

BEST PRACTICES FOR NEW COMMUNITIES DISCUSSION PAPER

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Foreword

These best practices are intended to inform a new generation of sustainable community planning for York Region.

The Purpose of the Report is to:

- ❖ **stimulate discussion on the development of the potential New Communities;**
- ❖ **discuss how the Region's new communities could be different with respect to liveability, energy, waste, transportation, health, live/work relationship;**
- ❖ **influence a new generation of communities which are people oriented; providing opportunities to live and work, a variety of housing choices and transportation choices, and an attractive urban form;**
- ❖ **elevate the understanding of sustainable community features;**
- ❖ **set a new standard of integrating economy, environment and community with a focus on quality of life;**
- ❖ **provide a basis for future new community criteria;**
- ❖ **apply sustainability lens to new communities.**

According to the Provincial forecasts contained in the Places to Grow Plan, the Region is expected to have 1.5 million residents, 800,000 jobs, and approximately 500,000 households by 2031. To accompany these forecasts, the Places to Grow Plan and the Greenbelt Plan have established parameters on where and how this growth will be distributed. Specifically, the parameters outlined in the Places to Grow Plan include:

- Of the total new household units forecasted for the Region by 2031, a minimum of 85,000 new household units or 40% are to locate in existing developed areas.
- The remaining 60% or approximately 140,000 new units are expected to locate in new development areas including the Region's whitebelt areas. Whitebelt areas refer to the Region's remaining undesignated greenfield areas outside the boundary of the Greenbelt Plan.
- The designated greenfield areas in the Region be planned to achieve a minimum density target that is not less than 50 residents and jobs combined per hectare.

Towards a Sustainable Region

We understand that the growth in York Region will place significant pressure on our natural, social and economic spheres. The Region has developed the **Sustainability Strategy** in order to provide a framework for smarter, better decision making. The strategy will provide a long-term framework for making smarter decisions about growth management and undertaking municipal responsibilities that better integrate the economy, environment and community. The Sustainability Strategy will be the lens through which all corporate initiatives and new policy initiatives will be examined, and will play a coordinating function of compiling all of the Region's sustainability initiatives under one strategic plan. In this way,



the Region can better evaluate and strengthen our progress in order to fully realize the Region's impact on sustainability planning.

The new "whitebelt" communities of York Region will be guided by the Region's Sustainability Strategy which includes the following action areas:

- *Become a leader in sustainable policy and action in Canada;*
- *Include a triple bottom line assessment in Council Reports on all major decisions;*
- *Integrate land use planning with urban design and infrastructure planning;*
- *Implement high quality urban design, architecture, and place making across the Region;*
- *Require all new housing development to be compact in nature and incorporate a mix and range of housing options;*
- *Promote the Region's Transit-Oriented Development Guidelines to provide opportunities to shape urban form that is transit-supportive, mixed-use and efficient, and provides a sense of place to residents and employees;*
- *Create new communities that prioritize mobility and access so that everyone is entitled to reasonable access to all places, goods and services in the Region. This includes people with physical disabilities, low incomes and the elderly;*
- *Design new communities in the Region's Whitebelt that prioritize the human condition with respect to health, social equity, culture, environment and sense of place;*
- *Continue to investigate innovative and creative strategies to promote intensification and compact development in the Regional Centres and Corridors, including financial and planning tools.*
- *Explore and produce a comprehensive green building strategy in consultation with municipalities that would incorporate ENERGY STAR® and/or LEED™ Standards.*
- *Expand on energy efficiency initiative and pursue other forms of renewable energy (i.e. solar, wind).*
- *Investigate community energy planning techniques and the use of alternative and renewable sources of energy such as building/subdivision orientation, district energy and community-based ground sources heat pump systems, among others.*
- *Update the York Region Affordable Housing Strategy.*
- *Investigate how community gardens can be incorporated into new developments and into the existing urban fabric as a contributor to community health, social interactions and security of the local food supply.*
- *Review the Regional forest cover target of 25% in the context of the updates to the Greening Strategy, Natural Heritage System and Regional Official Plan.*

Updating York Region's Growth Management Strategy

The New Communities Strategy is a component of the Region's Planning for Tomorrow Growth Management Strategy. A New Communities Workshop was held in November 2006, which brought together key regional stakeholders and partners to discuss potential development in the Region's whitebelt with respect to creating new compact communities, ensuring sustainable infrastructure and a completing and linking the natural heritage system.

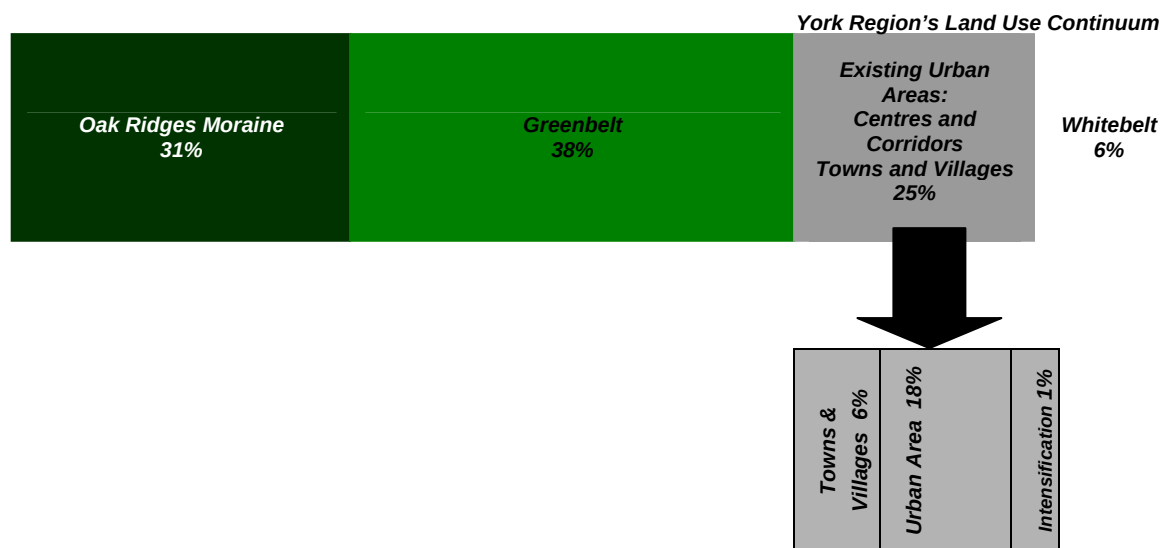
A number of conclusions emerged from the New Communities Workshop as follows:

1. *Take a new and innovative approach to community-building in the whitebelt by integrating sustainable infrastructure, a compact and intensified urban form and the natural heritage system.*
2. *Require that infrastructure planning emphasizes low-impact green crossing, transit, sustainable storm water management and the natural heritage system as permanent "green" infrastructure;*
3. *Address the issues of energy, health, changing demographics, human services, affordability, walk/transit emphasis, green buildings and quality of life in community design.*
4. *Consider legislative changes (i.e. Planning Act, Building Code) as well as promoting awareness and education of the public and stakeholders.*
5. *Find innovative funding methods to address capital costs, up-keep and management.*
6. *Involve stakeholders from all sectors in communication and education which include additional workshops and studies to clarify specific sub-issues and produce recommendations.*

7. Understand that this new approach could avoid expensive and time consuming conflicts.

The development of sustainable new communities is essential to achieve a complete community in which to live, work, and play. The location, composition, density, and design of new development projects can have a significant cumulative impact on the community's ability to sustain a healthy economy and reasonable cost of living; to provide effective and accessible public services; to secure adequate choice and opportunity for present and future generations of residents; to protect our environment, and; to ensure we all continue to enjoy a high quality of life.

Places to Grow, Places to Protect



The last remaining lands within the Region, which equate to approximately 6% of the Region's landbase are the **whitebelt areas**. These areas will be subject to a different policy regime than the Oak Ridges Moraine and Greenbelt areas (which together are 69% of the Region's landbase) and the existing built areas (approximately 25%).

The Provincial Places to Grow Plan requires that these areas accommodate 50 persons and jobs per hectare. The densities in the Region's greenfield communities range from approximately 37 to 60 people per hectare. Most of the recently developed communities are close to or meet the Provincial density targets. There is more to development in the new whitebelt communities than meeting the provincial density targets. Within this small land base, York Region has the opportunity to make significant gains in community development and sustainability.

The new communities of York Region will be designed to be state of the art communities; planned to be liveable, vibrant, walkable, inclusive and diverse communities. These compact and complete communities will be designed with priority on people and liveability offering a variety of housing choices, and transportation choices by providing opportunities for walkability and transit. They will be mixed use, live work communities with high quality, attractive urban design.

Purpose of Best Practices for New Communities

The best practices in this paper are intended to inform how the new communities of York Region will be developed to be healthy and complete. This paper will also be the basis for the development of future criteria for the new communities of York Region.

The Paper includes 42 best practices organized in the following 10 theme areas:

1. Sustainable Community Planning
2. Energy
3. Water Management
4. Green Buildings
5. Creating Liveable, Vibrant Communities
6. Sustainable Transportation
7. Green Space
8. Natural Heritage System
9. Sustainable Community Economics
10. Measuring and Reporting progress

Clearly, we cannot continue to build communities the way we have in the past in the whitebelt areas. The Region has the last opportunity to create “communities of tomorrow” that better integrate the social, ecological and economic features which contribute to community sustainability.

Next Steps

The New Communities Strategy is a component of York Region’s Growth Management Planning For Tomorrow Strategy. Following the release of the Best Practice paper, York Region will be consulting with local municipal partners, the development industry and Regional stakeholders on best practices and the elements for Regional consideration. York Region will be hosting a New Communities Symposium and Charrette and gathering further input on how to proceed with the creation of criteria for new communities.

Currently, there are 18 policies within section 5.2.7 of the Regional Official Plan which inform how communities in the Region are developed. With the findings of the best practice paper, and the symposium and charrette, New Communities Criteria will be created to inform the development of the whitebelt and infill communities of York Region which will update the existing policies of the Regional Official Plan.

The criteria will be based on the best case studies reviewed in the best practices document, and the lessons learned through the New Communities Charrette. The criteria will be presented to Regional Council in Spring 2008 for consideration.

Many of the best practices presented in this paper take significant steps in moving the Regional sustainability agenda forward. Many of the ideas are beyond the jurisdiction of York Region, and require a Regional role in partnerships, advocacy and education. It is not intended that York Region engage in action as suggested under the “Elements for York Region Consideration” section of each best practice, but rather that this document stimulate meaningful discussion on how the Region’s new communities can develop.

Next Steps:

- ❖ **Consult with local municipalities, development community and Regional stakeholders;**
- ❖ **Host a New Communities Symposium and Charrette early in 2008;**
- ❖ **Gather feedback on how to proceed;**
- ❖ **Update Regional Official Plan with New Communities Criteria in 2008.**

1.0 Sustainable Community Planning

Creating sustainable communities begins with effective sustainable community planning and complementary policies. Recently in Ontario has the Provincial Planning Act been amended to declare a provincial interest in “the promotion of development that is designed to be sustainable, to support public transit and to be oriented to pedestrians”. Notwithstanding this recent legislative support, sustainable community planning initiatives have been occurring throughout Ontario, elsewhere in Canada and internationally.

The inherent objectives of sustainable community planning are:

- *to ensure a high quality of life for its residents and workers,*
- *minimize energy use,*
- *reduce land consumption by ensuring efficient use of land,*
- *providing a mix of housing options for all ages and abilities*
- *Minimize waste*
- *provide sustainable transportation options and the ability to use a variety of transportation choices*

Sustainable communities contributes to high quality of life by making effective use of natural resources, promoting social cohesion and inclusion, strengthening the natural environment and economic prosperity, and reducing the impact on the built environment. These features in turn create a number of benefits including healthier living environments, reduced costs for heating and cooling, reduced greenhouse gas emissions, providing local employment opportunities, and liveable communities which addresses the needs of all residents.

Sustainability community checklists or scorecards are an increasingly popular tool with which municipalities ask strategic questions about a proposed development, and clearly convey the community's priorities, evaluation preferences and expectations around development proposals. Checklists help to inform the development community about what a municipality expects from a development. Where municipal expectations are beyond the regulatory regime, the checklists and scorecards encourage innovation and excellence in community development expectations.

Local governments can encourage sustainable community planning by building in-house professional capacity, providing community education, and having a dedicated and knowledgeable staff to ensure effective program implementation. Local governments can facilitate green building acceptance by hiring experts and training their own building inspectors and other officials in green building design and technology.

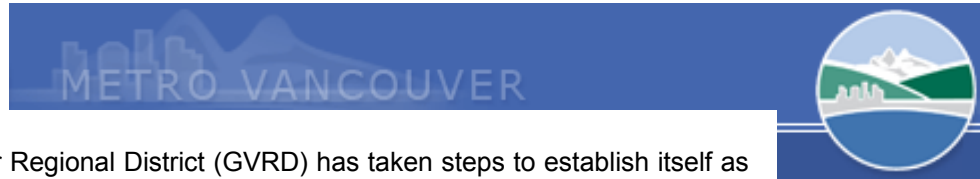
This section focuses on best practices which demonstrate a commitment to sustainable community planning through policy, planning tools, and developing municipal capacity.

Greater Vancouver Regional District

Best Practice 1.1:

Be a public leader in sustainability

Description:

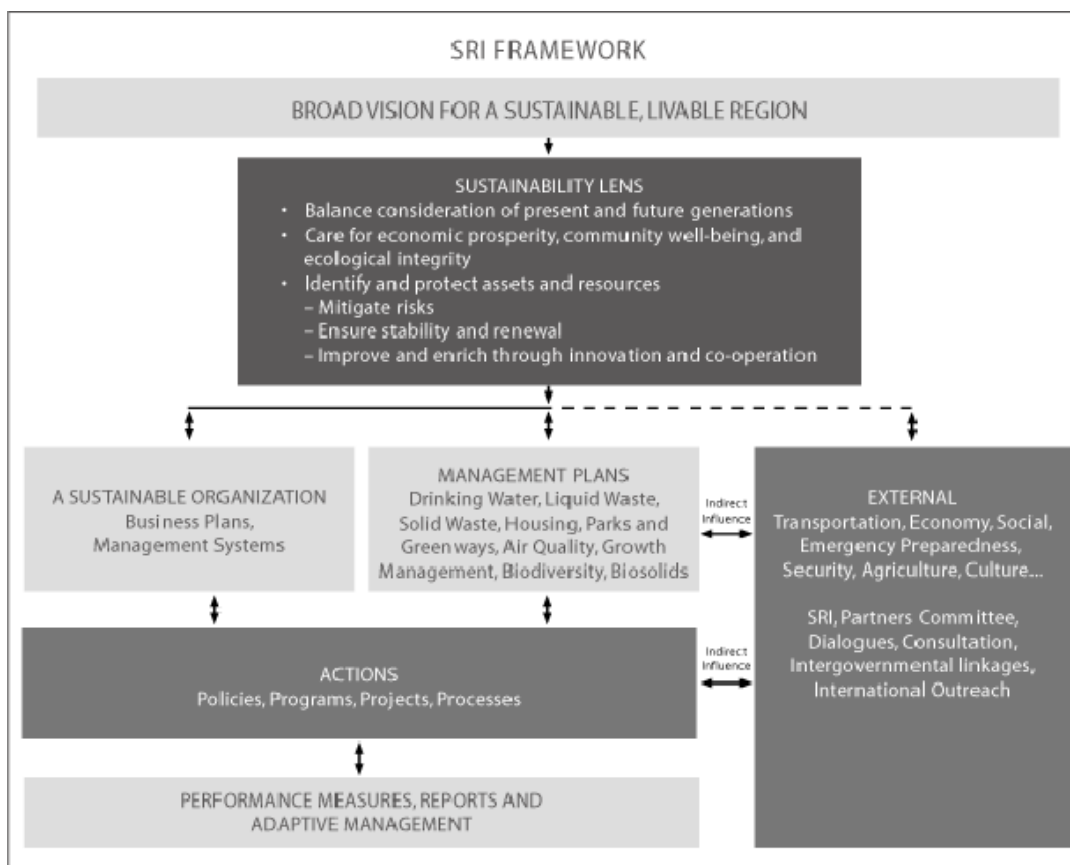


The Greater Vancouver Regional District (GVRD) has taken steps to establish itself as a leader in sustainability. GVRD has a wide range of policies, programs, and resources dedicated to ensuring the sustainability of the Greater Vancouver Regional District under the umbrella of the “Sustainable Region Initiative”. The GVRD has been active in sustainable development issues for years and has been a member of Partners for Climate Protection (PCP), jointly supported by FCM and ICLEI-Local Governments for Sustainability, since 1996.

The Sustainable Region Initiative is the GVRD commitment:

- To consider the future in both our plans and actions,
- To care for community, environment and economy in everything, and
- To nurture partnerships that make the region great today and even better tomorrow.

The Metro Vancouver launched the Sustainable Region Initiative (SRI) in 2001 to identify public values regarding regional sustainability, the principles that should guide regional development, and the key actions necessary. The Sustainable Region Initiative is the overarching framework for all Greater Vancouver activities.



Key Features:

Among the vast number of GVRD initiatives that form part of the “Sustainable Region Initiative” are the following:

1. **Liveable Region Strategic Plan:** The Liveable Region Strategic Plan (originally adopted in 1999) is Greater Vancouver's regional growth strategy. The plan's primary task is to help maintain regional liveability and protect the environment in the face of anticipated growth. The four main strategies of the plan are: protect the green zone; build complete communities; achieve a compact metropolitan region; and increase transportation.
2. **Air Quality Management Plan for the Greater Vancouver:** is a plan to address and mitigate air quality issues within the Greater Vancouver area.
3. **BuildSmart:** is Greater Vancouver's source for sustainable building information. Build smart takes the uncertainty out of green building development by providing information on resources, training, and assists in facilitating green building projects. See below for further information.
4. **Smart Steps:** is a program to assist green building operators and owners to operate and maintain their green buildings to maximize the energy savings and the health benefits.
5. **Liveable Centres:** is a strategy to develop the Metropolitan Core and eight interconnected Regional Town Centres across the region. These major centres are complemented by a number of smaller, local serving Municipal Town Centres.
6. **Business Case Total Cost Assessment:** is a tool which provides the method to help business owners identify changes to operational practices that can lead to reduced costs and increased profitability while also increasing resource efficiency and reducing pollution.
7. **Sustainable Community Breakfasts:** are hosted regularly as an opportunity for network and partnership building while at the same time building awareness and understanding of urban sustainability challenges and bringing together individuals and organizations interested in the sustainability of the region.
8. **Future of the Region Sustainability Dialogues:** is the outreach component of the Sustainable Region Initiative (SRI). These dialogues are a series of high-profile debates and discussions intended to help decision makers shape the future of the region by presenting a range of views to challenge and stimulate fresh thought on a range of regional issues.
9. **Social Components of Community Sustainability Framework:** examines components which create a socially sustainable community including equity, inclusion, adaptability, and security in the areas of living, working, sense of place, playing, engaging, learning, and moving.
10. **Biodiversity Conservation Strategy for the Greater Vancouver Region** aims to facilitate partnerships, provide information and tools to help prioritize resources and conservation efforts for biological diversity in our region.

This list is by no means exhaustive. GVRD has a number of initiatives to ensure the sustainability of Greater Vancouver.

Sustainability Features

- Demonstration of internal capacity for sustainability
- Sustainability Dialogue internal to the municipality and in the community
- Strategy has translated into action across the Region

Elements for York Region Consideration

1. Implementable plans and specific initiatives are crucial to a successful sustainability framework.
2. A comprehensive sustainability communication strategy and providing opportunities for on going dialogue with stakeholders assists in ensuring the success of the strategy.

Further Information:

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Eco-Tech Village Milton, ON

Best Practice 1.2: *Utilize Development Standards to Guide Sustainable Community Planning*

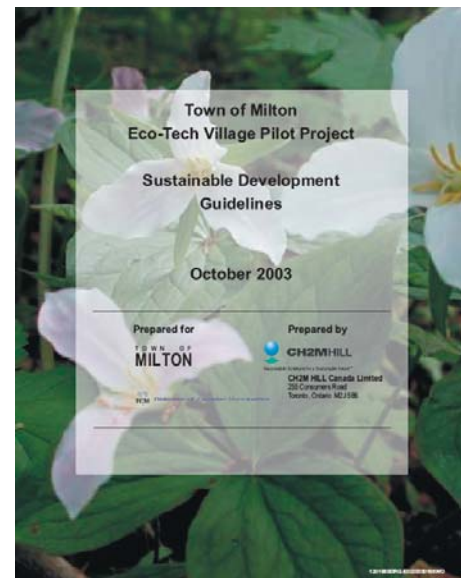
Description

The Town of Milton has developed sustainable community planning standards in response to the growing public awareness and desire to sustain the environment and be sensitive to ecological issues when planning new communities. As a result, the Eco-Tech Village concept, which promotes the development of communities that conserve ecosystems and foster social responsiveness, has been developed by the Town of Milton

This project promotes a neighbourhood that encompasses these principles:

- Environmental sustainability
- Ecological sensitivity
- Energy efficiency
- Financial accountability
- Economic viability and marketability
- Technological advancement
- Smart growth

Milton's Eco-Tech Village concept adds to the Eco Village environmental and ecological concept by also promoting the most current technological advancement and practices as well as fiscal responsibility and municipal governance.



Key Features

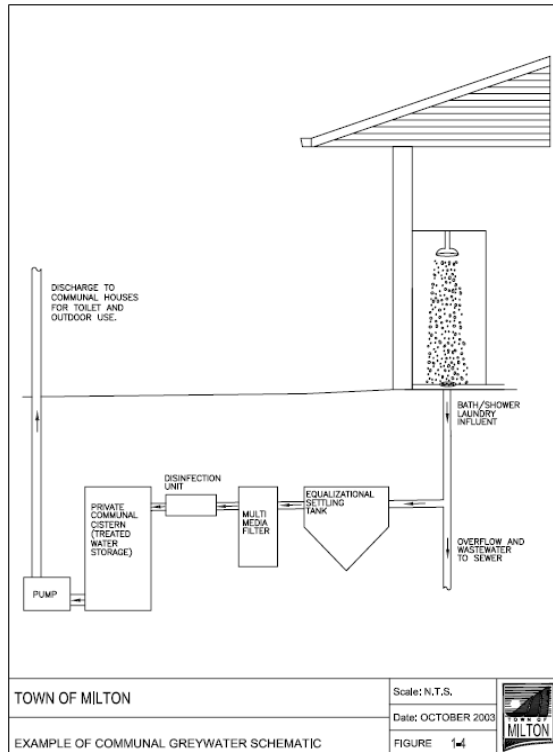
To ensure that municipal infrastructure requirements complement the other initiatives for the Eco-Tech Village, the Town commissioned the preparation of a Sustainable Development Standards Manual. The purpose of the manual is to establish detailed engineering standards for municipal infrastructure based on sustainable development principles.

The intent of this tool is assist the Town and its partners, including developers, to evaluate potential options and their possible impacts and benefits from social, environmental, and economic perspectives. Through better understanding and addressing implementation issues, it is expected that the development review process will be more amenable to allowing more sustainable approaches to municipal infrastructure, facilitating the realization of the vision for the Eco-Tech Village concept.

The guidelines are intended to be a supplementary document to the current Town of Milton Engineering and Parks Development Standards Manual, the Region of Halton development standards manuals, and Sherwood Secondary Plan Subwatershed, Transportation, and Conceptual Fisheries Compensation Plan master reports. In these guidelines, the municipal infrastructure includes transportation (regional and local roads), stormwater management, water conservation, and park facilities and landscaping.

The guidelines provide the Town of Milton and developers with a menu of options for potential pilot testing at the proposed Eco-Tech Village site, or, at an alternative development site within Milton. The guidelines

provide a direct connection between policy, criteria and design options, and provide schematics on proposed options.



Standards include:

- Transportation Component
- Stormwater Management Component
- Water Conservation Component
- Park Facilities and Landscaping Component

Sustainability Features

- Development of sustainable communities.
- Reduction in impacts on the natural environment.

Elements for York Region Consideration

1. Consider using development standards which are tied to sustainability criteria at the Regional (broad based) and Local levels (specific).

