotion program aimed at raising community awareness and building capacity in green roof techniques, technologies and permit requirements; and

³³ Planning Act, S.41(4)(2)

- b) formation of a working group with representatives from the building and development industry, technical experts and other stakeholders.

Research, education and promotion (2012-2013)

The first stage would take place in 2012 and 2013, and consist of education, promotion and consultation on green roofs:

- specific research on the internal (private) and external (social) costs and benefits of green roofs;
- review of engineering standards to ensure that green roofs enhance site performance and do not contradict or become substitutes for good engineering;
- training for City infrastructure project managers on the technical aspects of green roofs with respect to e.g. storm water runoff;
- training for City building officials on construction standards for green roofs;
- information on the City's web site on standards and permit requirements for green roofs; and
- a request to the Federal government to consider establishing a green roof requirement in their criteria for Federal office space. As a major tenant in Ottawa, the Federal government is well-positioned to transform the local real estate market by asking for green roofs in its leased facilities.

Green Roof Working Group (2012 -Q3 2013)

The purpose of the working group is to establish the framework for a set of Official Plan policies that would call for mandatory green roofs in certain developments, as well as a possible grant program for green roofs. Key questions for the working group include:

- In what kinds of developments, and under what circumstances, would it be appropriate to require green roofs as a condition of site plan approval?
- Should consideration be given to requiring accessible green roofs (i.e. those that can be used by occupants and/or the general public as outdoor amenity space) versus inaccessible roofs (i.e. those not designed to be regularly accessed, but that simply consist of a planted surface to reduce environmental impact and building cooling needs?)
- Assuming that funds could be made available for a grant program, what would the most effective and efficient grant program look like? (E.g. amount of the grant relative to costs; a one-time grant aimed at offsetting the capital cost of a green roof, versus an ongoing multi-year grant intended to offset maintenance requirements?)
- Such other questions relevant to development of a green roof OP policy and possible grant program as may emerge through the activities of the working group.

The working group would report to Council in 2013.

6.5 Ottawa Green Development Standard (OGS)

Developing an Ottawa Green Standard, loosely modelled on the Toronto Green (Development) Standard would be a project to be undertaken in the long term. However, some of the policy elements could be undertaken during the review of the Official Plan scheduled to begin in 2012. Other elements would be completed later, as time and resources permit. Eventually, the made-

in-Ottawa OGS would replace LEED and Green Globes as the basis for entry into the Green Express Lane.

An Ottawa Green Standard could include:

- An Ottawa Green Standard (OGS) in a stand-alone document (similar to the existing Design Guidelines documents already established by Council.) The OGS would describe a two-tiered system:
 - OGS Tier One would consist of elements or standards that either (a) are required by the Zoning By-law; (b) may be required as a condition of site plan approval or subdivision; and/or (c) shall be required in order for a development to qualify for incentives offered under Tier Two.
 - OGS Tier Two would consist of elements or levels of performance over and above those in Tier One, including elements that may be beyond the City's ability to regulate. Compliance with Tier Two standards would entitle a development to a financial incentive in the form of development charge reductions, tax increment grants or other means.
- 2. An amendment to the Official Plan that would specifically reference the Ottawa Green Standard, ensuring that all components of OGS Tier One as "sustainable design elements" within the meaning of the *Planning Act* and making these matters for consideration during site plan control, subdivision and other planning applications. (These policies would build and elaborate on policies relating to sustainable design enacted through OPA 76 and approved by the Ontario Municipal Board in August 2011, and could be undertaken as part of the Official Plan Review starting in 2012.)
- An amendment to the Site Plan Control By-law that would provide for matters relating to exterior design and sustainable design features. (Such an amendment is provided for in OPA#76.)
- An amendment to the Zoning By-law that would bring relevant development standards such as parking ratios into line with the intent of the Ottawa Green Standard.
- A financial incentive program in the form of a development charge reduction for projects that meet the requirements of both Tier One and Tier Two of the OGS.
- Consultations and public information sessions to make the public and the development industry aware of the proposed changes and to gather feedback.