Further Information

Town of Milton Planning Department
 43 Brown St.
 Milton, ON L9T 5H2
 905-878-7252 ext 2398

<http://www.milton.ca/Services-Projects-248.htm>

Sustainable Development Guidelines City of Pickering

Best Practice 1.3: *Provide Sustainable Development Standards*

Description

The City of Pickering has developed a series of Sustainable Development Guidelines as a part of the City-wide sustainability program called “Sustainable Pickering”.

The project is intended to demonstrate how sustainable development should be done; and what constitutes sustainable development. Pickering’s Sustainable Development Guidelines are a draft of certification system for new neighbourhoods adapted for the Ontario context from the LEED Neighbourhood Development pilot in the US.

Key Features

Two sets of guidelines have been produced by Pickering. Each set of guidelines contains required and optional element. Optional elements are assigned a point score, for which different “levels” are assigned.

Guideline #1 addresses the neighbourhood scale of development and identifies the required elements of sustainable design to be met, plus optional elements that provide points.

Guideline #2 addresses the subdivision/site plan/building scale. Guideline #2 also identifies required and optional elements.

For Guideline #1, the applicant may choose among the optional criteria to meet the following point targets:

For Guideline #2, the applicant may choose among the optional criteria to meet the following point targets:

Level 1: 13 points		Level 1: 19 points	
Level 2: 29 points		Level 2: 41 points	
Level 3: 35 points		Level 3: 80 points	

Level 1 is considered to be the minimum level of points required by all plans. For Guideline #2, the intent is to meet Level 1 through a series of approvals. The mechanics for implementation of the Guidelines is intended to be developed through testing of and consultation on the Guideline.

Proponents of projects who exceed Level 1 will receive recognition by the City. Other benefits of meeting Levels 2 or 3 include marketing opportunities, possible access to provincial/federal or other green funds. The intent of the optional criteria is to allow flexibility for the applicant to choose criteria that reflect the unique character of the area/site and business or marketing plan of the applicant. The minimum optional level of points is considered to be easily achievable with minimum extra cost to the developer. Applicants will demonstrate compliance with the criteria through the applications, designs and reports they submit to the City Planning & Development Department. The criteria have been designed to allow a great deal of flexibility for applicants to be creative, innovative and to move beyond the boundaries of conventional design and development to demonstrate sustainable outcomes.

Sustainability Features

- Contribution to the Canadian body of work around the development of LEED Neighbourhood Standards
- Can be used as a resource to enable the evaluation of sustainability level of existing and new neighbourhoods, and monitor change over time.

Elements for York Region Consideration

1. Consider providing standards or criteria for new communities which contain minimum and optional requirements.
2. Examine the feasibility of developing new community criteria to sustainability criteria.

Further Information

Catherine Rose
Manager, Policy
Planning & Development Department
City of Pickering
905.420.4660 ext. 2038
email: crose@city.pickering.on.ca
<http://www.sustainablepickering.com/SNP/index.html>

Toronto Green Building Standard Toronto, ON

Best Practice 1.4:

Provide policy to encourage the use of green buildings.

Description:

The Toronto Green Development Standard is an integrated set of targets, principles, and practices to guide the development of Toronto's City-owned facilities and to encourage sustainable development within the private sector. The document is organized to provide 2 separate standards; one for mid- to high-rise residences, commercial, and industrial, and institutional developments and one for grade related residential development.

The standard is based on key environmental drivers identified by Toronto which include:

- Better air quality;
- Reduced greenhouse gas emissions and urban heat island effects;
- Greater energy efficiency;
- Improved water quality and water efficiency;
- Less solid waste;
- Protection of urban forest and urban wildlife; and
- Reduced light pollution.



Key Features:

The Green Development Standard integrates existing City guidelines and targets with the elements of private green building rating systems including LEED (Leadership in Energy and Environmental Design), ENERGY STAR, and Green Globes (which are discussed in section 4.0).

	Development Feature	Existing City Standards, Guidelines or Targets	The Toronto Green Standard 2006*	Relationship to Other Standards	Possible Strategies to Implement
Air Quality O.P., Environmental Plan, Air Quality Strategy	Pedestrian Infrastructure Encourage walking as a clean air alternative	• O.P. policies promote a beautiful, comfortable and safe public realm with accessible streets, parks and open spaces. • Urban Design Guidelines: Provide guidelines for orienting buildings and improving the public realm. • Draft Toronto Streetscape Manual • Toronto Accessibility Design Guidelines	• Provide opportunities for shade, reduced ultra-violet exposure and protection from inclement weather • Provide direct integration with existing pedestrian routes • Provide appropriate grading and surface treatment, in accordance with the Toronto Accessibility Design Guidelines and the Draft Toronto Streetscape Manual as applicable • Provide clear and sufficient signage • Provide sufficient and appropriate lighting • Avoid conflicts between pedestrian and vehicular routes • Avoid conflicts between pedestrian routes and air exhaust and intake systems.	• CITE Guidelines partially address minimum and enhanced targets • Not addressed by LEED or Green Globes	• Pedestrian-scaled building design, landscaping, lighting and signage.
	Construction Activity Minimize air pollution from construction and demolition	• City Building Permit Construction and Demolition, Article 363 By-law 598-2005: requires identification of method for handling air and dust emissions, recognizing on-site resources, in compliance with sections 6 and 11 of regulation 346 made under the EPA.	• For construction and demolition, identify method for minimizing air emissions and dust • For construction and demolition, identify method for minimizing Volatile Organic Compound (VOC) emissions.	• LEED SS Prerequisite 1 satisfies minimum target	• Air and Dust Emissions Control Plan
	Ozone Protection Minimize contributions to ozone depletion from HVAC&R Equipment	• Toronto Atmospheric Funds: Zero use of CFC-based refrigerants and zero use of halons in fire suppression.	• Eliminate use of CFC-based refrigerants and Halons in fire suppression	• Satisfied by LEED EA Prerequisite 3 • Satisfied by Green Globes Emissions, Effluents and Other Impacts F.2	• Install HVAC equipment that uses no CFC refrigerants

Toronto's Green Development Standard is a voluntary program while further study and consultation is being conducted. While the standard is only mandatory for City owned facilities, the standard will be promoted through each private rezoning application where each applicant will be requested to consider complying with the standard.

Within the standard, there are 5 theme areas based on the City's priorities:

1. Air Quality
2. Greenhouse Gas Emissions/ Energy Efficiency
3. Water Quality
4. Solid Waste
5. Ecology

Within each theme area, there are development features, if applicable, connection to existing City standards, the new Toronto Green Standard 2006, relationship to other standards (such as LEED, or Green Globes) and finally, suggestions for possible strategies to implement the new standard. The standard contains minimum or core elements, and optional elements.

Sustainability Features

- The strengths of the Standard are that it is flexible, user friendly,
- Encourages green competitiveness.
- It is directly connected to the City's priorities and existing policies.

Elements for York Region Consideration

1. Requirements for mid to high rises and ground related buildings could be applied in the urban intensification and greenfield context in York Region.
2. Flexible standards are key; provide minimum and optional elements which relate directly to community priorities and local drivers.
3. Continue to be a leader in green buildings at Regional level with green building policy at York Region and encourage continued innovation at the local level like the ENERGY STAR/LEED policy at Town of East Gwillimbury.

Further Information

Green Development Standard
Metro Hall, 22nd floor
55 John Street
Toronto, ON M5V 3C6
sustainablecity@toronto.ca
416-392-0191
www.toronto.ca/environment

Discretionary Zoning Vancouver, BC

Best Practice 1.5:

Provide the necessary planning tools to encourage sustainability options in development.

Description

The City of Vancouver has the unique ability to entitle a development to higher densities provided a number of public benefits are met. This form of discretionary zoning is similar to the Density Bonusing provisions of the *Planning Act* in Ontario, however, incorporates the process directly into the Zoning By-law. Under this regime, a development has two permitted densities, one as of right, and a higher one subject to the provision of public benefits.



Key Features

Vancouver uses the discretionary zoning system to provide the incentives to developers to pay for parks, child care, cultural facilities, community centers, social housing, and green buildings, all of which contribute to building complete and vibrant neighborhoods.

The City has its own charter which gives it a high level of authority and considerable power to attain public benefits, such as park space, social housing and daycare, either through its discretionary zones or through a rezoning. The City Solicitor has identified "green development" as in the public good.

In the Discretionary zoning regime, the zoning has discretionary conditions. For example the base zoning allows 1 time FSR, but can go to 3 times FSR if certain public benefits have been provided. (FSR = floor surface ratio i.e., the ratio of interior floor space area on all floors to the site area excluding roads and park space).

Sustainability Features

- Green building features have been achieved in every rezoning during the previous 1 ½ years, with most projects negotiated to a LEED™ Silver standard.

Elements for York Region Consideration

1. Consider using all available planning tools to enable the development of sustainable options in new community development.
2. Tools provided by Bill 51 *Planning and Conservation of Land Statute Amendment Act* may assist in achieving sustainability options for new communities at a Regional or Local Municipal level.
3. Continue to lobby provincial government for flexible planning tools to implement sustainable community features.

Further Information

City of Vancouver
Planning and Land Use
453 West 12th Avenue
Vancouver, BC V5Y 1V4
[http://vancouver.ca/commsvcs/developmentservices/
planning@vancouver.ca](http://vancouver.ca/commsvcs/developmentservices/planning@vancouver.ca)

Green Building Program & Build Smart Website Greater Vancouver Regional District, BC

Best Practice 1.6:
*Ensure municipal capacity for
sustainable community features.*

Description

The Green Buildings Program of the Greater Vancouver Regional District (GVRD) helps streamline green building and design in the GVRD by providing education and research to the building industry. The GVRD integrated LEED™ guidelines with provincial standards and industry needs and is using them as a catalyst to educate builders, architects, engineers, general contractors, municipal staff about sustainable building practices.



The Green Buildings Program is delivered through the BuildSmart website which features technical guides, tools, and a directory of building products.

Since the launch of the program in 2001, the number of LEED™ certified projects has doubled every year. The program has an evaluation component which monitors the LEED™ certified buildings for energy performance and emissions.

In 2002, the GVRD began discussions with federal and provincial government agencies and utilities about adapting the LEED™ program specifically for British Columbia. The biggest challenge was to adapt the LEED™ system to Canadian energy-use guidelines. Once the studies were completed, the GVRD developed a series of tools and resources to support the Green Buildings Program.

Key Features

Among its resources, the Green Building Program offers industry training opportunities and workshops, technical guides and manuals, and an online building directory of locally available products and services. Three LEED™-accredited GVRD staff members co-ordinate and deliver the workshops, make presentations to the industry, provide direct assistance to design teams and assist building owners in monitoring their buildings' performance.

Developers in the GVRD who apply to become LEED™ certified follow the LEED™ BC guidelines, and the Canada Green Building Council, the organization that promotes LEED™ across the country, then certifies all buildings, rating them as Certified, Silver, Gold or Platinum, depending on their performance. The GVRD's LEED™ for Contractors training program helps builders grasp LEED™ concepts, reducing the risks associated with new practices.

This helps to address the concerns in the development industry that sustainable design would be delayed due to lack of experience amongst municipal staff in processing alternative types of development, and even certain municipal policies that discourage environmental features.

The Build Smart Website, acts as the information portal for the Green Building Program. The site contains information on design practices, design best practices, operations and maintenance, modelling and software tools, product directories, and incentives and funding.

METRO VANCOUVER
 SERVICES | BOARDS & COMMITTEES | DISCOVER/LEARN | MEDIA | CAREERS | BUSINESS |

BuildSmart Product Directory
 > Browse by Specification Index

Building green
 Design best practices
 Construction best practices
 Building retrofits
 Tenant improvements
 Demolition
 Operations & maintenance

Product directory
 BuildSmart Publications
 Software & modeling tools
 Building rating systems
 Incentives & funding
 Glossary of terms

Case studies
Research library
Residential Green Buildings

Browse by Specification Index | Keyword Search

Division	Section	Product
02 Site Work		
03 Concrete		
04 Masonry		
05 Metals		
06 Woods and Plastics		
07 Thermal and Moisture Protection		
08 Doors and Windows		
09 Finishes		
10 Specialties		
11 Equipment		

Products Suppliers
 Welcome to the new format BuildSmart Product Directory. As you will see it is now integrating into the GVRD Internet site. The functionality remains the same although a number of minor changes may be apparent to long-term users. We trust you enjoy using this service and welcome your feedback. If you supply environmentally friendly products, please consider adding them to this Free service, at no cost to you.

Get Your Product Listed!
 Do you have an environmentally responsible product that deserves to be listed in the BUILDSMART Product Directory? You can register as many products as you like and registration is **FREE!**

Edit Your Product and Company Details
 If you have already registered your company information, you can change your existing product and company information and add more products anytime for **FREE!**

Environmental Criteria
 The BuildSmart Product Directory has been designed in collaboration with building industry professionals and specifiers of building products. It is intended to provide objective, consistent information based on industry accepted standards and best practices to enable designers to systematically compare the environmental merits of various products available locally. To be included in the product directory a product or material must comply with at least one of the following:

- be low/non-toxic and contribute to good indoor air quality and occupant health (pdf 47 KB)
- utilize materials in a more efficient manner (pdf 40 KB)
- be energy-efficient (pdf 48 KB)
- conserve water (pdf 42 KB)
- be third-party certified (pdf 48 KB)

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Sustainability Features

- Green buildings contribute to reduced energy and water consumption, reduced resource consumption and green house gas emissions.
- Green buildings have lower operating costs.
- Contribute to decreased employee absenteeism and increased occupant health/

Elements for York Region Consideration

- Municipal capacity for sustainable development and sustainable community features particularly green buildings is an important component of a corporate sustainability strategy.
- Education for staff, politicians, development community and public helps to drive the sustainability agenda.
- Continue to build partnerships with many organizations.
- Consider monitoring the performance of energy and environmental buildings and projects.

Further Information

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 4330 Kingsway
 Burnaby, B.C., Canada, V5H 4G8
 604-451-6575
BUILDSMART@metrovancover.org
<http://www.gvrd.bc.ca/buildsmart/>

2.0 Energy

This section focuses on best practices which optimize the efficiency of energy use in new communities. These best practices include designing neighbourhoods to maximize passive solar gains, using district energy sources to increase energy efficiency while meeting energy use demands, and using renewable energy sources. Coupled with increasing the efficiency of buildings (as discussed in section 4.0 Green Buildings) and reducing the demand for municipal infrastructure (as discussed in section 3.0 Water Management) energy use can be minimized in the new communities of York Region.

The type of energy produced and the amount of energy consumed has significant impacts on local air quality and global concentrations of carbon dioxide and other greenhouse gases that contribute to climate change. Fossil fuels are damaging to public health and the natural environment throughout the fuel cycle of mining, processing, transporting, combustion and disposal of wastes.

District energy is an energy-efficient, environmentally sound method of heating and cooling buildings. District energy systems produce hot water or chilled water at a central plant located within the community. The water is then piped underground to individual buildings within a designated area for heating, cooling or process use. District energy is energy efficient, environmentally sound, easy to operate and maintain, reliable, comfortable and convenient, has lower life-cycle costs and offers design flexibility.

Renewable energy options are becoming increasingly popular for use in community developments, where the costs and benefits can be shared. Renewable energy has a range of social, environmental, and economic benefits. Renewable energy increases local control of energy production, which assists in ensuring stable pricing and increases energy security. Renewable energy also provides a host of environmental benefits including improving local air quality and reducing impact on the land, water and climate system. In comparison, conventional energy sources such as fossil fuels and nuclear power will perpetuate a host of environmental and social problems.

Best Practice Area

2.0 Energy

Conservation Co-operative Ottawa, Ontario

Best Practice 2.1: Design Neighbourhoods to Optimize Passive Solar Energy Use

Description

Passive solar heating is one strategy in a group of design approaches collectively called passive solar design. When combined properly, these strategies can contribute to the heating, cooling, and daylighting of nearly any building.

Passive solar heating makes use of the building components to collect, store, and distribute solar heat gains to reduce the demand for heating. It does not require the use of mechanical equipment because the heat flow is by natural means (radiation, convection, and conductance) and the thermal storage is in the structure itself. Also, passive solar heating strategies provide opportunities for daylighting and views to the outdoors through well-positioned windows.

The Conservation Co-operative, located in Ottawa, is an example of a multi-unit social housing project designed to maximize solar gains in the winter to reduce energy consumption. To complement the building orientation, summer solar shading using sunscreens and fin-walls on balconies, double-glazed argon filled low E windows, above normal wall and roof insulation levels, separated balconies to eliminate thermal bridging, use of heat recovery units for all suite ventilation, and, individually metered in-suite high (90%) efficiency gas heating units.

Key Features

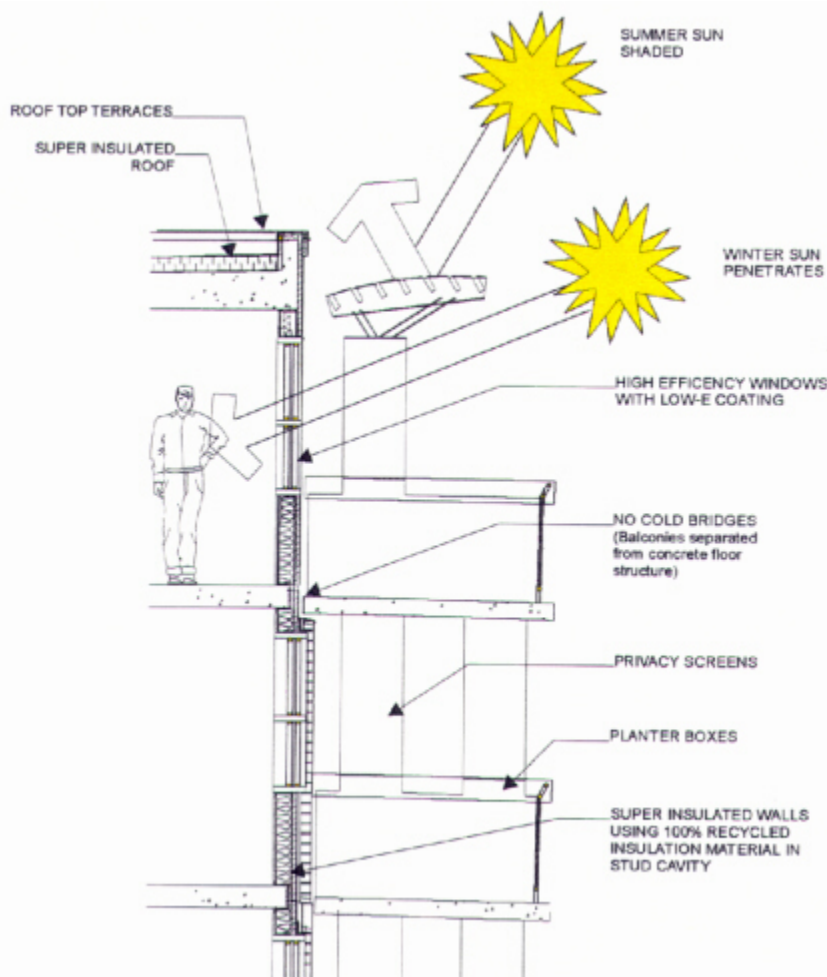
The project was funded by the Ontario Ministry of Housing, which insisted that the Co-op be built within social housing budget guidelines. The design group also wanted to ensure ongoing affordability by reducing monthly energy costs. The group chose building materials and energy-efficient products that fulfilled both criteria - affordable enough to fit within the budget and help reduce monthly energy costs in the future.



The Conservation Co-op building forms a “U” shape around a central, south-facing courtyard. In the wintertime this allows the building to maximize its solar gain, thus reducing heating costs. In the summertime balconies are very desirable spaces. In the winter, however, balconies can be inefficient because they are an extension of the floor slab, allowing for radiant heat loss through the floor to the outdoors. In the Conservation Co-op the balconies are constructed as a separate structure, which allows the main building to be wrapped in its own thermal blanket, eliminating radiant heat loss through the floor. In the summertime, fin-walls at the

front of the balconies and sunscreens achieve additional shading.

The Conservation Co-op represents one the few examples of this approach in North America, however, this is a long overdue implementation of an idea which is very appropriate to the Canadian climate.



Passive solar systems utilize basic concepts incorporated into the architectural design of the building. They usually consist of:

- buildings with rectangular floor plans, elongated on an east-west axis;
- a glazed south-facing wall;
- a thermal storage media exposed to the solar radiation which penetrates the south-facing glazing;
- overhangs or other shading devices which sufficiently shade the south-facing glazing from the summer sun; and
- Windows on the east and west walls, and preferably none on the north walls.

The most important characteristic of passive solar design is that it is holistic; it relies on the integration of a building's architecture, materials selection, and mechanical systems to reduce heating and cooling loads. It takes into consideration local climate conditions, such as temperature, solar radiation and wind, to create climate-responsive, energy conserving structures that can be powered with renewable energy sources.

Sustainability Features

- Design minimizes requirement for heating and cooling, reducing energy consumption.
- Reduced energy costs increases affordability of units.

Elements for York Region Consideration

1. Examine opportunities where new communities and buildings can be designed to maximize solar gains.

Further Information

Conservation Co-Op
140 Mann Avenue
Ottawa, Ontario
K1S 1E5
Phone: 613-567-7281

Best Practice Area

2.0 Energy

Deep Lake Cooling Toronto, ON

Best Practice 2.2:
Provide a district energy system which meets community energy requirements while increasing efficiency.

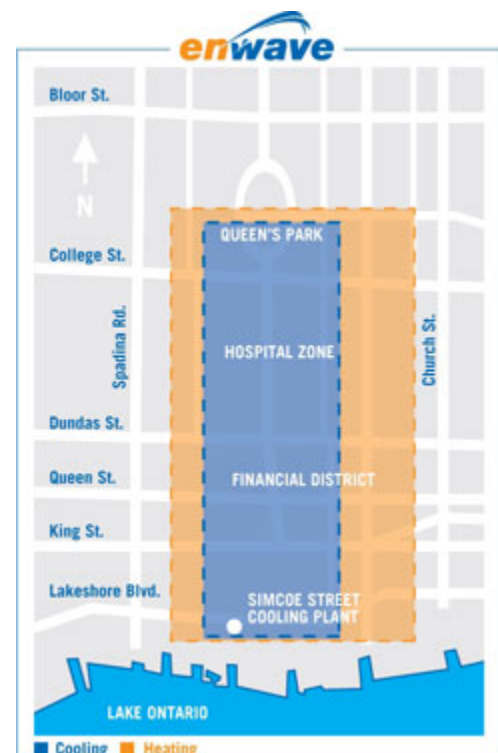
Description

Enwave and the City of Toronto have created an innovative cooling system to cool Toronto's downtown core, using the naturally cold (4°C) water below the surface of Lake Ontario. This cold water is the renewable source of energy that Enwave uses to cool office towers, sports & entertainment complexes and proposed waterfront developments.

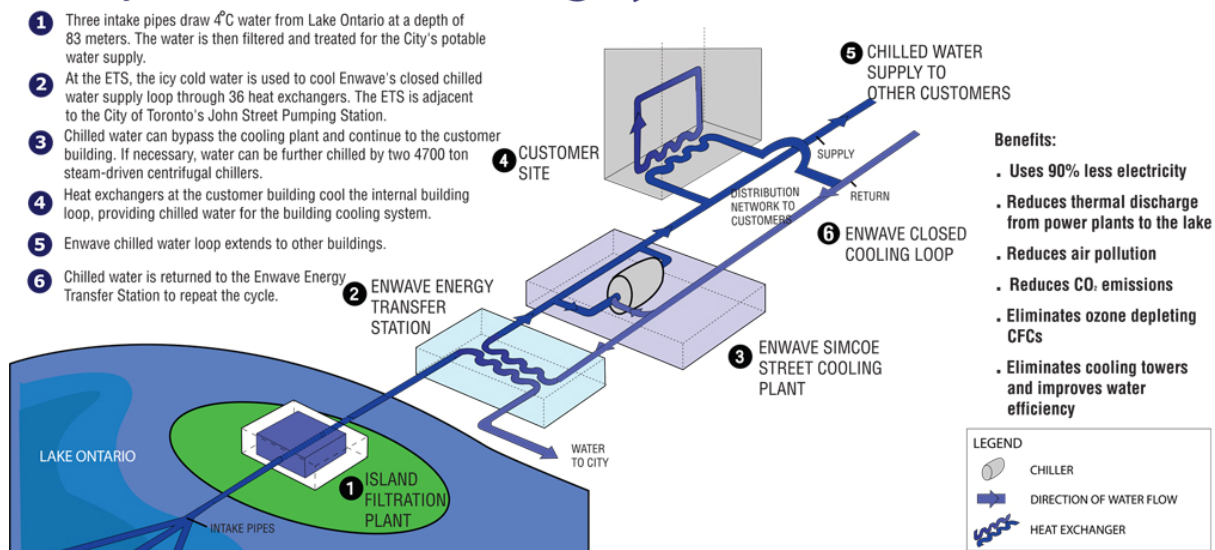
Enwave is a Toronto based district energy corporation providing heating and cooling services to over 140 office buildings in the City's downtown core. It is one of the largest district energy systems in North America. Toronto's unique characteristics of being a dense, urban center that is close to a body of deep cool water make it an ideal site for this sustainable technology.

Key Features

The Deep Lake Water Cooling system uses Toronto's existing infrastructure network which was improved to add two additional components for the system: new intake pipes that extend deep into Lake Ontario, and a closed energy transfer loop linking the energy transfer facility to link the City's John Street Pumping Station and Enwave's Simcoe Street Cooling Plant.



Deep Lake Water Cooling System



As the surface of the lake cools to 4° C in the winter, the surface water sinks because it is at its highest density. In the summer, surface water is warmed, but remains on the surface because it is less dense. Deep Lake Water Cooling remains very cold all summer long. Over the years, this cycle has created a permanent reservoir of very cold water that lies on the bottom of Lake Ontario.

Extending 5km into Lake Ontario to a depth of 83 meters, three new intake pipes made out of High-Density Polyethylene follow the natural slope of the lake and lead into the City's Island Filtration Plant.

Cold water drawn from Lake Ontario is processed at the City's Island Filtration Plant and is then directed to the City's John Street Pumping Station. At Enwave's Energy Transfer Station, attached to the John Street Pumping Station, heat exchangers facilitate the energy transfer between the icy cold lake water and Enwave's closed chilled water supply loop. Once the energy transfer process is complete lake water continues on its natural path into the City's potable water system.

Enwave uses the coldness from the lake water, not the actual water, to provide chilled water for air-conditioning Toronto's buildings. Enwave's chilled water capacity is 75,000 tons of refrigeration. This is enough capacity to air condition 100 office towers, or 3.2 million square metres of office space, 6,800 homes.

In exchange for Enwave's use of Island Filtration Plant a new intake was installed at a value of \$55 million at no cost to the City. In exchange the City has a stable source of raw water that requires substantially less chemical treatment. This results in a significant operating cost reduction to the City.

Sustainability Features

- Use of renewable resources in proximity
- Replaces the traditional air conditioning for the Toronto Core, which reduces the CO₂ emissions, and
- Deep Lake Water Cooling reduces electricity usage by 90%. This frees more than 61 megawatts from the Ontario's electrical grid.
- Harmful ozone depleting refrigerants, CFC's and HCFC's are reduced.
- 79,000 tons of carbon dioxide emissions to the atmosphere are prevented each year; the equivalent to taking 15,800 cars off the road.

Elements for York Region Consideration

1. Locally available resources can provide district heating and cooling sources.
2. Consider the feasibility of providing assistance to implement district energy for use at all Regional Centres.
3. Build partnerships with local energy distribution companies to implement district energy projects.
4. Be a leader in district energy technology by examining the feasibility of using district energy for Regional facilities.

Further Information

Enwave Energy Corporation
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Suite 1710, P.O. Box 105
Toronto, Ontario M5H 3M7
Tel: (416) 392-6838
Fax: (416) 363-6052
Email: Info@enwave.com
www.enwave.com

Best Practice Area

2.0 Energy

Markham Centre Markham, ON

Best Practice 2.3

Provide a district energy system which meets community energy requirements while increasing efficiency

Description

Markham District Energy Inc. (MDE), an energy company owned by the Town of Markham, was created in 1999 to develop the district energy system to serve Markham Centre. Markham Centre will be Markham's new smart growth downtown. When fully developed, Markham Centre will be home to over 25,000 residents and 17,000 employees working, living and recreating in 20 million square feet of commercial, institutional & residential buildings.

Key Features



Warden Energy Centre

The first of four energy production plants consists of high efficiency natural gas boilers, chillers, and a natural gas cogeneration facility with waste heat recovery technology. Hot and chilled water is distributed to homes and buildings via an underground network of piping and the thermal energy is transferred to the buildings to heat and cool the buildings and produce domestic hot water.

The heart of the system is the cogeneration plant. Combined heat and power – also known as cogeneration – is a way to increase energy efficiency in communities. Standard power plants effectively use just 40 % of the fuel they burn to produce electricity. Up to 60% of the fuel used in the electric production process ends up being rejected or "wasted" up the stack. Combined heat and power uses this rejected heat to heat buildings in a surrounding area through a district energy system. The efficiency gain results in a dramatic reduction in emissions. Combined heat and power is only possible when there is a density of buildings near the plant, such as Markham Centre.

Fuelled by natural gas, electricity is produced for the local distribution grid. Thermal energy is recovered from the generator and used to heat and cool buildings. In the winter, recovered heat is used to produce

hot water for space heating and domestic hot water. In the summer, the thermal energy drives absorption chilling technology to produce chilled water for space cooling.

When fully developed, the district energy system will achieve a 50% efficiency gain in the community resulting in a corresponding reduction of local emissions. District energy provides significant operating advantages for the host buildings and is priced competitively with conventional energy costs.

Markham District Energy is EcoLogo certified; a license issued by Environment Canada's Environmental Choice Program recognizing leadership in delivering Energy Efficient Heating and Cooling systems to buildings in Markham Centre.

Sustainability Features

- Higher energy efficiency than conventional heating and cooling options means reduced greenhouse gas emissions.
- Lower life-cycle costs
- Supports development options in Regional Centres.

Elements for York Region Consideration

1. Consider the feasibility of providing assistance to implement district energy for use at all Regional Centres.
2. Build partnerships with local energy distribution companies to implement district energy projects.
3. Be a leader in district energy technology by examining the feasibility of using district energy for Regional facilities.

Further Information

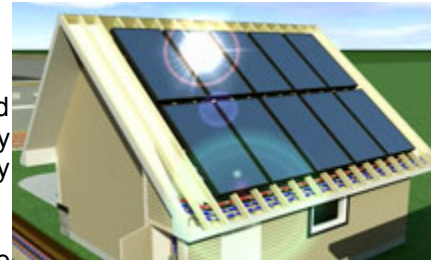
Markham District Energy Inc.
8100 Warden Avenue
Markham, Ontario L3R 8H7
Telephone: (905) 513-7930
Fax: (905) 513-7243
www.markhamdistrictenergy.com

Drake Landing Okotoks, Alberta

Best Practice 2.4: *Use renewable energy source – solar*

Description

The Drake Landing Solar Community (DLSC) is a master planned neighbourhood in the Town of Okotoks, Alberta that has successfully integrated energy efficient technologies with a renewable, energy source.



Okotoks is Canada's leading municipal user of solar energy. Drake Landing is the town's latest project. This 52-home subdivision will meet 90 percent of its space and water heating needs with solar energy, thus reducing annual greenhouse gas emissions by five tonnes per home. The energy will be stored in underground boreholes during warmer months for reuse in winter. This is the first time such technology has been used in North America. The weather in Okotoks ranges from -33 C in the winter to 28.3 C in the summer.

Okotoks has completed five solar projects. Four of them use solar energy in municipal facilities. The fifth, Drake Landing, is a residential development heated almost entirely by solar energy. It has received international recognition as the first seasonal solar storage system in North America. Eight hundred solar collector panels capture solar energy throughout the year and store it in an underground water piping system. Separate garage buildings were built behind the homes and collector panels were installed on the garage roofs. In winter, the stored thermal energy is pumped back into homes for space heating, while two solar panels on the roof of each home provide energy for domestic hot water uses, such as showers and laundry. This results in a reduction of approximately 5 tonnes of greenhouse gas (GHG) emissions per home per year.

Key Features

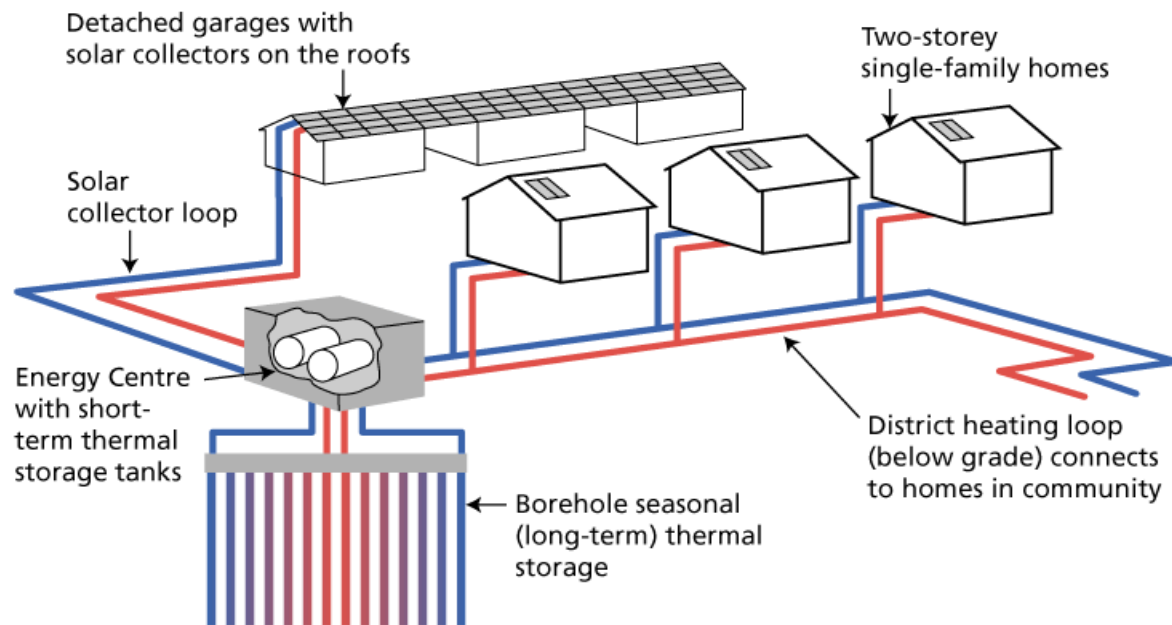
An array of 800 solar panels located on garage roofs throughout the community generate 1.5 mega-watts of thermal power during a typical summer day and supply heat to the district heating system. From sunrise to sunset, the solar panels absorb the Sun's energy and heat a glycol solution running through an insulated piping system, or collector loop that connects the array of collectors. The heated glycol travels along the roof overhang, down the end of the garage, and underground through a shallow buried trench system until it arrives at a heat exchanger within the community's Energy Centre. The heat exchanger transfers heat to the water stored in a short-term storage tank. The glycol solution carries on through its loop back to the solar collector system.

During the warmer months, the heated water is distributed from the short-term storage tank to the borehole thermal energy storage (BTES) system via a series of pipes. The pipes run through a collection of 144 holes that stretch thirty-seven meters below the ground and cover an area thirty-five metres in diameter. As the heated water travels through the pipe-work, heat is transferred to the surrounding earth. The temperature of the earth will reach 80 degrees Celsius by the end of each summer.

When winter arrives and the homes require space heating, the heated water in the BTES passes to the short-term storage tank in the Energy Centre and is then circulated to the homes through the district heating loop. Reaching each home the heated water passes through a heat exchanger within a specially designed, low-temperature air handler unit located in the basement. A fan, also within the unit, blows air across the warm fan coil. Heat is passed from water to air and then distributed throughout the house via the home's ductwork. When the temperature of the home's thermostat is met, an automatic valve in the basement shuts off the heat transfer between the district heating loop and the air handler unit.

The district heating loop temperature varies with outdoor air temperature. As it gets colder outside the district heating loop temperature is raised. This temperature is regulated by the heat exchanger between and the district heating loop.

Solar Seasonal Storage and District Loop



Sustainability Features

- A reduction of approximately 5 tonnes of greenhouse gas emissions per home per year.
- The largest subdivision of R-2000 single-family homes in Canada, each being 30% more efficient than conventional housing.
- 90% of each home's space heating requirements from solar energy and resulting in less dependency on fossil fuels.

Elements for York Region Consideration

1. Renewable energy technologies is an implementation option in the new communities of York Region.
2. Demonstrate leadership and commitment to renewable energy by examining the feasibility of piloting their use at Regional facilities.

Further Information:

Doug McClenahan
Manager, Active Solar R&D
Natural Resources Canada
Ottawa, Ontario
(613) 996-6078
dmcclena@nrcan.gc.ca

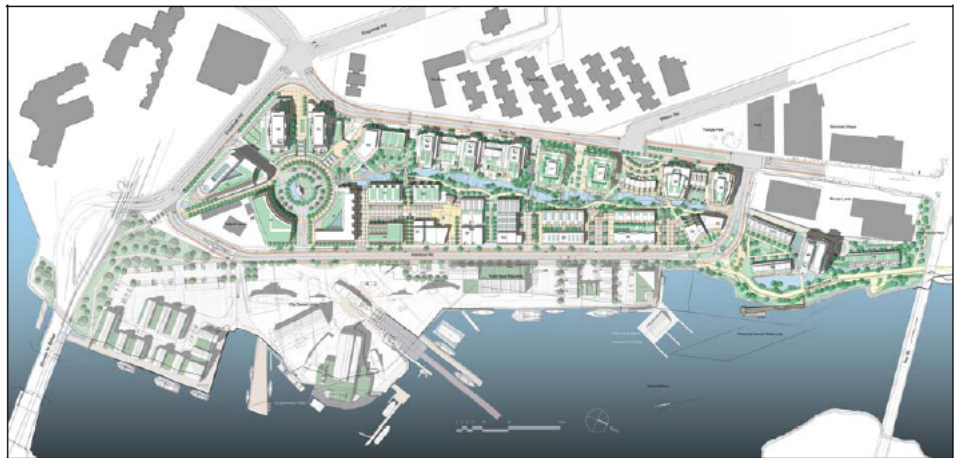
Dockside Green Victoria, BC

Best Practice 2.5: *Use renewable energy – Biofuels*

Description

Dockside Green is a 1.3 million sq. ft. mixed use sustainable community development on a 15-acre former brownfield site in Victoria, British Columbia. The project is comprised of residential, office, commercial and light industrial uses and will be a global showcase in environmental, social and economic responsibility (the Triple Bottom Line, or TBL).

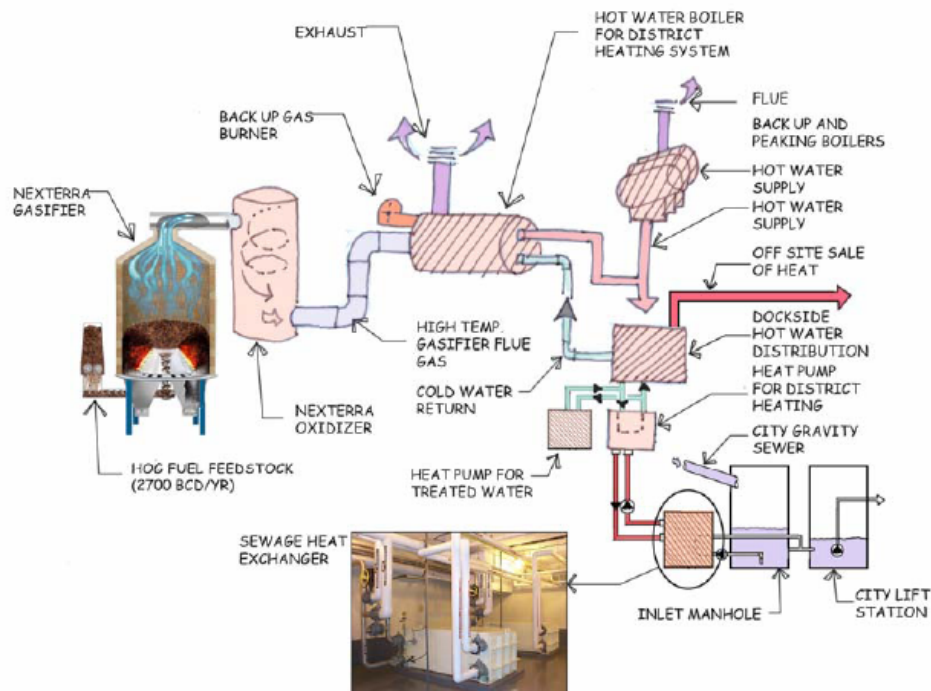
The centralized waste wood gasification plant will provide renewable heating for the development. Dockside Green is the first North American community development to be Green House Gas positive from an energy perspective.



Key Features

BC Hydro worked with Dockside Green to use a more efficient biomass system that focused on heating rather than electric generation. They worked closely with Nexterra Alliance association. Nexterra is a waste wood gasification process that produces heat. The advantage of the Nexterra system is its efficient process requiring only 3,000 tonnes of waste wood per year. The thermochemical gasification process to create a synthetic gas that will be burned to produce heat. The input "chemicals" for thermochemical gasification - wood, water and air - are heated in a low-air environment until the wood undergoes gaseous decomposition. The resulting gaseous products are then scrubbed and cleaned and burned to produce heat for a heating water boiler. The boiler will supply the majority of Dockside heating requirements with some peak load supplied by the backup/peaking gas boilers. No smoke is produced in the process- just green energy and clean, odourless flue gases. To avoid noise disturbances the gasification plant and the engines will be housed in an acoustically isolated building.

The system will be owned by Vancity Enterprises, Corix, Terasen Gas and Windmill Developments. Individual buildings will be charged for heat generated by the system for building heating and domestic hot water needs. Heat will also be sold to offsite customers displacing natural gas use. The net result is that Dockside Green is expected to be greenhouse gas positive from a building energy perspective.



Sustainability Features

GHG Emission Reduction Summary	tonne CO ₂ e/year
Electrical Energy Savings from Energy Efficiency in Dockside Green	100
Natural Gas Savings from Energy Efficiency in Dockside Green	2263
Savings from Fuel Switching from Natural Gas in Energy Efficient Dockside Buildings to Heating with Biomass and Sewage Heat	2233
Savings from Fuel Switching from Natural Gas in Off-site Delta Hotel and Warehouse to Heating with Biomass and Sewage Heat	1131
Total GHG emission reduction	5727

Elements for York Region Consideration

1. Biofuels for energy production may be a renewable energy option in the new communities of York Region.

Further Information:

Windmill Developments
 Joe Van Belleghem
www.docksidegreen.com

Marshall Homes Oshawa, ON

Best Practice 2.6: *Use renewable energy – Geothermal*

Description

Marshall Homes, a home builder in Oshawa, Ontario is offering a “STREAM” system in their new homes, where heating and cooling needs are supplied by a geexchange system supplied and installed by Clean Energy Developments. The STREAM system will be an upgrade option for all homes in the community, and an option for all homes in Marshall's future developments.

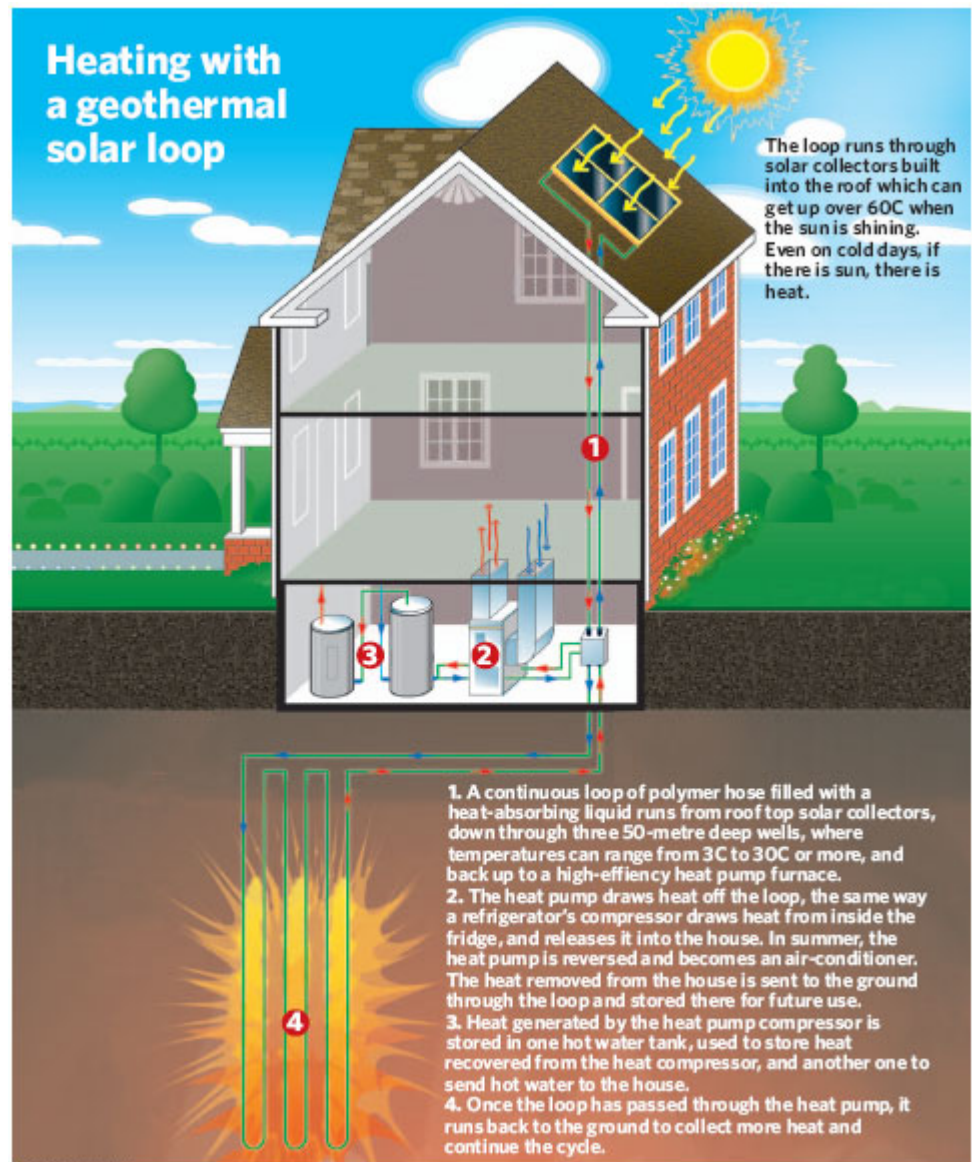
The system uses a closed loop of polymer hose, filled with 80 per cent water and 20 per cent glycol which runs 50 metres underground and draws heat from the earth. The geothermal heat is then extracted by a heat pump and blown through ducts in the house. In summer, the process is reversed to draw excess heat from the house and expel it to the earth through the loops. It works again like a fridge, drawing heat from the interior, not injecting cold air to keep it cool.

Key Features

During cold seasons, a Geothermal Heating and Cooling Systems (GHCS) extracts heat from the ground for use in spatial heating. During the warmer seasons the opposite is applied: the heat from a building is dispersed into the cooler ground.

A GHCS has three major components:

- A) A geothermal pump that draws heat to and from the ground.
- B) A fluid based energy transfer system for the transfer of heat between the pump and the ground
- C) HVAC systems to distribute energy (heating or cooling) to the building.



In this way, GHCS systems may serve to provide heating and cooling for residential, commercial and

even industrial applications using air based systems, hydronic systems and domestic and processed water systems.

Solar and geoexchange systems operate on much the same principle as a refrigerator, using a fluid-filled loop of pipes to exchange heat energy with its surroundings. The systems gather heat using a loop extending through a central heat pump to solar panels on the home's roof (solar-thermal), and to a depth of 180 feet (or 50m) below ground level (geoexchange). During the winter months, the system transfers heat from the sun and the ground into the home and, during the summer months, heat in the home is transferred to the ground. When the two components are combined, the result is an energy system about four times as efficient as a typical natural gas system. Extra heat is added to the geoexchange system from the solar panels; if it's not needed, it's expelled. The house automatically switches between heating and cooling modes, depending at which temperature the thermostat is set.