It should be noted that if financial incentives are not viewed as appropriate or feasible through discussions emanating from Activity 3, the OGS could be focussed on just the Tier One standards—essentially a stand-alone Ottawa Green Standard document and supporting Official Plan amendments establishing a range of sustainable design features as matters for site plan control—in order to make the best use of new tools under the *Planning Act*.

6.6 Pursue opportunities to green the existing building stock

This report has identified a number of specific measures that may be implemented to promote awareness, facilitate, provide incentives, remove obstacles and/or require greener construction and development. The bulk of these measures are oriented towards new construction and ensuring that new buildings are as green as is practical.

However, the greening of existing buildings warrants attention as well. Most of the buildings that will exist for the next several decades have already been constructed, and any successful program to reduce the environmental impact of the built environment will have to address these existing structures.

The problem is complicated by the human element—much of a building's environmental footprint can be attributed to the behaviour of its occupants and the day-to-day decisions made by its owners. Challenges to conservation include:

- *Revenge effects*, where installing more efficient hardware prompts users to use it more. For instance, replacing incandescent light bulbs with more efficient compact-fluorescent bulbs sometimes leads to occupants leaving the lights on overnight, because they feel the more efficient bulbs don't use that much energy. In such a case the net effect can be to increase the total amount of power being used.
- *Split incentives*, where the party who pays for a resource or service is not the one using it or making the decision to conserve it. One example would be in an apartment building, where the owner pays the water bills, leaving the residents no incentive to conserve water or install low-flow showerheads.
- *Sunk costs*, where the up-front cost of a less-efficient fixture has already been incurred, leaving the owner no economic incentive to switch to a more efficient fixture. Replacing an inefficient furnace with several years' worth of service life remaining may not be cost-effective to a building owner, even when the energy savings incurred by the more efficient unit are counted.

Staff propose to focus greater attention on research and policy proposals aimed at improving the environmental performance of existing buildings. Some work has begun in this area with the City's participation in Natural Resources Canada's SMORES (Systemwide Methodology for Optimizing Renewable Energy Systems) project, which is partly aimed at identifying the opportunities to retrofit and to encourage conservation behaviour in an existing urban neighbourhood. Staff will continue to work on this project in the coming year, with the intent of strategically implementing an appropriate initiative. This will begin with a stakeholder workshop being organized for Fall 2012 in partnership with the Existing Buildings Committee of the Ottawa Chapter of the Canada Green Building Council

Other possibilities include:

- Examining the potential of third-party Operations and Maintenance systems such as LEED EBOM and BOMA BEST to improve the performance of the building stock, and identifying any incentives or barriers to uptake that may exist in the real estate sector;
- Conducting research on factors motivating individual behaviour in building operation and maintenance;
- Coordinating programs to facilitate education and capacity building in the building management field, perhaps by arranging for courses in the Certified Energy Manager to be held in Ottawa for Ottawa-based building managers.

Appendix A: Summary of 2012 Green Building Promotion Program Activities

Activity 1: Ottawa Green Express Lane

Design and implement an improved service procedure for green developments, typically at the site plan approval stage, and primarily through improved staff training and information flow, including:

- Completing development review staff's LEED Green Associate accreditation begun in 2011;
- Providing ongoing credential maintenance training and continued training in emerging green building techniques to development review staff;
- Extending LEED Green Associate training to additional development review staff to ensure full coverage in all geographic approvals areas;
- Modifying the online pre-application consultation form to identify green projects up-front (ensuring quick delegation to LEED-trained development review staff);
- Promotion and outward visibility for the Green Express Lane, including a web page offering direct contact information to LEED-trained staff in each geographic approvals area; and,
- Improving coordination with Building Code Services to ensure that any unusual building techniques can be identified as early as possible in the review process

Activity 2: Provide staff training and information resources

A.2.1 Staff training on utility energy conservation incentive programs

Undertake staff training to inform Development Review planners and Building Officials on energy efficiency programs offered by Enbridge and Hydro-Ottawa. (Program development and delivery costs to be funded from the existing Green Buildings capital account.)