The system uses free, renewable heat energy from the sun and below ground to power a home's heating, ventilation and air conditioning systems, as well as meeting its domestic hot water needs. STREAM saves homeowners up to \$2,500 a year on home energy bills, and reduces conventional energy consumption by 79% compared to traditional, natural gas furnaces and hot water heaters.

While it is the first production home system to integrate solar and geothermal technologies, STREAM is a patent-pending combination of proven, high quality components supplied by leaders in clean energy systems.

Sustainability Features

- Reduces energy consumption by 79%, which reduces greenhouse gas emissions.
- Saves homeowners up to \$2500 a year on home energy bills.

Elements for York Region Consideration

1. Investigate the feasibility of using geothermal power in the new communities of York Region.

Further Information

www.marshallhomes.ca

3.0 Water Management

This section focuses on best practices in water management. A key component to sustainable communities is the management of water as a renewable and valuable community resource. Reducing water consumption, reducing waste water, maximizing water reuse, and increasing stormwater infiltration are important considerations of a sustainable water management strategy.

The best practices detailed below examine municipal water conservation programs, optimizing stormwater infiltration, reducing use of potable water through water recycling and grey water reuse. Naturalized waste water treatment and green roof technology are also examined.

Best Practice Area

3.0 Water Management

Welland Water Conservation Program Welland, ON

Best Practice 3.1: *Reduce use of potable water through a municipal water conservation program*

Description

The City of Welland has initiated a Water Conservation and Efficiency Program in 2006 which focuses on providing Welland residents with the information and tools they need to reduce their water demand.

In April 2005, there was a shift in the City of Welland's water/sewer rate structure from flat rate billing to metered consumption. It was determined that acceptance of the new rate structure would be assisted by a Conservation Program as a means of empowering customers and citizens with the information and tools to reduce their demand.

The Program Plan is to provide information and incentives to the Residential Sector in the form of both Indoor and Outdoor Water Conservation Initiatives and provide Public Education and Promotion for water conservation and demand management.

Key Features

Indoor Water Conservation Initiatives:

A Toilet Replacement Incentive program provides a \$60.00 replacement incentive per toilet to switch to a low flow toilet. Toilets represent the largest single use of household water at approximately 30%. Since 1998, the building code has mandated low-flow toilets be installed in new homes. Most homes in Welland, were built before this time and therefore do not realize the benefits of low-flush toilets. The resident rebate of \$60.00 per toilet (approximately 40% of the retail cost) has helped Welland residents save money on their water bill while reducing the overall volume of wastewater requiring expensive treatment.

Washing machines represent the second largest use of water in the home at approximately 20%. Efficient washers use only about 60% of the water and 40% of the energy that conventional washers use. The Washing Machine Replacement Incentive provides a \$100 incentive for purchasing a certified water efficient washing machine. Welland has determined that based on current water rates residents with a water/energy efficient washing machine will have their initial investment paid off in less than 4 years.



Outdoor Water Conservation Initiatives:

The Rain Barrel Purchase program has sold over 550 subsidized rain barrels to Welland residents in 2006. Rain barrels divert rain away from sanitary and combined sewers preventing unnecessary storm water treatment. These applications have diverted up to 32,000 litres of water per year from storm water collection systems.

A Downspout Disconnection Program is administered by the City, which risk of basement flooding and reduces combined sewer overflows, which pollute our creeks, rivers and lakes. City representatives conducted inspections of building roof downspouts and associated lot drainage on residential and commercial properties in selected areas of the city with a history of basement flooding.

York Region's Water for Tomorrow Program:

York Region has a similar water conservation program, which has been extremely successful.

- Over 106,000 low-flow showerheads installed
- Over 245,000 early-closing toilet flappers installed
- Reduction of 14,375 tonnes per year of carbon dioxide emissions
- Over 1,800 km of municipal watermain tested for leakage utilizing the District Meter Areas (DMAs) methodology
- Currently 20.33 million litres of sustained water savings per average day.

Sustainability Features

- Reduces potable water consumption.
- Reduces demand on municipal water system.
- Barrels divert rain away from sanitary and combined sewers preventing unnecessary storm water treatment. These applications have diverted up to 32,000 litres of water per year from storm water collection systems.
- Reduce outdoor use of treated, municipal water to lower peak water use in summer.

Elements for York Region Consideration

In the next 10 years, York Region's Water for Tomorrow strategy plans to:

1. Provide rebates for ultra low flow, high efficiency, or dual flush toilets, rain barrels, water efficient clothes washers and water efficient central humidifiers.
2. Install low flow kitchen aerators.
3. Provide rebates to Area Municipalities that develop, implement, and maintain a distribution leakage reduction program.

Further Information

City of Welland
60 East Main Street
Welland, Ontario, Canada L3B 3X4
Phone: 905-735-1700
<http://www.welland.ca/conservation/>

Reid's Heritage Homes Guelph, ON

Best Practice 3.2: *Harvest rainwater for reuse*

Description

A residential rainwater harvesting system was designed by two graduate students from the University Of Guelph School Of Engineering, in collaboration with a local supplier of rainwater harvesting technology for use in a pilot project with Reid's Heritage Homes in Guelph Ontario.

The Reid's Heritage Home, which has been certified LEED™ Platinum, will serve as a show home and will allow university researchers to monitor the rainwater harvesting system's performance and water quality. The house will offer residents a chance to learn about rainwater harvesting in the home, and potential home buyers will get to experience what it would be like to have a built-in rainwater harvesting system.

Key Features



Rainwater that lands on the roof will be collected in roof gutters and downspouts and diverted to a filtration device before it is carried to a 6,500 litre underground cistern. The stored water will be pressurized and piped into the home to supply water to three toilets, the washing machine, and the dishwasher. The collected rainwater will also supply water to an underground irrigation system. This would account for over 50% of water consumption in a typical home. The home will be unique in that it will feature a dedicated hot water system to provide rainwater for the washing machine and the dishwasher.

With the exception of the 10,000-gallon cistern buried in the backyard that pumps rainwater into the home's toilets, dishwashers and washing machines. The home is the first to get a city permit for a recycled rainwater system without active filtration.

The region has hired a consultant to study how cisterns will affect groundwater recharge to encourage the practice on a large scale. Such greywater systems can reduce water use by as much as a quarter. The home, which is funded by the Canadian Mortgage and Housing Corporation isn't connected to the city water supply and has its own filtration system for drinking water.

There are regulatory issues in getting water recycling programs going in the region. Cisterns and greywater recycling systems used inside the home require dual plumbing systems to separate filtered water from the drinking water supply.

Sustainability Features

- Reduces water consumption by 50%.
- Reduces demand on municipal potable water supply and waste water systems.

Elements for York Region Consideration

1. Investigate the feasibility and regulatory obstacles to providing rainwater harvesting in York Region.
2. Demonstrate leadership and commitment by examining the feasibility of piloting a rainwater harvesting project at a Regional facility.

Further Information

Reid's Heritage Group Head Office
6783 Wellington Road 34
R.R. #22 Cambridge, ON
N3C 2V4
Tel: (519) 658-6656
Fax: (519) 654-9746
www.rhhgreenhomes.com

Earth Rangers Centre Vaughan, ON

Best Practice 3.3: *Practice Water Recycling*

Description

The Earth Rangers Centre in Vaughan, Ontario is a LEED™ Gold certified building which opened in October of 2004. The \$23-million, 5,575 square metre (60,000 square feet), state-of-the-art building sets a new standard for technology and environmental design. The new Centre is home to Earth Ranger's education programs. Earth Rangers focuses on providing environmental education to youth hands-on action programs.



It is one of the most energy-efficient buildings in Canada, using 63 percent less energy than a normal building its size. It is a building constructed with the environment in mind.

Key Features

Earth Rangers uses an innovative “Z-MOD” onsite wastewater treatment and recycling system to reduce demand on potable water supplies and preserve the environment. Water is a large component of the environmental message that Earth Rangers delivers, and staff proudly tell visitors that the compact Z-



MOD membrane bioreactor system lets the facility recycle up to 9,850 litres of wastewater daily. The reclaimed water is reused for irrigation, floor washing, and toilet flush water, which reduces the centre's demand on potable supplies and spares that water for human consumption.

While this amount of water is only enough to meet the daily needs of about 12 average Toronto families, the membrane system is designed to be scalable, and also spared the expense and environmental impact of connecting a lengthy discharge pipe to a far-off main sewer line, which eliminated many land development challenges for the building.

A 310,000 litre cast-in-place concrete underground cistern collects rainwater from the roof and treated sanitary effluent from the high performance membrane treatment system. Already required for on-site fire protection water supply, the cistern was enlarged by 25,000 litres to provide a reserve of non-potable water for toilet flushing, cage cleaning and filling animal ponds. The concrete tank did not require any special liner or surface coating for these applications, and helps reduce well water consumption by 60%. Flat portions of the roof are finished with a vegetated “Green Roof” for storm water improvement and landscaping. The concrete roof supports the 150 kg/m² (30 psf) design load of the soil and vegetation. Rainwater is harvested from roof run-off and stored in a 310 cubic metre, buried, concrete tank to supplement the treated water and provide fire protection.

The Earth Rangers Center is situated in a rural area, and as such is able to accommodate all of its potable water requirements for the facility from an on-site well. Dirty water from sinks, showers and toilets is treated onsite using a ZENON membrane bioreactor and UV light sterilization system. The treated water is then re-used within the facility for toilets, animal ponds, irrigation and floor washing.

Earth Rangers Centre takes a holistic approach to dealing with water management as follows:

Runoff Reduction:

- Design a green roof system
- Use modular block paving

Rainwater Collection:

- Collect and store rainwater for domestic uses
- Wastewater and Graywater Recycling
- Design buildings to use treated wastewater for non-potable uses
- Plumb building to accommodate graywater separation

Integration with Site Resources:

- Integrate on-site wastewater treatment system with landscape design
- Siting Analysis
- Hire a landscape architect to help with siting of buildings and infrastructure
- Site Planning
- Provide for solar access

Sustainability Features

- Reuses over 3.5 million litres of water annually.
- Reduces demand for potable water.
- Reduces demand on municipal waste water system.

Elements for York Region Consideration

1. Water use should be examined in a comprehensive manner to best recycle waste water and storm water to maximize grey water reuse both at a building scale and community scale.

Further Information

Earth Rangers
9520 Pine Valley Drive
Woodbridge, Ontario
Canada
Telephone: (905) 417-3447

www.earthrangers.ca

Rouse Hill Sydney, Australia

Best Practice 3.4: *Reuse Grey Water*

Description

A new residential development at Rouse Hill, Sydney is being supplied with treated wastewater, which households can use for non-drinking purposes. Sewage from houses goes to a nearby treatment plant. The treated water returns via its own pipe system. This is known as dual reticulation.

The treated water is used for toilet flushing, irrigating gardens, and washing cars. The recycled water taps, pipe-work and plumbing fittings are coloured purple to ensure that recycled water is not confused with drinking water

The project started in 2001, and more than 16,500 homes are now using 1.9 billion litres of recycled water each year for flushing toilets, watering gardens, washing cars and other outdoor uses. On average the Rouse Hill scheme has reduced demand for drinking water by 35 per cent. Eventually the scheme will serve 35,000 homes.

Key Features

As part of the Metropolitan Water Plan a major new recycling project, the Western Sydney Recycled Water Initiative, will provide recycled water via dual reticulation to all 160,000 new homes to be built in new suburbs in Sydney's north west and south west, as well as for agriculture, industry and replicating natural river flows downstream from dams.

The north west will be the first to receive recycled water as there are already three high quality sewage treatment plants in the area. All the wastewater currently being discharged by them will be fully allocated to productive uses, with water quality improvements in the Hawkesbury-Nepean River and its tributaries. The scheme will produce 27 billion litres of recycled water a year by 2015.



Rouse Hill Recycled Water Plant

The plumbing systems have been designed to separate grey water (water which contains no sewage) from black water (water which contains sewage) to collect the water that drains from bathroom basins, tubs, showers, and laundry rooms. Water from the kitchen is also considered grey water, but the fats, oils

and greases from dishwashing makes kitchen water hard to filter, and a likely breeding ground for disease.

Sydney Water provides homes in the area with two water supplies - recycled water and drinking water. This is known as dual reticulation. The recycled water taps, pipes and plumbing are coloured purple to make sure that recycled water is not confused with drinking water.

Sustainability Features

- Reduces the burden placed on waste water systems (site based or municipal).
- Reduces waste water generation, treat waste water, and reuse where possible.
- Reduces demand on drinking water by 35%.

Elements for York Region Consideration

1. Consider examining the feasibility of a municipal greywater recycling system.

Further Information

Sydney Water
PO Box 53
Sydney South NSW 1235
recycledwater@sydneywater.com.au
www.sydneywater.com.au

Stormwater Source Control Design Guidelines Greater Vancouver Regional District, BC

Best Practice 3.5: *Maximize On Site Stormwater Infiltration*

Description

Conventional stormwater management approaches manage rainfall runoff using conventional “storm-based” approaches to sizing and designing municipal storm drainage facilities and large scale stormwater management ponds. Stormwater management has evolved to address the entire spectrum of rainfall events, not just storms, in ways that reflect more natural water systems or holistic approach.

Greater Vancouver Regional District has created stormwater management design guidelines based on the more holistic or integrated approach to stormwater management.

The Design Guidelines focus on the technical details of practices in landscape areas that treat stormwater through plant materials and soils by infiltration, retention, detention and evapotranspiration.

Key Features

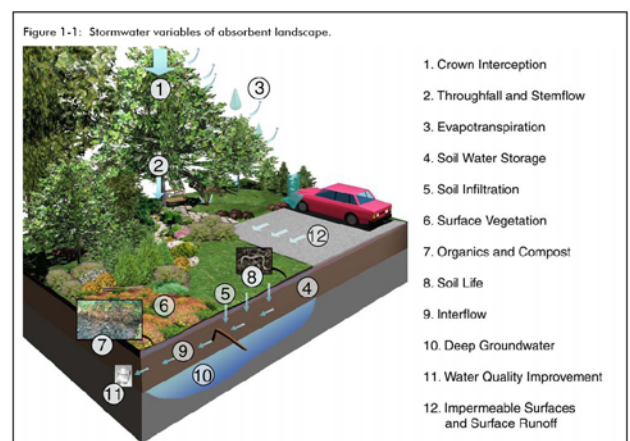
Greater Vancouver Regional District’s Stormwater Management Guidelines take a comprehensive approach to Stormwater management and a ‘design with nature’ approach to mitigate the impacts of existing and future development and growth. The guidelines are based on the appropriate application of absorbent landscapes, infiltration swale systems, infiltration rain garden, pervious paving, green roofs and infiltration trench and soakaway manholes.

Absorbent Landscape

Most landscapes – either natural or manmade – act like a sponge to soak up, store and slowly release rainfall. In most GVRD natural wooded conditions without paving and roof development, 90% of rainfall volume that lands on natural watersheds never becomes runoff, but is either soaked into the soils or evaporates. The trees, shrubs, grasses, surface organic matter, and soils all play a role in this absorbent landscape. The premise of the absorbent landscape concept is maximize the area of absorbent landscape either existing or constructed on the site.

Infiltration Swale System

An Infiltration Swale is a shallow grassed or vegetated channel designed to capture, detain and treat stormwater and convey larger flows. It takes surface flows from adjacent paved surfaces, holds the water behind weirs, and allows it to infiltrate through a soil bed into underlying soils. The swale and weir structures provide conveyance for larger storm events to the storm drain system. Variations on designs include an underlying drain rock reservoir, with or without a perforated underdrain.





Informal rain garden, Water Pollution Control Laboratory, Portland Oregon

Infiltration Rain Garden

An Infiltration Rain Garden is a form of bioretention facility designed to have aesthetic appeal as well as a stormwater function. Rain gardens are commonly a concave landscaped area where runoff from roofs or paving infiltrates into deep constructed soils and subsoils below. On subsoils with low infiltration rates, Rain Gardens often have a drain rock reservoir and perforated drain system to convey away excess water.

Pervious Paving

Pervious paving is a surface layer that allows rainfall to percolate into an underlying reservoir base where rainfall is either infiltrated to underlying soils or removed by a subsurface drain.

The surface component of pervious paving can be:

- Porous asphalt or porous concrete.
- Concrete or plastic grid structures filled with unvegetated gravel or vegetated soil.
- Concrete modular pavers with gapped joints that allow water to percolate through.



Green Roof

A Green Roof is a roof with a veneer of drainage and growing media that supports living vegetation. Green roofs provide a wide range of benefits – from reduction in peak flows and volumes to building heat gain reductions. There are two basic types:

- Intensive – deeper growing medium to support larger plants and trees; designed for public use as well as stormwater and insulation functions.
- Extensive - shallow, lightweight growing medium; designed for stormwater, insulation and environmental functions; vegetation is low and hardy; usually no public access.

Infiltration Trench and Soakaway Manhole



An Infiltration Trench System includes an inlet pipe or water source, catch basin sump, perforated distribution pipe, infiltration trench and overflow to the storm drainage system. A Soakaway Manhole (Sump, or Dry Well) System includes an inlet pipe, a sedimentation manhole, and one or more infiltration shafts with connecting pipes. Use of Infiltration Shaft will be limited by hydrogeotechnical conditions.

Sustainability Features

- Maximizes stormwater infiltration at source.
- Reduces dependence on municipal stormwater systems.

Elements for York Region Consideration

1. Examine opportunities in the new communities of York Region to maximize stormwater infiltration at source.
2. Use as potential criteria for new communities.

Further Information

Greater Vancouver Regional District
4330 Kingsway, Burnaby, B.C. V5H 4G8
www.gvrd.bc.ca/sewerage

Green Roof Program Toronto, ON

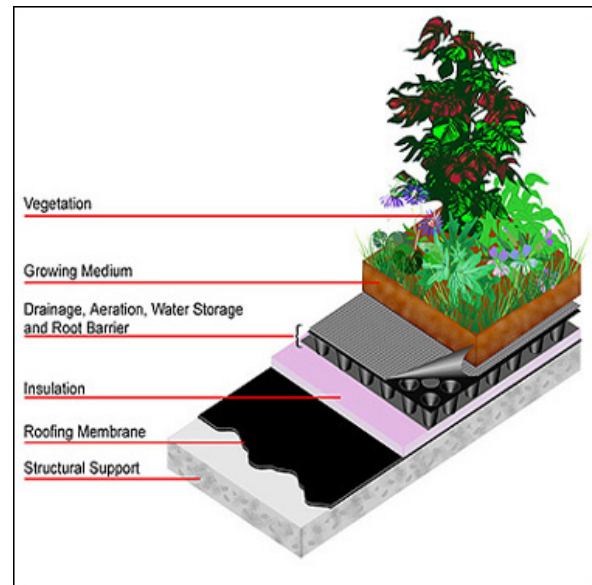
Best Practice 3.6 *Use Green/ Vegetated Roofs*

Description

Toronto City Council approved a Green Roof Incentive Pilot Program for 2007 with an incentive of \$50 per square metre.

The Green Roof Incentive Pilot Program supports the City's stormwater plan known as the Wet Weather Flow Master Plan. The overall goal of the Green Roof Pilot Program is to encourage green roof construction in the City. The program will:

- Result in the construction of a variety of green roof types which could be used for education and promotional purposes
- Provide an opportunity to showcase various green roof technologies and planting styles
- Provide a grant of \$50 per square metre of eligible green roof area up to a maximum of \$10,000 for single family homes and a maximum of \$100,000 for all other property owners in the City of Toronto



Key Features

Green roofs consist of two different types of organic covering for roof surfaces. Intensive roof gardens provide people with access to a garden environment and feature deep root planting. Extensive vegetated roofs consist of a thin layer of soil, over a heavy waterproofing membrane. The roof is planted with plants and grasses that can tolerate extremes in temperature and dryness in the harsher roof environment. Extensive green roofs are generally inaccessible, very light, and low maintenance.

Brief concentrated rain storms can easily overwhelm stormwater entry points and cause severe damage and flooding at the end of the stormwater pipe. These heavy rainfalls can cause flooding in underground systems and structures. A Green Roof delays water from draining off the roof and acts like a massive sponge. A green roof provides a helpful delay mechanism to relieve pressure on existing stormwater pipes during flash rainfalls.

One of the pilot program successful applicants (one of 16) is the Jackman Avenue Public School. Jackman Avenue Public School is operated by the Toronto District School Board and is a junior public school. The Jackman Avenue "Green Team" has built a green roof on the first floor roof and can be seen from street level and by students from a second floor hallway. Jackman Avenue Public school staff, parents and children are stepping out with yet another innovative green project that sets them apart from other Toronto schools. Over May 3rd and 4th, 2006 the Jackman Avenue Public School established a green roof on their lower podium roof. This 1,800 square foot green roof will help students and teachers study and discover the many environmental benefits associated with green roofs.



Jackman Public School

The planting media on the Jackman green roof can retain up to 75% of the rainwater that falls on it – before becoming supersaturated and allowing some runoff. Runoff water quality will be much improved compared to that of a typical conventional roof.

Sustainability Features

- Reduction in stormwater runoff.
- Reduction in energy consumption.
- Reduction in the urban heat island effect and associated cooling costs.
- Beautification of the City.
- Creation of more natural green spaces.
- Opportunities for local food production.

Elements for York Region Consideration

1. Green Roof promotion throughout the Region may assist in increasing implementation.
2. A Regional Facility may make a good test project for green roofs.
3. Opportunity to examine green roofs in connection to the Regional Greening Strategy.
4. Consider including green roofs as an optional criteria for new communities.

Further Information

Green Roofs
 Metro Hall, 22nd floor
 55 John Street
 Toronto, ON M5V 3C6
 E-mail: sustainablecity@toronto.ca
 Phone: 416-392-0191

Dockside Green Victoria, BC

Best Practice 3.7 *Naturalized Waste Water Treatment*

Description

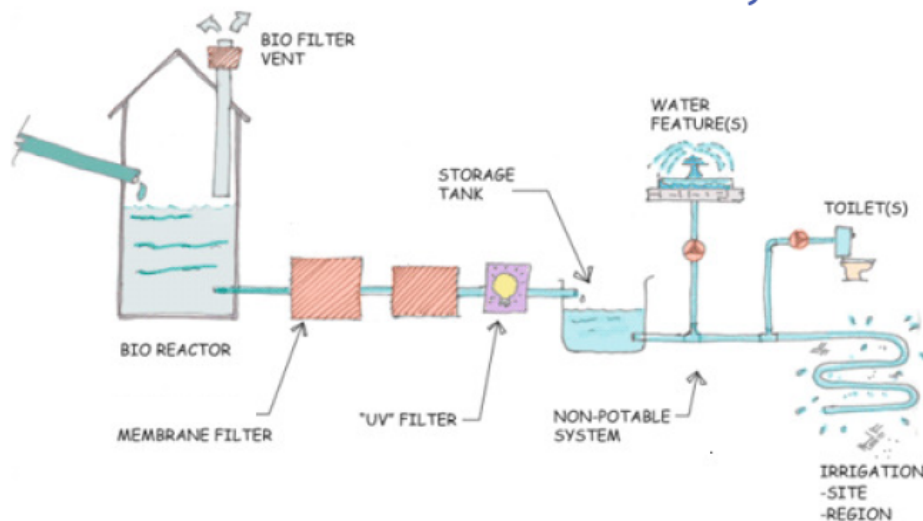
Among the many innovative technologies that make the Dockside Green community development a model of sustainable design, Dockside Green will feature on-site wastewater treatment and reuse. The development will treat 100% of its sewage on-site and use the treated water for flushing toilets, landscape irrigation and water features. It is estimated that over 52 million gallons (196,841 m³) of potable water will be saved from water efficient appliances and the use of treated water on site for flushing toilets and irrigation. With the potential of a further 18 million gallons (68,137 m³) of treated water available for sale off site, the entire potential water savings equal the entire Greater Victoria's regional water use on the driest day of the year.