A.2.2 Extend LEED GA training opportunities to other departments

Where LEED Green associate training courses are to be re-offered to maintain and increase staff capacity in development review, take advantage of group discounts to include staff from other departments involved in green building development and operation (e.g. Construction and Design.)

A.2.3 Explore feasibility and cost/benefit of "LEED Sustainable Sites" information service

Explore development of a City information service that would advise prospective developers whether their proposed site would meet the criteria for Sustainable Sites credits under LEED-NC 2009 (Site Selection, Development Density/Community Connectivity, Public Transit Access and Brownfields.)

Activity 3: Explore financial incentives for green building

A.3.1 Explore financial incentives for new green construction

Engage a consultant to undertake a sustainable cost-benefit and feasibility analysis [i.e. one that counts the benefits to society of reduced pollution, avoided cost to public utilities and governments, and other externalities] of various green building features. Results of the analysis will establish the business case (or lack thereof, as the case may be) for a future financial

assistance program to green buildings. Consultant costs to be paid out of the existing Green Building capital account.

This work would include a feasibility assessment of a PAPER (Property Assessed Payments for Energy Retrofits) program to assess the need and viability of providing financing for energy retrofits under the LIC, Community Improvement Plan, or other mechanism..

Activity 4: Ottawa Green Roof Program

A.4.1 Research, education and promotion (2012-2013)

A research, education and promotion program aimed at raising community awareness and building capacity in green roof techniques, technologies and permit requirements, including:

- specific research on the internal (private) and external (social) costs and benefits of green roofs;
- review of engineering standards to ensure that green roofs enhance site performance and do not contradict or become substitutes for good engineering;
- training for City infrastructure project managers on the technical aspects of green roofs with respect to e.g. storm water runoff;
- training for City building officials on construction standards for green roofs;
- information on the City's web site on standards and permit requirements for green roofs; and
- a request to the Federal government to consider establishing a green roof requirement in their criteria for Federal office space. As a major tenant in Ottawa, the Federal government is well-positioned to transform the local real estate market by asking for green roofs in its leased facilities.

A.4.2 Green Roof Working Group (2012 -Q3 2012)

Form a working group with representatives from the building and development industry, community groups and other stakeholders. The purpose of the working group is to establish the framework for a set of Official Plan policies that would call for mandatory green roofs in certain developments, as well as a possible grant program for green roofs. The working group would report to Council no later than Q3 2013.

Activity 5: Ottawa Green Development Standard

Develop and implement an Ottawa Green Standard sometime after 2012, as time and resources become available. Core features of the OGS to include:

- Conceptually modelled on Toronto's Green Standard, i.e. a two-tier system with a mandatory component (Tier One) and a financial incentive-based component (Tier Two.)
- Mandatory elements to be supported by specific policies in the Official Plan.
- Incentives to consist of development charge reductions, subject to further approval by Council. (If resources for financial incentives are unavailable, the OGS would consist simply of the mandatory Tier One standards.)
- Official Plan and Site Plan Control By-law amendments to support sustainable design features at the site plan control and subdivision stage; OP amendments may be undertaken as part of the upcoming Official Plan review.

- Stand-alone Green Development Standard document that lays out the requirements for compliance, all in one document to make it easy to find, look up and communicate to developers.
- Where practical, OGS would be compatible with or exceed LEED 2009 standards.

Activity 6: Pursue opportunities to green the existing building stock

Carry out research and develop policy proposals for the next iteration of the Green Building Promotion Program, with a particular focus on improving the environmental performance of existing buildings.

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