The recycled water system will serve to irrigate a central greenway running the length of the community that will serve as a main pedestrian artery. Treated recycled water will also feed the Dockside Creek, a scenic waterway flowing alongside the greenway that will play a major role within the community's ecosystem as an essential tool in treating stormwater. The City will not bill residents for the sewage component charge of the water bill nor for the use of treated water.

Key Features

Raw water first flows to a concrete bioreactor tank where bacteria consume or digest the biodegradable waste before it enters the membrane chamber where the ZeeWeed membranes are immersed. Water is gently drawn through billions of microscopic pores on the surface of the membrane fibre via a permeate pump. The pores act as a filter that physically block suspended solids, bacteria and viruses from passing through, producing an exceptional water quality that is completely suitable for nonpotable applications. Ultraviolet units further disinfect the treated water. The sanitized, finished water flows to the water storage tank for use within the community.

Dockside Creek Wastewater Treatment and Reuse System Flow Diagram



The treatment system will blend into the naturalized setting of the community and will be constructed under the greenway.



Sustainability Features

- 52 million gallons (196,841 m³) of potable water will be saved from water efficient appliances and the use of treated water on site for flushing toilets and irrigation.
- Reduces demand on municipal water and waste water infrastructure.

Elements for York Region Consideration

1. Consider examining the opportunities and regulatory obstacles to pilot the use of naturalized waste water treatment.

Further Information:

Windmill Developments
Joe Van Belleghem
www.docksidegreen.com

4.0 Green Buildings

The Residential Sector accounts for roughly 40% of all energy use in Ontario. Green buildings contribute to the reduction of energy consumption, water use, and create a more healthy living or working environment. It is estimated that 17% of the greenhouse gas emissions in Canada are generated from the energy consumed in the home, which in Ontario comes from burning fossil fuels, which are a contributing factor to global warming.

The Ontario Building Code has been revised to increase the energy efficiency of single dwellings. By 2012, the Ontario Building Code will meet the equivalent of EnerGuide 80 or ENERGY STAR level. ENERGY STAR (or EnerGuide 80) level of energy efficiency is 30 to 40% more efficient than units built to minimum Ontario Building Code standards.

Each ENERGY STAR home is responsible for 2-3 tonnes fewer greenhouse gas emissions than a house built to minimum Ontario Building Code. Based on York Region forecasts, approximately 46,000 residential units (excluding the units built in East Gwillimbury, which will be built to ENERGY STAR standards) will be built in York Region. By adopting an ENERGY STAR standard across the Region prior to the Building Code changes being phased in by 2012, 92,000 to 138,000 tonnes of greenhouse gas emissions could be saved.

EcoLogic Subdivision Newmarket, ON

Best Practice 4.1 *LEED™ Certified Buildings*

Description

LEED™ is an acronym for Leadership in Energy & Environmental Design. It is a voluntary, green building rating system to provide a recognized standard for the construction industry to assess the environmental sustainability of building designs. It evaluates environmental performance from a “whole building” perspective over a building’s life-cycle, providing a definitive standard for what constitutes a “green building”. It was developed by the U.S. Green Building Council (USGBC) and has been licensed to Canada Green Building Council (CaGBC), a national not-for-profit corporation, for implementation in Canada. The Canadian version of LEED™ provides a comprehensive list of guidelines to improve the environmental and energy performance of buildings using proven principles, technology and materials that are aligned with Canadian standards and conditions.

The EcoLogic subdivision in Newmarket, is a 34 home subdivision which is a unique collaboration with the Town of Newmarket and the Canada Mortgage and Housing Corporation. The Town originally owned the lots and sold them to Rodeo Fine Homes with a condition of sale that these lots have homes that use at least 25% less fresh water, have 60% less discharge into the storm and sanitary sewers, produce 60% less greenhouse gas, and use 60% less energy compared to conventional homes. Rodeo Fine Homes won the bid and plans to exceed all of the targets, even doubling the water conservation target.

The site also includes Tom Taylor Place, an affordable housing project of 50 rental units which has been designed to LEED™ standards. The 34 EcoLogic homes are all designed to meet US LEED™ for Homes Platinum rating.

Key Features

LEED™ is a point-based rating system; points are earned for building attributes considered environmentally beneficial. LEED™ differs from other rating systems in that it has quantified most of the “green credits”. For example, 5% of the building materials must be from salvaged materials to earn a point for the salvaged materials credit.

LEED™ NC (New Construction of commercial and institutional buildings) in Canada, has 70 points covering six topic areas. Each topic area has a statement of associated goals.

1. **Site Development:** minimize storm water run-off, encourage car pooling and bicycling, increase urban density and green space
2. **Water Efficiency:** eliminate site irrigation, reduce water consumption, minimize or treat wastewater
3. **Energy Efficiency:** reduce building energy consumption, use renewable energy, eliminate ozone-depleting chemicals, commission building systems
4. **Material Selection:** minimize construction waste, re-use existing building façade, use recycled and salvaged materials, use renewable construction materials and design and build more durable buildings
5. **Indoor Environmental Quality:** incorporate daylighting, use low off-emitting materials, provide operable windows and occupant control of work space, improve delivery of ventilation air
6. **Innovation in Design:** use a LEED Accredited Professional, greatly exceed the requirements of a credit, incorporate innovative environmental features not covered in other areas.

Designers can pick and choose the credits most appropriate to their project to achieve a rating. LEED™ has four performance ratings:

26 to 32 points: Certified
 33 to 38 points: Silver
 39 to 51 points: Gold
 52 or more: Platinum

There is no LEED™ program for homes currently in Canada. The Newmarket homes will be certified to US LEED™ for Homes standards and will be used as a case study for a Canadian LEED™ for Homes program, set to launch in 2008.

On the US LEED™ for Homes scale, a typical new suburban home would achieve only 15 points, well below any of US LEED™ for Homes four achievement levels: Certified at 45 points, Silver at 60 point, Gold at 75 points, and Platinum requires 90 points. Rodeo's Newmarket Eco Logic Homes are all designed to achieve at least 96 points on this scale and will achieve a platinum rating when they are finally assessed after completion.

The primary heating source will be renewable solar energy, with a small high efficiency tankless gas boiler serving as the secondary heating source. The home will be super insulated, with added basement, wall, underslab and attic insulation.

Heat recovery systems will be installed to reclaim heat from drain water and ventilation exhaust. Rain water will be collected in an underground cistern and used to flush the ultra low flow toilets and irrigate the drought resistant landscaping. The homes will maximize the use of daylight, and have either compact fluorescent lighting that is 75% more efficient or LED lights that are 95% more efficient than incandescent bulbs.

In addition to this environmentally sensitive design, Rodeo Fine Homes has put in place new building and material sourcing practices that will reduce construction waste by 65%, prevent soil erosion, leave about 25% of the lots untouched and naturally green. For the source local materials Rodeo is using Forest Stewardship Council (FSC) certified wood, and are maximizing the recycled content in all of the materials used. Additionally, the homes are designed to have superior indoor air quality using advanced air filtration, mechanical ventilation, and source reduction design.

Sustainability Features

- Reduced energy costs
- Reduced water usage
- Reduction in resource consumption
- Reduction in greenhouse gas emissions
- Lower operating and maintenance costs
- improved indoor environment which can lower absenteeism, increased productivity

Elements for York Region Consideration

LEED™ (NC) Rating	Certified	Silver	Gold	Platinum
LEED™ Points	26 to 32	33 to 38	39 to 51	52 to 69
Energy Savings	25 to 35%	35 to 50%	50 to 60%	>60%
Annual Utility Savings	\$0.75/ft ²	\$1.00/ft ²	\$1.25/ft ²	\$1.50/ft ²
Typical Payback	Under 3 yrs	3-5 yrs	5-10 yrs	10+ years

(Source: [Enermodal Engineering](#))

1. Support, encourage, and/or require the construction of Green Buildings using the LEED™ certified buildings.
2. Consider expanding the Sustainable Development through LEED™ incentive program to include buildings outside of Regional Centres and Corridors.

Further Information

Canada Green Building Council
325 Dalhousie Street, Suite 800
Ottawa, ON K1N 7G2
Tel: 613-241-1184 ext. 22
www.cabgc.org

Lenard Hart
Media Representative, Rodeo Fine
Homes
Cell: 416-898-0835
E-mail: Lhart@telus.blackberry.net

Amber Harrison
Senior Communications Specialist,
Town of Newmarket
Phone: 905-953-5300 ext. 2046
E-mail: aharrison@newmarket.ca

**Town of East Gwillimbury &
City of Vaughan, ON****Best Practice 4.2:**
*ENERGY STAR for New Homes***Description**

ENERGY STAR® for New Homes is an initiative to promote energy efficient home building backed by Natural Resources Canada. In Ontario, ENERGY STAR® for New Homes is managed by the EnerQuality Corporation. It applies to all low-rise, residential building types regulated by the Ontario Building Code, Part 9, regardless of building orientation, distribution of windows, building size and eligible heating system. The program's focus is almost exclusively on energy efficiency.

The Town of East Gwillimbury has adopted a corporate policy to direct developers of residential developments of ten or more units to construct homes to ENERGY STAR® qualification.



The City of Vaughan, together with the Toronto and Region Conservation Authority initiated a sustainable communities pilot project where approximately 1200 homes will be ENERGY STAR® qualified. With the success of this program, Vaughan Council, in November 2007, approved a policy similar to the Town of East Gwillimbury, which requires that the ENERGY STAR® program be implemented as a standard condition of approval on all residential subdivisions.

Key Features

New homes that meet the Energy Star standard will be 40% more energy efficient than homes built to minimum building code standards. An ENERGY STAR® qualified home is responsible for roughly 2-3 tonnes less global warming, greenhouse gases than a house built to the minimum Ontario Building Code and much less than older houses. The Energy Star system includes Building Packages for two Ontario climate zones, with optional trade-offs for each package to provide the builder with compliance choices. All trade-offs have been pre-determined to meet or exceed specified performance levels.

Energy Star is linked to the EnerGuide program. EnerGuide for New Houses measures the energy-use and efficiency of a whole house and gives a rating out of 100. To be Energy Star qualified, a new home must score 78 on the EnerGuide for new houses scale. A typical home built to minimum Ontario Building Code standards would score EnerGuide 68 (approximately). The changes to the Ontario Building Code in 2006 will require all new homes started December 2011 to be built to EnerGuide 80.

To achieve ENERGY STAR® for New Homes status, builders select from an array of possible improvements. Homes can earn the ENERGY STAR for New Homes label only after a neutral, 3rd party verification. Independent Home Energy Evaluators conduct on-site testing and inspections to verify that the homes qualify.

Features of an ENERGY STAR® home include effective Insulation, high-performance windows, tight construction and ducts, more efficient mechanicals including efficient appliances, lighting and high efficiency heating, air conditioning and ventilation.

The ENERGY STAR® program's key strength is that it has the greatest brand recognition amongst homeowners. ENERGY STAR® products are known to be best in class, and EnerQuality Corporation manages the ENERGY STAR® program in addition to the R-2000 and EnerGuide for New Houses

program. These three initiatives have 354 participating home builders. In 2006, there were 1616 new energy efficient homes completed and labelled; 802 homes ENERGY STAR[®] qualified, 78 homes R-2000 certified, and 736 homes EnerGuide rated. In 2006 builders have either started or have committed to building 5011 homes among the three initiatives.

By 2012 ENERGY STAR[®] will be the equivalent energy standard in the Ontario Building Code (EnerGuide 80 or greater).

Sustainability Features

- 30% to 40% more energy efficient than those built to minimum Ontario Building Code standards;
- An ENERGY STAR[®] home generates 2-3 fewer tonnes of greenhouse gas emissions.

Elements for York Region Consideration

1. By 2012, when the Ontario Building Code meets EnerGuide 80, there will have been approximately 46,000 new residential units built in York Region equating to approximately 96,000 to 138,000 tonnes of greenhouse gases which could be saved by adopting ENERGY STAR[®] standards now.
2. Support, encourage, and/or require the construction of ENERGY STAR[®] buildings in the new communities of York Region.
3. Lobby the Provincial government for faster implementation of new building code standards.

Further Information

ENERGY STAR[®]
EnerQuality Corporation
20 Upjohn Road, Suite 102
North York, Ontario M3B 2V9
416-447-0077

www.esnewhomes.ca

Town of East Gwillimbury
Dan Stone
Manager of Planning Policy
19000 Leslie Street
Sharon, ON L0G 1V0
905-478-4282

www.eastgwillimbury.ca

City of Vaughan
Development Planning
Department
2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
905-832-8585

www.vaughan.ca

Jayman MasterBUILT™ Calgary, AB

Best Practice 4.3: *Built Green*

Description

Similar in many ways to the ENREGY STAR® program in Ontario, Built Green™ is a building labelling and rating system currently available in Alberta and British Columbia.



Built Green™ offers a menu of options addressing a range of "green" items from which the builder selects a minimum number to meet a chosen achievement level.

- The program is voluntary.
- Training is integral to the qualification component of the Built Green™ program.
- Flexibility and affordability.
- Not cost prohibitive.
- Program Integrity.

Jayman MasterBUILT™ in Alberta has committed to building 100% their homes in Calgary and Edmonton Built Green™ Gold. This will save over 3000 tonnes of greenhouse gas emissions annually.

Key Features

The Built Green™ standards have the following 8 categories where points can be gained in order to determine the Built Green™ certified category as Bronze, Silver, or Gold.

Checklist Categories		Bronze	Silver	Gold
I. EnerGuide for New Houses Rating		72	75	77
II. Operational Systems	Min. 15/91	75 Points	80 Points	85 Points
III. Building Materials	Min. 15/66			
IV. Exterior & Interior Finishes	Min. 10/69			
V. Indoor Air Quality	Min.15/69			
VI. Waste Management	Min. 7/32			
VII. Water Conservation	Min.7/48			
VIII. Business Practices	Min 6/33			

In order to be Built Green™ certified, the Built Green™ Certified Builder enrolls the new home on behalf of the purchaser/owner. The energy efficiency of the building is verified by a Certified Energy Advisor possession. Upon completion of construction and a satisfactory blower door test/inspection, the builder will receive an EnerGuide for New Houses rating label and report together with an official Built Green™ seal for the new home. The EnerGuide label and Built Green™ seal are affixed to the furnace in the new home to provide assurance of its Built Green™ status to the new as well as future owners.

To confirm selected checklist items are being included in the homes, 5% of enrolled homes will be audited at random during different phases of construction. The audit can consist of a consultant visiting the home to confirm the Checklist items or the builder may be requested to submit documentation and/or certificates as outlined on the Checklist.

Sustainability Features

- Provide greater energy efficiency and reduce pollution
- Provide healthier indoor air
- Reduce water usage
- Preserve natural resources
- Improve durability and reduce maintenance

Elements for York Region Consideration

1. Consider adopting a standard for new residential construction which goes above and beyond the building code for energy efficiency.

Further Information

Built Green™ Society of Canada, Administration
Room NJ207, SAIT Polytechnic
1301-16th Avenue NW
Calgary, AB, T2M 0L4
(403) 284-8100
admin@builtgreencanada.ca
www.builtgreencanada.ca

Jayman Head Office
200, 3132 - 118 Ave. S.E.
Calgary, AB T2Z 3X1
Phone: 403.258.3772
Fax: 403.253.3576
info1@jayman.com
www.jayman.com

5.0 Creating Liveable, Vibrant Communities

The development of the new communities of York Region will be informed by the policies of the Province's Places to Grow Plan. Places to Grow states that new development taking place in designated greenfield areas will be planned in a manner that:

- *Contributes to the creation of complete communities.*
- *Creates street configurations, densities, and an urban form that supports walking, cycling, and the early integration and sustained viability of transit services.*
- *Provides a diverse mix of land uses including residential and employment uses to support vibrant neighbourhoods.*
- *Creates high quality public open spaces with site design and urban design standards that support opportunities for transit, walking and cycling.*
- *Meets a minimum density target that is not less than 50 residents and jobs combined per hectare.*

Places to Grow defines "complete communities" as a community which meets peoples needs for daily living through an entire lifetime by providing convenient access to an appropriate mix of jobs, local services, a full range of housing and community infrastructure including affordable housing, schools, recreation and open spaces for their residents. Convenient access to public transportation and options for safe, non-motorized travel is also provided.

Land use planning is a fundamental driver of sustainable communities and provides the physical context within which communities grow but it is the principles underlying land use planning decisions that determine how features such as street layout, open space and building placement combine to bring vitality and diversity of opportunity

York Region is committed to ensuring that new communities are planned to ensure a mixture of uses that allows people to live and work in close proximity, contains densities appropriate to support efficient use of infrastructure, resources, transit, while providing high quality urban design.

The following best practices represent cases where these community elements have been successfully planned or implemented.

South East False Creek Vancouver, BC

Best Practice 5.1: *Create Mixed Use, Live-Work Communities*

Description

The Southeast False Creek (SEFC) study area comprises a total of approximately 80 acres (32 hectares) of former industrial land near downtown Vancouver. The majority of the land is City owned and there are over 30 acres (12.1 hectares) of privately owned land.

Southeast False Creek (SEFC) is envisioned as a community in which people live, work, play and learn in a neighbourhood that has been designed to maintain and balance the highest possible levels of social equity, liveability, ecological health and economic prosperity, so as to support their choices to live in a sustainable manner.

SEFC will be a mixed-use community, with a focus on residential use, developed at the highest density possible while meeting liveability and sustainability objectives.

Key Features



The objectives of the Official Development Plan for Southeast False Creek include developing a mixed use neighbourhood focussing on a diversity of residential uses to accommodate all incomes, with family housing as a priority, where people live, work, play, and learn in a neighbourhood designed to maintain

and balance the highest possible levels of social equity, liveability, ecological health, and economic prosperity so as to support their choices to live in a sustainable manner.

Several mixed-use precincts are planned with commercial, light industrial and office uses located on the ground floor, and residential above. The land use plan and preliminary designs (some phases are currently under development) ensures that goods and services within walking distance and housing that is linked by transit and in proximity to local jobs.



Live-Work and Work-Live areas are planned for sections of South East False Creek. In Live-Work areas the expectations of neighbours for quiet in the building or in the neighbourhood take precedence over the work needs of the unit.

In Work-Live area the work-related needs of the unit, with respect to noise, odour, employees and customers, take precedence over the neighbours' expectations for quiet.

Sustainability Features

Mixed use, live-work communities provide a range of benefits including;

- Reducing the need for private automobiles, reducing congestion, and greenhouse gas emissions.
- Providing the opportunity for more affordable and varied housing choices to meet the needs of all community members.
- Encourages people to walk by placing shopping, services and housing in close proximity to one another.
- Revitalizes community life by helping streets, public spaces and pedestrian-oriented retail to become places where people meet, shop and gather.
- Promotes inclusion by and diversity by incorporating housing for people of all income levels along with supportive housing for the elderly and people with special needs.
- Promotes healthy and active lifestyles.

Elements for York Region Consideration

1. New Communities of York Region should be designed with mixed use and live-work components in order to meet the density requirements in the Provincial Growth Plan and to create liveable and healthy communities.

Further Information

Southeast False Creek
Current Planning Division, Community Services
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Vancouver, BC V5Z 4A8
sefc@vancouver.ca
www.city.vancouver.bc.ca/commstvcs/southeast/index.htm

Vancouver Eco Density Program Vancouver, BC

Best Practice 5.2: *Appropriate Density*

Description

The City of Vancouver's has embarked on a strategy called "EcoDensity" or ecological density. The EcoDensity program is designed to create higher density throughout Vancouver in a way that lowers impact on the environment; ensures the necessary physical and social amenities; and supports new and different housing types as a way to promote more affordability.

The EcoDensity strategy is in response to the following challenges faced by Vancouver and other similar cities:

- how to continue to grow in a way that is sustainable and reduces the city's ecological footprint;
- how to grow in a way that maintains our liveability; and
- how to grow in a way that improves opportunities to create more affordable types of housing.

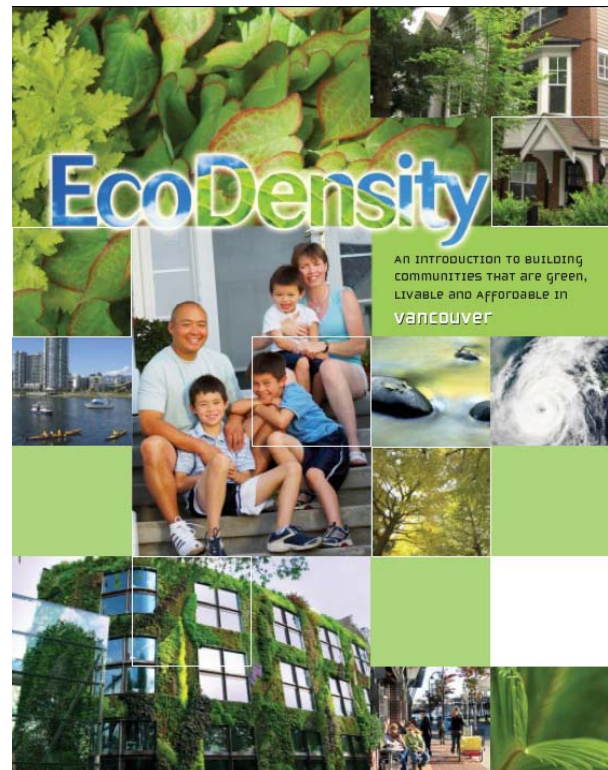
Key Features

Single-family dwellings still take up half of the land area in Vancouver. Only 11 per cent of the city's land area is currently used for multiple-unit dwellings. Consequently, EcoDensity will explore increasing density in a variety of contexts across the city (i.e. in lower density areas; along transit routes and nodes, neighbourhood centres,). The key will be to support density that is high quality, attractive, more energy efficient, and respects neighbourhood character, while lowering Vancouver's footprint.

EcoDensity, or ecological densification, is one of the key ways to ensure the future liveability of the city and make our neighbourhoods more adaptable, healthy and economically competitive in the face of global changes brought on by climate change and heavy reliance on fossil fuels.

Vancouver has developed 6 Guiding Principles for the EcoDensity strategy:

1. Use ecological sustainability as the primary consideration in making decisions about planning and development in the city.
2. Create a new strategic pattern of development, services and amenities (a structure plan) based on densification, green buildings, and sustainable energy, food and transportation systems.
3. Take advantage of the activities, systems and services that density enables or makes more efficient, including shared energy systems, walking, cycling, transit, and a greater diversity of amenities.
4. Improve affordability for owners and renters through increasing housing supply, types, sizes, tenure, locations and targeted affordability programs in every neighbourhood across the city.



5. Plan for the amenities and services that must come along with densification to support liveable, healthy and safe neighbourhoods and think creatively about the diversity and varied uses of public spaces and rights-of-way.
6. Engage the citizens of Vancouver in making decisions on the implementation of EcoDensity

EcoDensity will mean altering some City policies, bylaws, incentives and zoning to reduce barriers and promote ideas that will create communities that are sustainable, liveable and affordable.

Sustainability Features

- Higher density communities are more ecologically sustainable by reducing the city's ecological footprint.
- Infrastructure is used more efficiently.
- Reduces automobile trips, encourages biking and walking, and support public transit
- Provides a range of housing forms and affordability options.
- Leaves more open space open for parks, trails, woods and other pedestrian-friendly avenues.

Elements for York Region Consideration

1. Continue to support intensification in Regional Centres and along Regional Corridors.
2. Provide criteria to ensure that new communities are built to an appropriate density to support transit, improve housing options, walkability and liveability, and provide a range of human services to support the residents and workers.

Further Information

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<http://www.vancouver-ecodensity.ca/>

**Cornell
Markham, ON****Best Practice 5.3:**
*Build Communities with high quality urban design***Description**

Cornell is a community in Markham which was developed based on the principles of new urbanism, and represents an example of high quality urban design.

Approximately half of the land has been preserved as permanent open space, with much of that comprising a perimeter park along the adjacent Rouge River Valley. The remaining property has been divided into ten distinct neighbourhoods along a coherent transit route, so that every resident will be within a five-minute walk of convenience retail and a bus stop.

Key Features

The key features of the Cornell Community include:

- Narrower streets and locating buildings closer to the streets.
- Use of lanes for garage access, which helps improve streetscape design by allowing more space for sidewalks, trees, and buildings.
- A range of housing types, including garden suite apartments over garages to allow for increased densities.
- Measures to promote walking, cycling, and social interaction among residents, such as appropriate sidewalk size, and location, adequate lighting, traffic-calming measures, and mixed land uses.



The Cornell community development is currently 100% lane based where garages are located in laneways behind single and multi-family homes, while grid-like street patterns were chosen in favour of confusing networks of curvy-linear roads.

The community has residential with centres within a 5 minute walk of all edges, and a grid of interconnected streets with specific development corridors identified as the focus for transit service and mixed use high density buildings. A mixed use district supports a balance of live work opportunities. Garden suites on laneways add housing diversity.

Compact built form in proximity to the streets to foster pedestrian activity and social interaction. A mix of uses and human activities provided for in the community include live, work, shop, play, worship, and education.



The natural heritage features in Cornell are protected and enhanced. Greenspace corridors of large and small parks interconnected through pathways and street side linkages.

Single homes are close together with short setbacks from the street. The streetscape contains a variety of housing types and finishes, with porches which provide an opportunity for neighbourhood interaction and eyes on the street. The scale of Cornell is walkable, the streets are designed with rear lanes so parking and garages are in back.

Sustainability Features

- Desirable, attractive, walkable, community environment.
- Pedestrian focussed community fosters active lifestyles.

Elements for York Region Consideration

1. The new communities of York Region should use high quality urban design to create attractive and liveable communities to foster community interaction and pedestrian focus.

Further Information

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Town of Markham Anthony Roman Centre
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www.markham.ca



Affordable Housing Strategy City of Coquitlam, BC

Best Practice 5.4: *Have an affordable housing strategy*

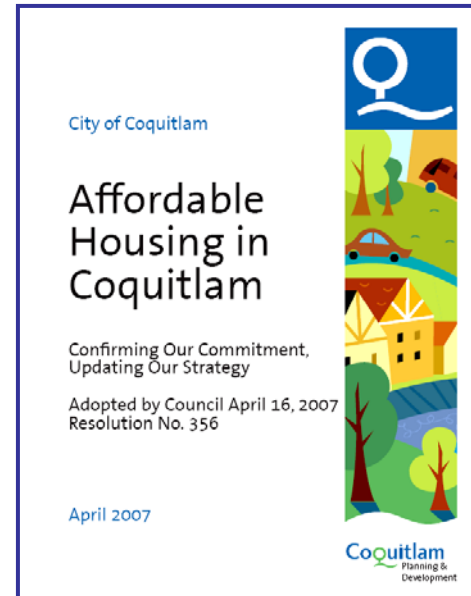
Description

In April 2007, Coquitlam adopted an updated Affordable Housing Strategy in partnership with a community-based, multi-stakeholder Advisory Group, a reflection of the partnerships necessary to address the issue of housing affordability.

The Strategy is presented within the context of various established roles that a municipality can take in addressing housing affordability and consists of a multi-year work program outlining specific strategic actions. A measurement framework is included and an annual progress report will be produced in order to track implementation of the Strategy.

Key Features

The Coquitlam Affordable Housing Strategy is based on the vision statement: *That all residents of Coquitlam will be able to live in safe, appropriate housing that is affordable for their income level.*



The strategy is based on four principles:

1. Affordable housing is an essential community good.
2. The City of Coquitlam is committed to a sustainable community, including affordable and safe housing for its residents.
3. The City will collaborate with senior government, its municipal neighbours, the region, the housing industry and community stakeholders in the interests of housing affordability.
4. The principle of social integration, of both neighbourhoods and housing developments, underlies the City's approach to affordable housing.

And the following Three Goals:

1. To preserve and increase Coquitlam's stock of safe, affordable, appropriate housing.
2. To decrease the number of Coquitlam residents in housing need.
3. To support Coquitlam residents in moving through the stages of the housing continuum, from homelessness to independent market housing.

The core of the strategy is presented in the context of 10 established municipal roles and associated actions in addressing housing affordability.

- 1. Serviced Land Supply.** Maintain a planned supply of serviceable land for residential development of various types and densities.
- 2. City Land.** Use some of the City's land holdings to help meet affordable and special housing needs.
- 3. Zoning, Subdivision, and Building Regulations.** Minimize regulatory barriers for residential developers.
- 4. Advocacy and Involvement.** Advocate about Coquitlam's housing issues and needs. Participate in and support Tri-Cities, regional and provincial housing initiatives.
- 5. Information and Outreach.** Increase public awareness of housing needs, issues and opportunities for action.

6. Measuring Accomplishments. Analyze measures associated with achieving goals; spot emerging trends and monitor issues to help inform City policy and decision-making.

7. Policy and Implementation. Keep housing affordability on the City's agenda through continued implementation of the Affordable Housing Strategy.

8. Policy Development.

- (i) Work with residential developers towards the goal of an inclusionary (inclusive of various income, ability and support needs) housing mix in residential and mixed use developments.
- (ii) Encourage adaptable and accessible housing in multi-unit buildings.
- (iii) Protect against the loss of affordable rental housing and assist displaced tenants.
- (iv) Encourage the development of new rental housing.

9. Assistance to Non-market Housing Providers. Assist Non-market housing providers to produce additional rental and special needs affordable housing.

10. Market Rental Housing Stock. Encourage the development industry to add more rental housing and landlords to upgrade existing rental housing.

Sustainability Features

- Provides a comprehensive approach to affordable housing.
- Affordable housing options allows people to live close to where they work, which can reduce commute times, congestion, and greenhouse gas emissions.
- Provides opportunities for social inclusion and cohesion.

Elements for York Region Consideration

1. Consider updating York Region's Housing Supply Strategy in the context of the Planning For Tomorrow Growth Management strategy.
2. Link the housing requirements of York Region with employment.

Further Information

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6.0 Sustainable Transportation

Sustainable transportation for new communities means building new communities to encourage alternative forms of transportation, transit oriented development, design neighbourhoods to reduce dependence on private automobiles, provide support for alternative forms of transportation such as car share programs.

The Centre for Sustainable Transportation, a Canadian organization based in Toronto, defines sustainable transportation as a transportation system that:

- *Allows the basic needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations;*
- *Is affordable, operates efficiently, offers choice of transport mode, and supports a vibrant economy; and*
- *Limits emissions and waste within the planet's ability to absorb them, minimizes consumption of non-renewable resources, reuses and recycles its components, and minimizes the use of land and the production of noise.*

A sustainable transportation system can minimize environmental, economic, and social impacts through the application of energy and spatial efficiencies. Energy efficiencies are achieved when either renewable energy sources are used for transportation, such as electricity for cars or carbohydrates for walking and cycling; or non-renewable energy sources are used more effectively, such as transit and ridesharing (i.e. carpooling).

Spatial efficiencies are achieved through land use practices that optimize public space and the utility of land. With respect to transportation, spatial efficiencies exist when transportation systems maximize the carrying capacity of a roadway (i.e. mass transit over single-occupant vehicle travel) and land use policies encourage compact, dense, and mixed-use development, which increase access. Land uses should be arranged so that places of work and places of residence is closer together and transit, trails, and sidewalks should be provided early in development to encourage use from first occupancy.

The following best practices outline programs and developments which incorporate sustainable transportation features.

U-Pass Program Greater Vancouver Transportation Authority (Translink)

Best Practice 6.1:
Encourage Transit Use

Description

The U-Pass Program of the Greater Vancouver Transportation Authority is an integrated comprehensive transportation package that provides students with universal, accessible, and affordable access to public transit and other sustainable transportation programs. TransLink's universal pass program serves 60,000 students at Simon Fraser University and the University of British Columbia and was designed to increase transit ridership and build a transit culture over the long term.



Key Features

The U-Pass allows students unlimited travel on the area's transit facilities for a significantly discounted price. It also provides a \$2 discount on rides on the West Coast Express commuter rail service, as well as new bus routes and increased bus service to both universities. Transit is now the leading mode of transportation to and from both universities, and automobile traffic at both sites has decreased by between 10 and 12 per cent, for associated greenhouse gas (GHG) emission reductions of about 21,000 tonnes per year.

TransLink worked to improve transit service and frequency to accommodate the estimated increase in transit users. TransLink introduced a non-stop bus routes on high volume routes and improved route frequency and increased the number of hours of service to increase service and use. TransLink increased bus service to the two universities by 61,000 service hours annually, at a yearly cost of about \$4.5 million. TransLink then negotiated a fee per student with each university— UBC subsidizes the pass at a rate of \$23 per student per month, while SFU subsidizes the pass at a rate of \$25 per student per month—and guaranteed the price for the first two years of the program.

Sustainability Features

- Automobile traffic at both universities has decreased by between 10 and 12 per cent, for associated greenhouse gas (GHG) emission reductions of about 21,000 tonnes per year.
- Students have saved between \$200 to \$800 on average for a four month semester on transportation costs since the implementation of the U-Pass.
- Demand for parking on both campuses has decreased. The cost to build a 500-space parking lot is approximately \$15 million, and UBC has already been able to remove several hundred parking spaces as a result of the U-Pass program.

Elements for York Region Consideration

1. York Region Transit and VIVA together with the TTC are currently examining opportunities to provide an incentive program to York University Students.
2. Engage in partnerships with key organizations; educational facilities; large employers.

Further Information

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Best Practice Area:

6.0 Sustainable Transportation

South East False Creek Vancouver, BC

Best Practice 6.2 *Design Communities to Reduce Automobile Dependence*

Description

In the South East False Creek neighbourhood of Vancouver, the planning of the movement system reflects Vancouver's transportation priorities, in descending order of importance, of pedestrians, bicycles, transit, goods movement, and automobiles. Movement system planning is to support transportation alternatives to vehicles by requiring dedicated space for bicycle lanes, greenways, and tramways, and limited automobile ownership through parking demand management and the proactive application of neighbourhood transportation demand management.

The transportation target for South East False Creek is for 60% of all daily trips by non-auto modes based on reduced parking requirements, greater support for car-sharing and co-op vehicles, and increased support for alternative transportation modes such as cycling and public transit.

Key Features

Parking and loading is to be the minimum required to serve all uses while encouraging sustainable transportation choices and overall trip reduction. Development promotes unbundling parking from residential units to support reduced parking standards and housing affordability; and is used to encourage the provision of car-sharing vehicles with the goal of reducing car ownership.

The development has been designed to support measures to encourage better use of the movement system including more use of the pedestrian, cycling, and transit facilities to decrease automobile dependency, minimize parking demand, and reduce greenhouse gas transportation emissions. The implementation and ongoing monitoring of a neighbourhood transportation demand management program provides consistent and coordinated approach to transportation demand management planning.

There are programs and strategies that further promote walking, biking, and transit over cars as “build out” progresses either at the time of re-zonings or as part of individual projects.

Key features of the transportation strategy include:

- The provision for a streetcar connecting to downtown running through the heart of the community,
- Providing additional pedestrian and bicycle capacity throughout the community.
- Reducing parking standards.

Sustainability Features

- Design and policies encourage the use of a variety of transportation options.
- Policies support a community that is not designed around single automobile use as the primary mode of transportation.

Elements for York Region Consideration

1. Provide the appropriate criteria to design new communities to support a range of transportation choices.

Further Information

Southeast False Creek
Current Planning Division, Community Services
#406 - 515 West 10th Avenue
Vancouver, BC V5Z 4A8
sefc@vancouver.ca
www.city.vancouver.bc.ca/commsvcs/southeast/index.htm

Best Practice Area:

6.0 Sustainable Transportation

Calgary Alternative Transportation Cooperative Calgary, AB

Best Practice 6.3:
Provide alternative transportation modes

Description

CATCO is the Calgary Alternative Transportation Co-operative. It is a member owned, democratic co-operative, incorporated in 1999, with a mission to "promote, develop and operate transportation alternatives". It was formed primarily to provide a democratic ownership and governance structure for carsharing, but is serious about promoting walking, cycling, transit and urban design issues to aid the members. CATCO members want Calgary to be less auto-dependent.



CATCO:

- Promote and encourage the use of more sustainable modes of transportation
- Develop and operate a car sharing co-operative
- Assist members in developing alternative transportation methods
- Develop educational strategies focusing on more sustainable transportation
- Develop opportunities for lobbying on issues affecting transportation

Key Features

CATCO focuses on walking and bicycling, car sharing, ride sharing, car pooling, promoting Calgary Transit, and Community Planning, however, focuses primarily on their carsharing program.

CATCO's car sharing program is an alternative form of car ownership. It is a community based short term auto rental program structured to provide the vehicle use and ownership based on use. If you drive less than 15,000 km a year and you don't need a car for work every day, car sharing will likely save you money, give you greater mobility - and actually reduce pollution.

Carsharing is like owning a portion of a car, but with your cost based on how much you use it. It is like car rental, but with most of the hassle and uncertainty removed. Carsharing responds to the costs of car ownership which often drive excessive car use, to maximize private car investment. Unnecessary car use leads to excessive traffic congestion, air and water pollution, higher taxes to provide roads and parking, a poor transit system, and concerns about the cohesiveness of communities. When car-owners switch to carsharing they drive substantially less and save money, because carsharing is priced on a per-trip basis.

Carsharing also addresses the issues of accommodating the amount of parking necessary to store all the cars that are not being used at any given time. Parking requirements dictate the design of communities. If parking requirements can be reduced by reducing auto use and reducing the number of autos our communities can evolve into a greener and more pedestrian-friendly urban form.

Sustainability Features

- Grassroots organization
- Reduces automobile dependence
- Car sharing has been shown to reduce individual members' driving by over 50%, and thus related pollution. And every car shared takes 5 or 6 off the road.

Elements for York Region Consideration

1. Work with Smart Commute to examine the feasibility of developing a car share program.

Further Information

www.catco-op.org

Best Practice Area:

6.0 Sustainable Transportation

Halifax Active Transportation Plan Halifax, NB

Best Practice 6.4: *Participate in active transportation planning*

Description

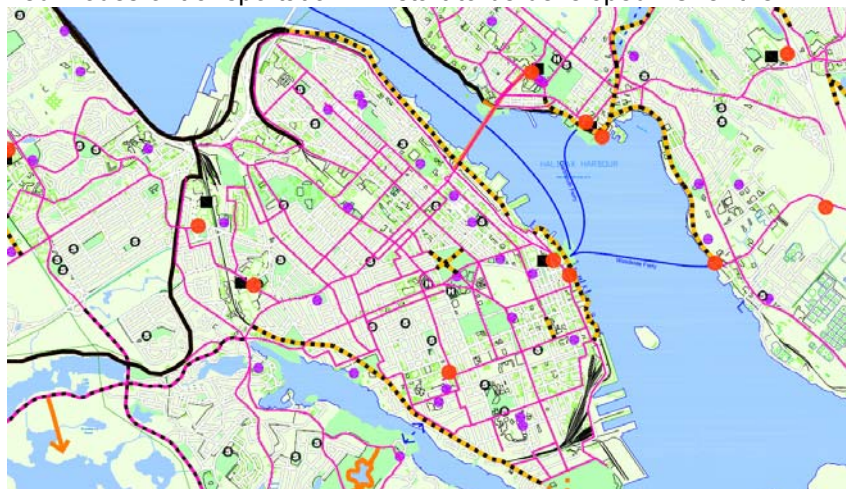
Halifax Region has developed an Active Transportation Plan which provides policy direction for the development of an Active Transportation network within Halifax Regional Municipality. It is anticipated that promotion and education will be fundamental to the increase in the number of residents using active modes of transportation for their day-to-day activities.

Active Transportation incorporates a variety of self-propelled modes of transportation which utilize on- and off-road facilities. These modes include in-line skating, walking, jogging, cycling and skateboarding. Also included, but not as commonly thought of are manual wheelchairs, cross-country skiing and snowshoeing. Active Transportation should be viewed as being year round and available for all member of the community.

A well-connected, safe and functional active transportation network, which will take into account all origin and destination trips, utilizing non-motorized modes of transportation will start to be developed. Over the next 20 years, a more integrated, diverse network supporting active modes of transportation will allow for greater choice, improved health and environmental benefits.

Key Features

The Active Transportation plan will create an Active Transportation Network Plan for the urban, suburban and rural areas for both on-road and off-road facilities. For the Halifax Region, Active Transportation is defined by four categories.



1. *Active Commuting* which involves journeys to and from work.
2. *Active Workplace Travel* which includes trips during working hours such as the delivery of materials or attending meetings.
3. *Active Destination Oriented Trips* which includes trips to and from school, shops, visiting friends and running errands.
4. *Active Recreation* which involves the use of an AT mode for fitness or recreational pursuits, such as hiking or cycling.

A central goal of the Active Transportation Plan is to double the number of people who use AT modes for a portion of their entire trip, particularly for utilitarian (commuting) purposes. To achieve this goal, a hierarchy of routes and facility types is recommended to appeal to a wide range of skill levels and includes:

- Off-Road Multi-Use Trails
- Sidewalks
- Signed-Only Cycling Routes
- Bicycle Lanes
- Paved Shoulders on Arterial and Higher Volume Collector Roads or Rural Roads.

Sustainability Features

- By providing a variety of options for transportation, a more active lifestyle is promoted and there is a decrease in the reliance upon the automobile.

Elements for York Region Consideration

1. Encourage active transportation by ensuring a safe network which enables a variety of transportation modes.
2. Implement the Region's Pedestrian and Bicycle Master Plan.

Further Information

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<http://www.halifax.ca/TDM/activetransportation/index.html>

7.0 Green Space

Green space, including urban trees, active and passive parks, and open spaces, are all important components of creating liveable, people-first communities. Active and passive park space, urban squares, and outdoor gathering spaces provide both an aesthetically pleasing urban atmosphere and help contribute to social cohesion and inclusion, but also provide important opportunities for recreation.

Beyond the aesthetic value of urban trees, they also can assist in reducing energy demands, improve water quality, and provide habitat for migrating birds and other urban wildlife. Strategically planted deciduous trees can shade buildings in the summer, reducing the need for cooling. By shading paved surfaces, they can also reduce the urban heat island effect. In the winter, urban trees can assist in mitigating the impact of cold winds while allowing sunlight to passively heat buildings.

Community gardens provide spaces for people to grow food and to interact with the natural environment and their community. They are important contributors to strengthening social networks and enhancing the quality of life for all in a neighbourhood.

The following best practices focus on green space initiatives which value the urban forests and greening within an urban context, create interconnected open space systems and provide opportunities for community gardening.

Best Practice Area:

7.0 Greenspace

Green Factor Seattle, Washington

Best Practice 7.1: Require minimum area of green cover

Description

The Seattle Green Factor provides a new menu of landscaping strategies that will be required for all new development in neighborhood business districts. It is intended to increase the amount and quality of urban landscaping in these dense urban areas, while allowing increased flexibility for developers and designers.

SEATTLE *× green factor*



The green factor encourages the planting of layers of vegetation and larger trees in areas visible to the public and in the public rights-of-way directly adjacent to the property. There are additional bonuses for using rainwater harvesting and/or low-water use plantings. Use of larger trees, tree preservation, green roofs and even green walls is encouraged by this proposal.

Key Features

A worksheet has been developed that assist applicants in calculating their "score," allowing them to try different combinations of features to reach the requirement. The green factor encourages the planting of layers of vegetation in areas visible to the public and along the street directly next to the property. Bonuses are provided for using rain water harvesting and choosing low-water use plants. Use of larger trees, tree preservation, green roofs and even green walls is encouraged through this policy.

When a new project is proposed for development in Seattle's commercially-zoned areas, applicants must demonstrate how they intend to meet the new landscaping requirement. An electronic worksheet is available for download at the Seattle Green Factor website. This tool helps applicants calculate their score. The worksheet keeps a running score so applicants can test different landscaping arrangements to

meet the requirement. Applicants will submit the worksheet, a plan showing landscape areas, and a chart calling out planting areas and how the score was achieved.



SEATTLE GREEN FACTOR:

- 🌿 Maximizes vegetation potential in rights-of-way
- 🌿 Rewards layering of plant material
- 🌿 Rewards tree preservation
- 🌿 Rewards larger species of trees
- 🌿 Rewards low water use
- 🌿 Rewards landscapes visible to passersby
- 🌿 Provides flexibility for developer to meet the code

Sustainability Features

- Increases tree canopy
- Absorbs carbon, releases oxygen
- Provides habitat for birds and bees
- Cools buildings with shade
- Cools cities – urban heat island effect
- Insulates buildings
- Green roofs increase the life of roof membrane
- Green walls increase life of building cladding

Elements for York Region Consideration

1. Providing a minimum green space index is an option for inclusion in new community criteria.

Further Information

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<http://www.seattle.gov/dpd/permits/greenfactor/>

Cool Toronto Toronto, ON

Best Practice 7.2: *Reduce Urban Heat Island Effect*

Description

Toronto Public Health, the Clean Air Partnership and the Toronto Atmospheric Fund (TAF), with the financial assistance of Government of Canada Climate Change Action Fund (CCAF), have embarked on "Cool Toronto", a special project that will develop model municipal practices and policies together will form Toronto's Urban Heat Island Mitigation and Adaptation Project. The project also provides better scientific understanding of Toronto's heat island and the benefits of mitigation strategies.



Key Features

The project also provides better scientific understanding of Toronto's heat island and the benefits of mitigation strategies. Dark surfaces and infrastructure present in the city amplify the heating capacity of incoming solar radiation. Over the long term, municipal policies and measures that encourage urban reforestation and more reflective roofs and streets can cool ambient air temperatures. The result is more healthy micro-climates for people, reducing the hot air that air conditioning pumps into the urban environment, and ameliorating heat induced smog levels. The Cool Toronto strategy includes a number of implementation options and mechanisms. Toronto's Green Development Guidelines (see Section 1.0) contains a number of policies to reduce the urban heat island including:

- Using trees and other vegetation can shade buildings, pavements, parking lots and roofs, and naturally cool a city by releasing moisture into the air through evapotranspiration. Cities can be cooled by strategically placed vegetated areas.
- By protecting buildings from wind, trees can reduce heating costs in winter, and through direct shading and evaporative cooling, can contribute to reductions in air conditioning use in summer.
- The use of reflective surfaces such as light-coloured roofs, roads, and parking lots are another way to cool cities. Light-coloured surfaces reflect rather than absorb heat. The more solar radiation a surface absorbs, the hotter it gets. The more radiation it reflects, the cooler it stays, and cooler surfaces can be achieved with little or no additional costs.

Sustainability Features

- Holistic approach to reducing urban heat island.
- Connection to Green Development Strategy.
- Reducing urban heat island can assist in reducing energy demands for cooling in the summer heat and creating a more comfortable city living condition for residents and workers.

Elements for York Region Consideration

1. Consider examining the urban areas of York Region for urban heat island impacts.
2. Connect findings to Greening Strategy update to examine strategic areas to target for additional coverage.
3. New community criteria could contain provisions for intensifying urban areas and provide policies to ensuring the greening of urban areas to mitigate urban heat island.

Further Information

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Best Practice Area:

7.0 Greenspace

Oakville's Urban Forests Our Solution to Our Pollution Oakville, ON

Best Practice 7.3: *Manage Urban Forests*

Description

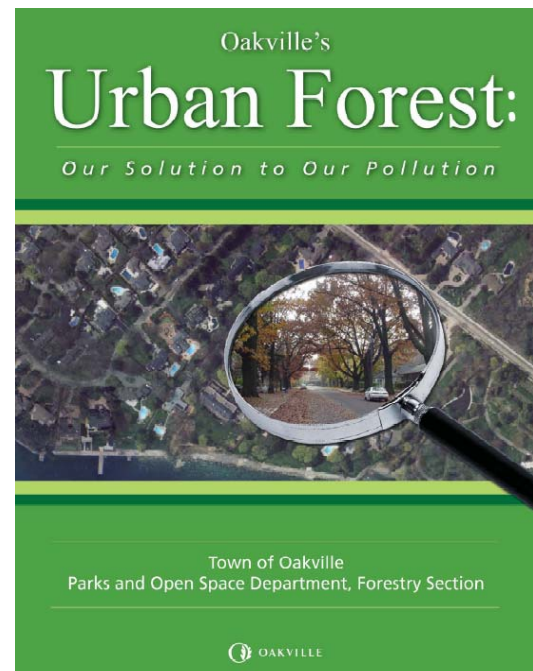
Oakville's urban forest strategy recognizes that urban forest should be managed under a long-term strategy of sustainable development to provide a perpetual green cover on public lands. The study quantifies the function of the urban forest in Oakville with respect to air pollution reduction, provides details about its structure, and quantifies its value to people living and working in Oakville, and identifies how the quantity and quality of the urban forest canopy cover depends on land use type. The potential urban forest canopy cover by the year 2046 is presented and it identifies the paradigm shift in urban design required in order to realize this potential: link the green infrastructure - trees - with the hard infrastructure so that both function optimally.

Key Features

Oakville's "Our Solution to Our Pollution" analyses the structure, functions, and values of urban forests.

In the context of structure, it has quantified the number of public and privately owned trees in Oakville, and their species composition and the overall canopy cover (29.1%). It examines the ecological functions of urban forests in filtering emissions, particulate matter, carbon storage and sequestering.

Finally, it provides an economic value of the annual ecological services provided by trees within the Town. This review has determined that trees save local industry \$1.1 million each year by avoiding the expenditure on mechanical methods to remove the 172 tonnes of criteria pollutants emitted at source. Trees save Oakville residents \$812,000 annually in reduced energy bills. The annual revenue potential through trading the Town's qualifying carbon credits was \$5,191 on the Chicago Climate Exchange on June 21, 2006.



Sustainability Features

- Recognition of the connection between urban forests, air quality, and climate change mitigation and adaptation.
- Providing the economic valuation of the ecological services provided by urban trees.
- Trees play a role in contributing to the human and ecosystem health.
- Recognizing the urban forest as 'green infrastructure'.

Elements for York Region Consideration

1. York Region's urban canopy is essential green infrastructure which provides a number of ecological functions.
2. Option for consideration in the Regional Greening strategy update.

Further Information

Town of Oakville

905-845-6601, ext. 3395.

www.oakville.ca/forestry.htm

Ottawa's Greenspace Master Plan Ottawa, ON

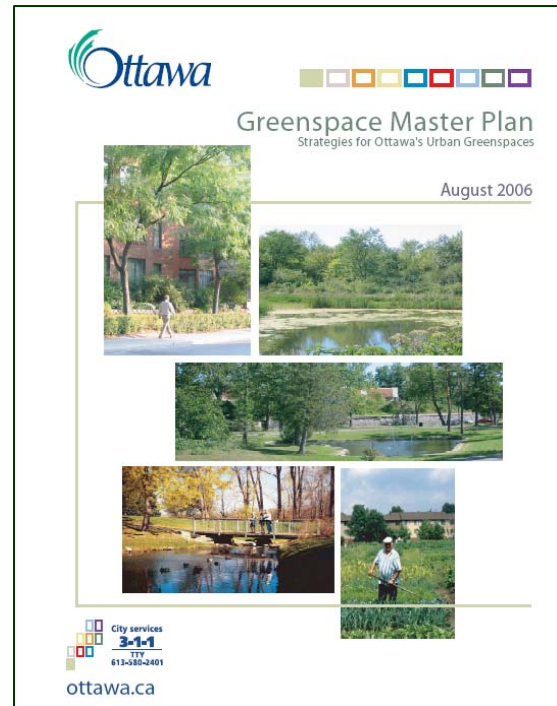
Best Practice 7.3:
*Provide a system of connected
recreational open spaces*

Description

Ottawa City Council approved the *Greenspace Master Plan - Strategies for Ottawa's Urban Greenspaces* to express its vision for an interconnected greenspace system in urban Ottawa and establish policies to achieve that vision in the future.

Key Features

The purpose of the *Greenspace Master Plan - Strategies for Ottawa's Urban Greenspaces* is to express Ottawa's vision for greenspace in the urban area and set policies for how this vision can be pursued over the future. Ottawa's vision for greenspace is broad and takes in a continuum of lands, ranging from waterways and remnant woodlands to manicured downtown pocket parks. It also includes lands that are not usually considered as greenspace, such as stormwater management ponds and other infrastructure lands, plus the landscaped lands around major institutions and business parks. One of the major accomplishments of the *Greenspace Master Plan - Strategies for Ottawa's Urban Greenspaces* is that it inventories all the greenspaces in the urban area and shows which spaces are the most valuable in terms of their contribution to natural lands or open space and leisure uses.



An Urban Greenspace Network is the focal point of Council's greenspace vision. Building on the land inventory, the Urban Greenspace Network is a continuum of natural lands and open space and leisure lands that will connect every home in Ottawa to a larger network of greenspace that spans the urban area. Much of this network now exists but many key linkages and features are yet to be secured. The *Greenspace Master Plan - Strategies for Ottawa's Urban Greenspaces* proposes two strategies to advance this work:

1. Implement key sections of the recreational pathway system identified in the *Pathway Network for Canada's Capital Region: 2006 Strategic Plan* and request staff to prepare a plan and budget estimate to do so.
2. Prepare a Green Street Strategy to explore ways that Green Streets could be used to provide connections within the Urban Greenspace Network and contribute to the greening of municipal infrastructure.

Sustainability Features

- Provides for active transportation options.
- Fosters a healthy, active lifestyle.

Elements for York Region Consideration

1. New communities could provide an interconnected greenspace system of active and passive parklands and natural heritage trails and pathways.

Further Information

City of Ottawa
110 Laurier Avenue West
Ottawa, ON K1P 1J1
www.ottawa.ca

Best Practice Area:

7.0 Greenspace

South East False Creek Urban Agriculture Strategy Vancouver, BC

Best Practice 7.4: *Establish Community Gardens*

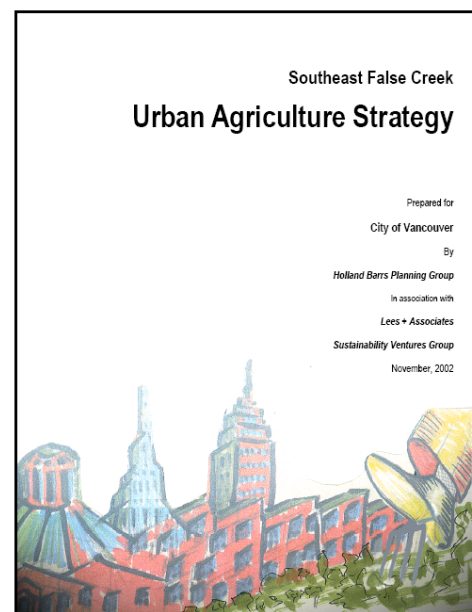
Description

South East False Creek is planned to be a model of energy efficiency and sustainable urban development and, as such, an urban agriculture strategy, should assist with achieving the fundamental goals of a sustainable community.

These goals include:

- Reducing energy and material consumption and the production of wastes.
- Preserving the viability of ecosystems and halt the loss of biodiversity.
- Ensuring economic viability and vitality.
- Strengthening social networks and enhance the quality of life for all in the neighbourhood.

It is within the context of these goals that the urban agriculture strategy for South East False Creek has been developed. The report explores urban agriculture in the context of Vancouver's current food system, and discusses some basic considerations for developing a strategy suitable for the model South East False Creek community. This includes examination of nine strategic objectives that will help achieve the fundamental goals. For each objective a number of strategic actions and policy directions are presented. These broad strategic directions are followed by an examination of a number of specific food production, food processing and food distribution options that could support each objective at South East False Creek.



Key Features

The South East False Creek Urban Agriculture Strategy developed a series of strategic objectives for urban agriculture, implementation tools and responsibilities, and food production, processing and distribution options.

Based on the findings of the South East False Creek Urban Agriculture Strategy, the Official Community Plan for South East False Creek includes policies to encourage and support the provision of urban

agriculture in the form of a community demonstration garden, farmers market, and provisions for a variety of urban agricultural spaces.

In addition to the Official Community Plan policies, performance targets and indicators for South East False Creek includes a minimum area of community demonstration garden that has been targeted at 26,000 sq ft; the inclusion of a farmers market; and a minimum percentage of buildings with green roofs.

Sustainability Features

- Encourages local food production.
- Farmer's Markets encourages the consumption of locally grown foods.

Elements for York Region Consideration

1. An urban agricultural strategy could be examined for the new communities of York Region, and the existing urban areas.

Further Information

Southeast False Creek
Current Planning Division, Community Services
#406 - 515 West 10th Avenue
Vancouver, BC V5Z 4A8
sefc@vancouver.ca
www.city.vancouver.bc.ca

8.0 Natural Heritage System

Interconnected natural heritage system through neighbourhoods not only contributes to a healthy ecological system, but also fosters and encourages ecological awareness and stewardship and contributes to a liveable, healthy community.

York Region has the unique opportunity with the potential development in the whitebelt areas to integrate the ecological environment with the built and cultural environment. This system not only provides recreational spaces for experiencing the natural environment, but many water management functions.

The natural heritage system in York Region will consist of lands within the Greenbelt, which are in need of restoration to establish and strengthen the system through strategic restoration, and the systems which will be planned to be connected through the potential new whitebelt communities, and the existing urban areas.

The following best practices provide examples of a community with an interconnected natural heritage system, and strategies for enhancing and restoring the natural heritage system.

Best Practice Area:	8.0 Natural Heritage System
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North Oakville Secondary Plan Area Oakville, ON

Best Practice 8.1: *Ensure an interconnected natural heritage system*

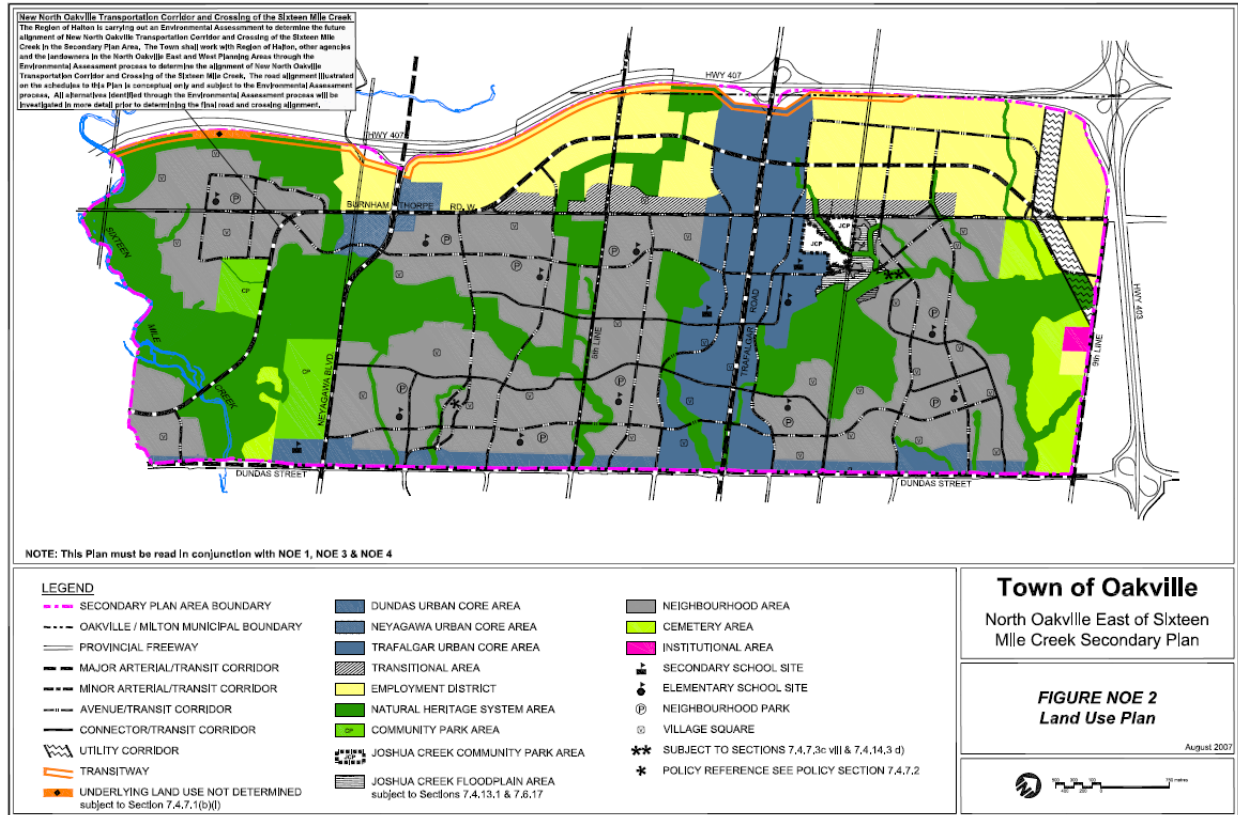
Description

The secondary plan for North Oakville, while a controversial plan, ensures the preservation of a sustainable natural heritage system that could maintain a diversity of species and landscapes within an urban context. The plans for North Oakville also provide a walkable, compact and diverse community, developed in a New Urbanist form.

Notable in the report was the creation of a “system” comprised of core natural areas connected by a system of linkages. It will include one of the largest protected green spaces in any development in Ontario. Approximately 600 hectares of open space has been created. This will help make this area one of Canada’s most sustainable and liveable communities. The Town, other levels of government and the landowners all worked together to create this lasting legacy for future generations to enjoy.

Key Features

The Natural Heritage and Open Space extends through all of North Oakville. It forms a central feature of the North Oakville Planning Area. It is comprised of two components, a Natural Heritage component, and an Open Space component.



Natural Heritage and Open Space System is the establishment of a system, the majority of which is to be in public ownership, and the focal point of which is a linked natural heritage system enhanced by a range of open space facilities. The system is designed to protect the natural environment, provide a balance between active and passive recreational needs and contribute to overall quality of life in North Oakville and the Town as a whole.

The primary purpose of the Natural Heritage component of the Natural Heritage and Open Space System is to protect, preserve and, where appropriate, enhance the natural environment. The focus of the Natural Heritage component is on the protection of the key ecological features and functions of North Oakville. It will also contribute to the enhancement of air and water resources, and provide for limited, passive recreational needs.

The primary purpose of the Open Space component of the system is to provide for active recreational needs and community facilities. It also should be designed, where possible, to connect to, and enhance the Natural Heritage component of the Natural Heritage and Open Space System, as well as providing for passive recreational needs. Finally, the Open Space component of the System provides facilities which will assist in building social relationships within the North Oakville community.

Within the Natural Heritage System, there are two key components; the Core Preserve Area, and the Linkage Preserve and Optional Linkage Preserve Areas:

Core Preserve Areas

The Core Preserve Area includes key natural features or groupings of key natural features, together with required buffers and adjacent lands intended to protect the function of those features and ensure the long term sustainability of the Natural Heritage component of the System within the urban context.

Linkage Preserve Areas and Optional Linkage Preserve Areas

The Linkage Preserve Area and Optional Linkage Preserve Area includes areas which are designed to link the Core Preserve Areas together to maintain and enhance their environmental sustainability. They follow natural features whenever possible and are intended to be of sufficient size and character to ensure the functionality and sustainability of the Natural Heritage component of the System.

Sustainability Features

- Healthy natural heritage system is an integral component to overall sustainability.
- Provides habitat for urban and migrating wildlife species.
- Provides water management functions, infiltration, erosion control, reducing peak flows and flooding.
- Provides nature based recreational amenities

Elements for York Region Consideration

1. Consider an interconnected natural heritage system as new community criteria.

Further Information

Town of Oakville
Planning Department
P.O. Box 310
1225 Trafalgar Road
Oakville, ON L6J 5A6
<http://www.oakville.ca/bpo-nosp.htm>

Best Practice Area:

8.0 Natural Heritage System

Land Reclamation Program Sudbury, ON

Best Practice 8.2:
*Restore and enhance natural heritage
systems and areas.*

Description

In response to the devastation caused to the natural environment by the nickel mining industry in Sudbury, the City reclaims and restores the region's landscape by greening and tree planting and operates in partnership with other community partners toward the restoration of watershed ecosystems in the Greater Sudbury area.

This program enhances environmentally stressed lands both ecologically and aesthetically. Sudbury's Reclamation program is touted as one of the most successful land reclamation and restoration programs in Canada. While Sudbury's program responds to land reclamation as a result of their industrial past, there are several lessons and features of the program which can be implemented in York Region's context in response to the stresses and pressures of urban development.



Key Features

Since the reclamation program launched in 1978, the Program has planted almost 8 million tree seedlings and reclaimed over 3,300 hectares of land.

The results have been dramatic, as shown before in a “then” and “now” photo comparison of reclaimed land.



Twenty years ago, large areas of environmentally degraded landscape existed in the City of Greater Sudbury. Over 10,000 hectares of land were barren and in need of restoration. Rehabilitation of this landscape was one of the most critical challenges faced by the Region in its resolve to improve its image. The Reclamation program consists of the following 5 phases.

1. The Liming Phase:

In this phase, barren or semi-barren landscapes require site treatment to counteract soil acidity and metal toxicity. An agricultural grade of limestone is applied to the soil surface at an average rate of ten tonnes per hectare.

2. The Fertilizer Phase:

Following limestone application, these same areas are fertilized. Fertilizer is spread at a rate of approximately 400 kilograms per hectare. The fertilizer used is high in phosphorus to encourage the growth of legumes which are able to enrich the soil with nitrogen by fixing it from the atmosphere. Furthermore, phosphorus can decrease the amount of toxic metals available to roots. The fertilizer application usually occurs in the summer to coincide with the seeding operation.

3. The Seeding Phase:

In the early fall, usually in mid-August continuing through September, a seed mixture of 5 agricultural grasses and 2 nitrogen fixing legumes are broadcast by cyclone seeders at a rate of 25 to 45 kilograms per hectare. The blended seed mixture includes Canada Bluegrass, Kentucky Bluegrass, Timothy, Red Top, Creeping Red Fescue, Alsike Clover and Birdsfoot Trefoil. The stony conditions at most sites help to trap seeds and nutrients and acts as a natural mulch.

4. The Natural Colonization Phase:

In the first year following seeding, a bright green cover of grasses and legumes develop. In the spaces between the plants, seeds of birches, poplars and willows, blown in from neighbouring woodlands, germinate and take root, forming a "pioneer" forest community.

5. The Tree Planting Phase:

Additional tree species are introduced one to three years after initial treatment. Both bare-root nursery stock and container stock are used. Seedlings are not planted in rows, but in groups that conform with topography and appear relatively natural.

Sustainability Features

- Program responds specifically to local needs and conditions
- Recognition that the enhancement and reclamation of natural features and systems contributes to a healthy and liveable City.

Elements for York Region Consideration

1. Lands within the greenbelt will require an extensive restoration and planting program.
2. Opportunity to investigate increasing the greening initiatives through the greening strategy for the areas of York Region in need of significant restoration.

Further Information

City of Greater Sudbury
PO Box 5000, STN 'A', 200 Brady St.
Sudbury, ON P3A 5P3

http://www.city.greatersudbury.on.ca/cms/index.cfm?app=div_landreclamation&lang=en

9.0 Sustainable Community Economics

Creating sustainable communities also includes providing innovative financing arrangements for sustainable community features, affordable housing, and support for businesses looking to make their operations more sustainable.

In order to assess the sustainable benefits of decisions, triple bottom line accounting is used as a tool. Triple bottom line is a business principle that measures corporate performance along three lines: profit, environmental sustainability and social responsibility.

The following best practices demonstrate the range of opportunities in making sustainable community features work from an economic perspective, and provides an example of a successful application of triple bottom line accounting.

Best Practice Area: 9.0 Sustainable Community Economics

Tridel Greater Toronto Area

Best Practice 9.1: Green Financing

Description

Tridel, together with the Toronto Atmospheric Fund have devised an innovative financing arrangement to pay for high performance building upgrades. Rather than raise the price of a home for green or high performance buildings, an innovative financing approach is being used that leverages operating cost savings to pay for incremental capital costs of energy efficient upgrades, like better heating and cooling equipment, ventilation systems, and building envelope (e.g. windows and walls). These costs are shared among the owners in the condominium corporation.



Key Features

The Green Loan involves a lender, who is interested in the environmental and economic benefits of energy efficiency; a developer, who wants to build a high performance building as cost effectively as possible; and a Condominium Corporation that will benefit from energy-related cost savings during the life of the installed equipment and material.

Step 1: The builder specifies and installs energy efficient upgrades on equipment, windows, and other features.

Step 2: The lender finances the developer's incremental capital costs of acquiring these materials, which are over and above Code requirements. However, the loan advance occurs only after the condominium building has been substantially completed and the energy performance measures have been verified by the independent agencies described below.

Step 3: The Condominium Corporation pays the money back to the lender with funds that would otherwise be spent on heating, cooling and electricity.

The principal and interest payments owing to the lender by the Condominium Corporation on an annual basis are incorporated within the common expenses outlined in the condominium's annual budget. None of the condominium owners will be dealing with the lender directly. Instead, each owner will pay his or her proportionate share of the loan as part of the monthly charges paid to the Condominium Corporation. In this respect, repayment of the green loan is assessed along with other applicable common element costs,

such as security, maintenance and utilities. The proportionate share of the green loan assessment for an individual suite is based on the size of the suite.

A building is like an ecosystem – lots of inter-connected parts that contribute to the functioning of the whole system. Tridel's objective for their buildings is to achieve an energy performance target of 25% less energy than the Model National Energy Code. However, no single piece of equipment is sufficient to achieve that goal. Instead, Tridel makes an additional investment in a bundle of improvements.

Below is a list of some of the upgrades that can be used to achieve the qualifying energy performance benchmark:

- Upgrading boilers from 80% efficiency rating to 87% or 92% rating.
- Adding a soft coat and/or gas fill to the double glazed windows.
- Upgrading chiller efficiency for air conditioning.
- Installing high pressure, low flow showerheads to reduce domestic hot water costs.
- Installing sub-meters at each suite for allocating utility costs based directly on individual consumption levels (as opposed to using formulas and ratios).
- Installing heat recovery and additional controls on ventilation equipment to pre-condition incoming air with exhaust air.
- Installing Energy Star™ rated appliances in every suite.
- Using compact fluorescent lighting in all common areas and designing in-suite lighting fixtures to be compatible with compact fluorescent bulbs.
- Replacing standard operating equipment with high efficiency fans, pumps and motors.
- Commissioning a third party engineering firm to ensure that equipment and systems perform according to their specifications and design.
- Increasing thermal insulation in the walls and installing highly reflective rooftop membranes to reduce heat gain in the summer.

Sustainability Features

- Shares the costs of energy upgrade among owners to ensure affordability.

Elements for York Region Consideration

1. Examine opportunities for similar financing arrangements at a community scale to secure sustainability features in new communities.

Further Information

Tridel Head Office
4800 Dufferin St.
Toronto, Ontario
M3H 5S9
416-661-9290
www.naturallybetter.ca

Smart Steps Program Greater Vancouver Regional District, BC

Best Practice 9.2: *Business Tools for Sustainability*

Description

SmartSteps is a program which provides tools; technical assistance and information to help businesses in Greater Vancouver become more eco-efficient and more competitive. The goal of the program is to help businesses find specific, cost-effective actions to reduce the amount of materials and energy used in business.



Key Features

Smart Steps is a resource base provided by Greater Vancouver to assist in educating the business community to become more sustainable. It provides information on how to increase business efficiency, improve profitability and reduce impacts on the environment by providing the information and assistance to reduce costs and manage the business to maximize eco-efficiency.

SmartSteps provides cost-effective tips and information tailored to specific industries to improve business eco-efficiency. An eco-efficient business uses materials, energy and water more efficiently while minimizing waste. This keeps costs down and reduces corporate liability while improving your competitive edge, giving your customers better value and providing greater appeal to investors and employees. An eco-efficient business also considers its place in the community, ensuring that future generations have the resources they need to start- and- stay in business too.

Resource use efficiency provides the added benefit of helping the GVRD to control the costs and associated environmental impacts of supplying utility services to the region.

The following are some of the key tools provided by SmartSteps:

- 1. Sustainable Supply Chain Logistics Guide**
This Guide is about sustainable supply chain logistics (SCL) which includes the planning, storage, transportation, and reverse logistics processes involved in getting goods and services to the right place, at the right time, and in the right condition, while minimizing the impacts on the natural and social environments.
- 2. Sustainable Purchasing Guide**
This guide provides information to businesses who are interested in purchasing products and services with characteristics that make them environmentally and socially beneficial. This Sustainable Purchasing Guide can help incorporate social and environmental considerations into purchasing decisions.
- 3. Business Case Total Cost Assessment**
The Business Case Total Cost Assessment is a Web application developed by the Greater Vancouver Regional District to assist the business community to identify changes to operational practices that can lead to reduced costs and increased profitability while also increasing resource efficiency and reducing pollution.
- 4. BuildSmart Product Directory**
BuildSmart is Metro Vancouver's source for design and construction information about sustainable buildings. The BuildSmart website provides updates on the latest industry news and

events in Vancouver. There is also a green product directory with over 400 environmentally responsible building materials and products, along with a wealth of helpful technical guides, case studies and directories of salvage and recycling contractors.

5. **Sector Guides** are provided for the following sectors:

- Automotive
- Educational Facilities
- Food Service / Restaurants
- Health
- Hotels & Motels
- Manufacturing
- Offices
- Recreation
- Retail
- Transportation
- Warehousing

6. **SmartSteps Library**

The SmartSteps library holds articles, reports and noteworthy news items as well as links to a range of further reading and research sites.

Sustainability Features

- Provides businesses with the resources they need to build and operate a sustainable business.

Elements for York Region Consideration

1. Examine York Region's role in providing support to businesses looking to make their buildings and operations more sustainable.

Further Information

Greater Vancouver Regional District
4330 Kingsway
Burnaby, B.C. V5H 4G8
www.gvrd.bc.ca/SmartSteps

**Dockside Green
Victoria, BC****Best Practice 9.3:**
*Triple Bottom Line Accounting***Description**

Dockside Green, is a sustainable community development featured in several previous section of this paper. In addition to its various design features, Dockside Green is committed to a Triple Bottom Accounting and believes that developers and investors do not have to forfeit profitability to achieve sustainability. Rather, they base their business philosophy on the understanding that environmentally and socially conscious developments, balanced with a triple bottom line approach, make long-term business sense.

Triple Bottom Line (TBL) is a business principle that measures corporate performance along three lines: profit, environmental sustainability and social responsibility. TBL considers people, planet and profit the principle being that environmental quality and social equity are just as important as profits.

The developers of Dockside (Windmill Developments) understands that providing the infrastructure and environment to support collaboration and synergies between different uses is the key to promoting new business ventures and economic spin-offs at Dockside Green. Working with local entrepreneurs, values-based businesses, neighbouring non-profit organizations and residents will help create a prosperous working community while enhancing our residential community.

In addition to creating new jobs, supporting local suppliers, and demonstrating local products, the development of Dockside Green will create educational opportunities for students as well as entry-level jobs and training programs during construction with particular emphasis on First Nations training.

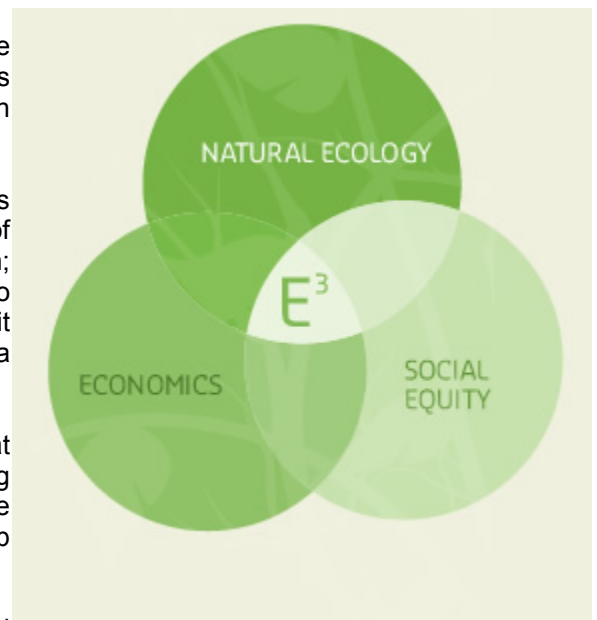
Key Features

The Dockside Green development plan emphasizes the creation of a healthy and inclusive community that supports new economic opportunities and a high quality of life with minimal impact to the environment.

Their strategy recognizes that triple bottom line components should never be treated as separate targets, independent of one another. Instead, they take an integrated approach; intertwining economic, environmental and social objectives so that each enhances the attributes of the others, making it difficult to distinguish which specific TBL component a particular tactic is addressing.

The Dockside approach is to select design features that embrace all the triple bottom line components demonstrating how a commitment to the environment and sustainable development pays off in the long run through factors like job creation, improved marketability and energy cost savings.

Dockside moves the concept of whole-system costing beyond building design to include site and community infrastructure costs. For example, a sound green building strategy like ecological stormwater management will reduce infrastructure costs, while reducing the emission of greenhouse gases and heat-island effects, creating natural habitat and improving human



health. The ability to implement whole-system thinking will be critical to our success: ecologically, socially and financially.

Sustainability Features

- Accounting takes into consideration the economic, social and environmental benefits and costs of a project.

Elements for York Region Consideration

1. York Region's sustainability strategy calls for providing a triple bottom line assessment of all major Regional decisions.

Further Information

Joe Van Belleghem
Managing Partner
Windmill Development Group
joe@buildgreenconsulting.com
www.windmilldevelopments.com

10.0 Measuring and Reporting Progress

A key element of sustainable community development is ensuring the successful implementation of sustainable community policies. Effective evaluation tools are being used by several municipalities to assess the application of policies and evaluate decision making and as a mechanism to measure sustainable community achievement.

Recognizing excellence and innovation can also be a key driver in ensuring the successful implementation of community desires and assist in fostering healthy competition and innovation in the private and public sectors.

The following best practices provide an overview of performance standards, evaluation tools, and recognition awards for sustainable community features.

Best Practice Area	10.0 Measuring and Reporting Progress
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Markham Centre Performance Measures Markham, ON

Best Practice 10.1 Utilize Performance Standards to Guide Sustainable Community Planning

Description:

Markham's vision for their new sustainable downtown "Markham Centre" is an urban, mixed use, transit supportive community that will be a model of financial, environmental, and social sustainability.

Markham Centre is Markham's developing smart growth downtown. It is located on 988 acres including 75 acres of parkland and 192 acres of open space. With 5 million square feet of new development, Markham Centre will be home to 25,000 new residents and 17,000 employees.

The Town of Markham has introduced innovative Development Guidelines that will deliver the Town's sustainable vision for Markham Centre. In recognition of this achievement, Markham received the Federation of Canadian Municipalities' Sustainable Communities Award in 2002 for excellence in Sustainable Community Planning.

Key Features:



Markham's Performance Measures and checklists were formulated based on guiding principles, which provide clear direction on the expectations of development. The performance measures are intended to guide and monitor the development of Markham Centre in accordance with the broader community's goals and expectations and the highest quality standards and best practice models. The performance measures translate the community values for the Centre into a measurement system.

Within the Performance Checklist, there are 5 theme areas: Greenlands, Transportation, Built Form, Green Infrastructure, and Public Open Space. The performance indicators were developed out of the checklists for each theme area to provide a basis for ensuring that all development applications within Markham Centre are evaluated in terms of achievement of goals and measurable targets. The measuring of targets determines whether the development meets a gold, silver, or bronze status.

An initial assessment of a development is made on each development application by staff using the performance checklist. Once all of the questions in the checklist have been addressed, staff evaluates the application in accordance with the performance indicators. An annual report card is prepared by staff to evaluate the implementation of development toward the achievement of community values, goals, and performance targets.

Sustainability Features

- Performance of development tied to sustainability principles of smart growth, transit supportiveness, and healthy natural environment.
- Targets measure effectiveness of development in achieving indicators, and provide measurable evaluation tool.

Elements for York Region Consideration

1. Consider providing an evaluation tool of sustainability performance on new developments.
2. Possible inclusion for new community criteria.

Further Information

Town of Markham
Development Services Department
Town of Markham Anthony Roman Centre
101 Town Centre Boulevard,
Markham, Ontario, Canada, L3R 9W3
905-477-7000, ext. 2466.

markhamcentre@markham.ca
www.markham.ca

Best Practice Area

10.0 Measuring and Reporting Progress

Sustainability Checklist Port Coquitlam, BC

Best Practice 10.2: *Sustainability Evaluation*

Description

As a component of their Sustainability Initiative, Port Coquitlam has instituted a Sustainability Checklist for rezoning and development permit applications as a mechanism to score development based on a triple bottom line approach (environmental, social, economic).

The City's Sustainability Initiative integrates City activities which directly relate to development services and social planning and is committed to fiscally, socio-culturally and environmentally responsible land use development. Sustainable development integrates the three systems the economy, the environment and society. Their philosophy is that to be sustainable, there must be an understanding of how these systems

interact, and ensure activities do not compromise the ability of any of the systems to function currently and in the future.

Key Features

As part of the Official Community Plan implementation, the Port Coquitlam is the first municipality in North America to introduce a Triple Bottom Line Sustainability Checklist for all significant land development applications, such as rezoning and development permits. The Checklist provides a comprehensive assessment of a proposal's contribution to sustainability by balanced scoring of environmental, economic and socio-cultural criteria (1/3 each); a Triple Bottom Line assessment. It was prepared through best practice review customized for the municipality through community consultation with existing staff resources and no external or internally dedicated funding.

C I T Y O F

PORT
COQUITLAM

SUSTAINABILITY CHECKLIST

REZONING AND DEVELOPMENT PERMIT APPLICATIONS

	Points	Wt	Total	Soc	Env	Eco
1. Land Use						
- Mix of uses provided or uses consistent with OCP - Adds to the diversity of uses within an existing neighbourhood, such as employment, housing, retail, civic, educational, cultural, recreational	None – 0 Poor – 1 Good – 2 to 3 Excellent – 4 to 5	1	/5	(50%)		(50%)
2. Housing						
- Offers or adds a mix of housing types, sizes and tenure, including special needs¹ - Provides units with a wide-range of pricing options that will be sold or leased	None – 0 Poor – 1 Good – 2 to 3 Excellent – 4 to 5	2	/10	(50%)		(50%)

By providing sustainability criteria at the earliest development stage, the City enables developers and their consultants to create the most sustainable project possible. The development community has consistently asked for municipal criteria up front, have a level playing field and to know the goal posts. The Sustainability Checklist is provided to all development inquirers and is available on the City's web page.

Through self assessment, the developer will determine how the criteria apply to the individual site. The criteria are broad and multi-faceted to provide flexibility for site customization and encourage innovation. The highest weighting is given to green building technology due to its significance to Port Coquitlam. While the Checklist describes an ideal - it is highly unlikely that any one project will earn maximum points in all sections, and no pass/fail standard has been set, a transition to more sustainable building and site construction is expected over time. The Checklist connects the incremental, site by site development to the community's long-term strategic goals.

The development community was consulted on an individual and group basis, including the Urban Development Institute. Developers appreciate the common criteria received as early as possible and understand the sustainability goals are a priority.

For integration, the checklist assessment was designed to indicate how well a proposed application performs to the sustainability and complete community goals contained in the Official Community Plan and Corporate Strategic Plan. The framework is useful during the application review meetings with the developer as it provides common basis during the review and clearly identifies any areas where improvement is desirable and possible, particularly where the developer's self assessment score varies significantly from the staff assessment score. If high scores are obtained, the application will be fast-tracked through the rezoning and development permit approval process. Environmental and socio-cultural considerations are integrated at the start of the development design process, instead of attempted additions after initial municipal review.

Council uses the Checklist as an assessment tool to determine how well a proposed development achieves stated community sustainability goals.

Sustainability Features

- The Checklist drives changes to individual applications cumulating in significant improvements to long-term community sustainability.

Elements for York Region Consideration

1. Consider new community standards which connect to corporate Sustainability Strategy.
2. Sustainability Strategy action area calls for a triple bottom line assessment in Council reports on all major decisions.

Further Information

Development Services Department
City Hall Annex
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Best Practice Area

10.0 Measuring and Reporting Progress

Green Toronto Awards Toronto, ON

Best Practice 10.3 *Sustainability Recognition*

Description

The City of Toronto hosts the “Green Toronto Awards” annually to recognize achievement in 10 environmental categories. The winners of each award receive \$5000 to donate to the environmental organization of their choice. The funds are donated by corporate sponsors.

Key Features

The Green Toronto Awards program has 10 award categories that will be delivered in partnership between the City of Toronto and Green Living Enterprises along with media and corporate sponsors.

The 10 categories are as follows:

COMMUNITY PROJECT Award
ENERGY CONSERVATION Award
ENVIRONMENTAL AWARENESS Award
GREEN DESIGN Award
GREEN ROOF Award
HEALTH Award
LEADERSHIP Award
MARKET TRANSFORMATION Award



WATER EFFICIENCY Award
YOUTH Award
ENVIRONMENTAL ACHIEVEMENT Award

Sustainability Features

- Provides incentives for private sector to achieve high level of environmental performance.
- Encourages achievement in a range of key green areas which overall contribute to leadership and innovation.

Elements for York Region Consideration

1. Consider hosting sustainability awards for achievement in sustainability in the private and public sectors.

Further Information

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FCM CMH2Hill Sustainable Community Awards

Best Practice 10.4: Sustainability Recognition

Description

The Federation of Canadian Municipalities (FCM) and CH2M HILL offer national recognition for projects that demonstrate environmental responsibility, excellence and Projects that take a holistic, integrated approach to sustainable community development.

Key Features

The Awards recognize municipal leadership in sustainable community development and give national recognition to projects that demonstrate environmental excellence and innovation in service delivery. These projects spotlight municipal governments that are leaders in sustainable community development, and demonstrate practical, innovative solutions to secure the environmental, economic and social well-being of Canada's communities.

The Awards are open to all municipal governments and their private sector partners. Projects must have achieved measurable results. Submissions are judged by an expert panel of judges selected by FCM.

Projects must demonstrate innovation and excellence in one of the following award categories:

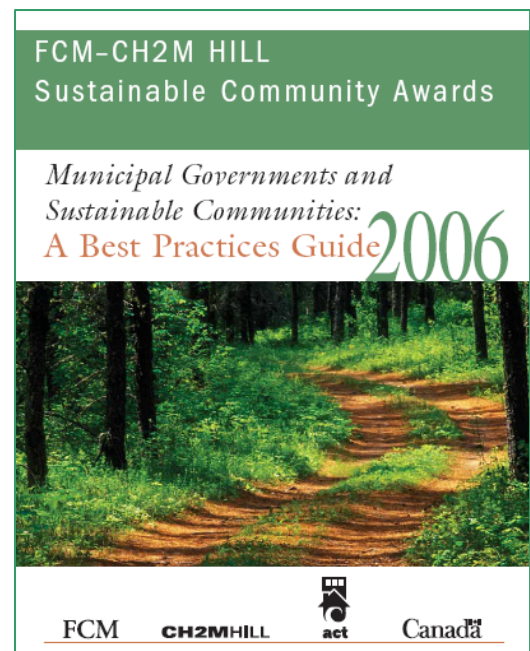
- Buildings
- Energy
- Residential development
- Solid waste
- Sustainable community planning
- Sustainable transportation
- Wastewater
- Water

Innovation is defined as the development or application of new knowledge, practices or advanced technologies; the application of current or emerging technologies or practices; or the adoption of an advanced technology, knowledge or practice in a region in which that technology has not been applied before.

After the awards are issued FCM and CMH2HILL produce a best practices guide based on the award winning submissions and honourable mentions.

Sustainability Features

- Recognizes innovation and achievement in sustainable community components.
- Fosters healthy competition.
- Builds capacity for sustainable technologies for their application elsewhere.
- Best Practices Guide assists in providing baseline information to build on for future initiatives.



Elements for York Region Consideration

1. Consider sponsoring or hosting sustainability awards to foster innovation and competition in the local municipalities and private sector.

Further Information

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Summary of Best Practice Elements for Consideration

Throughout the Best Practices Paper, elements of the best practices are highlighted for consideration by York Region. The following is a summary of the best practice area, and the elements for potential consideration by York Region.

	Best Practice	For Consideration by York Region
1.1	Be a public leader in sustainability	Implementable plans and specific initiatives are crucial to a successful sustainability framework. A comprehensive sustainability communication strategy and provide opportunities for on going dialogue with stakeholders.
1.2	Utilize development standards to guide sustainable community planning.	Consider using development standards which are tied to sustainability criteria at the Regional (broad based) and Local levels (specific).
1.3	Provide sustainable development standards	Provide standards for new communities which contain minimum and optional standards. Ensure new community development is tied to sustainability criteria.
1.4	Provide policy to encourage the use of green buildings	Provide requirements for mid to high rise buildings and ground related buildings which could be applied in the urban intensification and greenfield context in York Region. Ensure the standards are flexible; provide minimum and optional elements which relate directly to community priorities and local drivers. Continue to be a leader in green buildings at Regional level with green building policy at York Region and encourage continued innovation at the local level like the ENERGY STAR/LEED policy at Town of East Gwillimbury.
1.5	Provide necessary planning tools to encourage sustainability options in developments.	Utilize all available planning tools to enable the development of sustainable options in new community development. Examine new tools provided by Bill 51 Planning and Conservation of Land Statute Amendment Act which can be implemented at a Regional and Local level. Lobby provincial government for flexible planning tools to implement sustainable community features.
1.6	Ensure municipal capacity for sustainable community features	Ensure municipal capacity for sustainable development and sustainable community features, particularly green buildings. Invest in education and research for staff, politicians, development community and public. Build partnerships with many organizations. Monitor the performance of energy and environmental buildings and projects.
2.1	Design Neighbourhoods to optimize passive solar energy	Examine opportunities where new communities and buildings can be designed to maximize solar gains.

	Best Practice	For Consideration by York Region
	use.	
2.2, 2.3	Provide a District Energy system which meets community energy needs while increasing energy efficiency.	Use locally available resources to provide district heating and cooling sources. Provide assistance to implement district energy for use at all Regional Centres. Build partnerships with local energy distribution companies to implement district energy projects. Be a leader in district energy by using district energy at Regional facilities
2.4	Use renewable energy sources – solar	Investigate options to use renewable energy technologies in the new communities of York Region. Demonstrate leadership and commitment to renewable energy by piloting their use at Regional facilities.
2.5	Use renewable energy sources – biofuels	Investigate opportunities to use biofuels for energy production in new communities of York Region.
2.6	Use renewable energy sources – geothermal	Investigate the feasibility of using geothermal power in the new communities of York Region.
3.1	Reduce use of potable water through municipal water conservation program.	In the next 10 years, York Region's Water for Tomorrow strategy plans to: 1. Provide rebates for ultra low flow, high efficiency, or dual flush toilets, rain barrels, water efficient clothes washers and water efficient central humidifiers. 2. Install low flow kitchen aerators. 3. Provide rebates to Area Municipalities that develop, implement, and maintain a distribution leakage reduction program.
3.2	Harvest rainwater for reuse.	Investigate the feasibility and regulatory obstacles to providing rainwater harvesting in York Region. Demonstrate leadership and commitment by piloting rainwater harvesting project at a Regional facility.
3.3	Practice water recycling	Examine water use in a comprehensive manner to best recycle waste water and storm water to maximize grey water reuse at both a building scale and community scale.
3.4	Reuse Grey Water	Examine the feasibility of a municipal grey water recycling system.
3.5	Maximize on site stormwater infiltration	Examine opportunities in the new communities of York Region to maximize stormwater infiltration at source. Use as potential criteria in new communities.
3.6	Use vegetated/green roofs	Promote the use of green roofs throughout the Region. Utilize a Regional facility as a test project for green roofs. Examine green roofs in connection with the Regional Greening strategy. Promote the use of Green Roofs in new communities
3.7	Naturalized waste water treatment	Examine the opportunity to use naturalized waste water treatment.
4.1	Use LEED Certified Green Buildings	Support, encourage, require the construction of green buildings using LEED certified green buildings Consider expanding the Sustainable Development through

	Best Practice	For Consideration by York Region
		LEED incentive program to include buildings outside of Regional Centres and Corridors
4.2	ENERGY STAR for new homes	By 2012, when the Ontario Building Code meets EnerGuide 80, there will have been approximately 46,000 new residential units built in York Region equating to approximately 96,000 to 138,000 tonnes of greenhouse gas emissions which could be saved by adopting ENERGY STAR standards now. Support, encourage, require the construction of ENERGY STAR buildings in the new communities of York Region. Lobby for faster implementation of new building code standards.
4.3	Built Green	Consider adopting a standard for new residential construction which goes above and beyond the building code for energy efficiency.
5.1	Create mixed use, live-work communities	New communities of York Region should be designed with mixed use and live-work components in order to meet the density requirements in the Provincial Growth Plan and to create liveable and healthy communities.
5.2	Appropriate Densities	Continue to support intensification in Regional Centres and Corridors. Ensure that new communities are built to appropriate density to support transit, improve housing options, walkability, liveability, and provide range of human services to support the residents and workers.
5.3	Build communities with high quality urban design	Require that the new communities of York Region use high quality urban design to create liveable, attractive communities which foster community interaction and pedestrian focus.
5.4	Have an affordable housing strategy	Update York Region's Housing Supply strategy in the context of the Planning for Tomorrow Growth Management strategy. Link the housing requirements of York Region with employment.
6.1	Encourage transit use.	York Region Transit and VIVA together with the TTC are currently examining opportunities to provide an incentive program to York University Students. Create partnerships with key organizations; educational facilities, and large employers
6.2	Design communities to reduce automobile dependence	Design new communities to support a range of transportation choices.
6.3	Provide alternative transportation modes	Work with Smart Commute to develop car share for new communities.
6.4	Participate in active transportation planning	Encourage active transportation by ensuring a safe network which enables a variety of transportation modes. Implement the Region's Pedestrian and Bicycle Master Plan.
7.1	Require a minimum area of green cover	Optional inclusion in new community criteria.
7.2	Reduce urban heat island effect	Examine the urban areas of York Region for urban heat island impacts. Connect findings to greening strategy update to examine strategic areas to target for additional coverage.

	Best Practice	For Consideration by York Region
		<i>New community criteria should contain provisions for intensifying urban areas and provide policies to ensure the greening of urban areas to mitigate urban heat island.</i>
7.3	<i>Manage urban forests</i>	<i>Recognition of York Region's urban canopy as green infrastructure which provides a number of ecological functions.</i>
		<i>Options for consideration in the Regional Greening strategy update.</i>
7.3	<i>Provide a system of connected recreational open spaces.</i>	<i>New communities should provide an interconnected greenspace system of active and passive parklands and natural heritage trails and pathways.</i>
7.4	<i>Establish community gardens.</i>	<i>An urban agricultural strategy could be examined for the new communities of York Region.</i>
8.1	<i>Ensure an interconnected natural heritage system.</i>	<i>Consider as new community criteria.</i>
8.2	<i>Restore and enhance natural heritage systems and areas.</i>	<i>Focus restoration and enhancement on lands with the greenbelt.</i>
		<i>Examine opportunities to enhance increasing the greening initiatives through the greening strategy.</i>
9.1	<i>Green Financing</i>	<i>Examine opportunities for financing arrangements at a community scale to secure sustainability features in new communities.</i>
9.2	<i>Provide business tools to enhance sustainability</i>	<i>Provide support to businesses looking to make their buildings and operations more sustainable.</i>
9.3	<i>Triple Bottom Line Accounting</i>	<i>Provide a triple bottom line assessment of all major Regional decisions.</i>
10.1	<i>Utilize performance standards to guide sustainable community planning</i>	<i>Provide an evaluation tool of sustainability performance on new developments.</i>
		<i>Possible inclusion for new community criteria</i>
10.2	<i>Use sustainability evaluations</i>	<i>Connection of community standards to corporate sustainability strategy</i>
		<i>Sustainability action area calls for triple bottom line assessment in Council reports on all major decisions.</i>
10.3, 10.4	<i>Sustainability Recognition</i>	<i>Host sustainability awards for achievement in sustainability in the private and public sectors.</i>
		<i>Sustainability awards can foster innovation and competition in the local municipalities and private sector.</i>

Conclusions and Next Steps

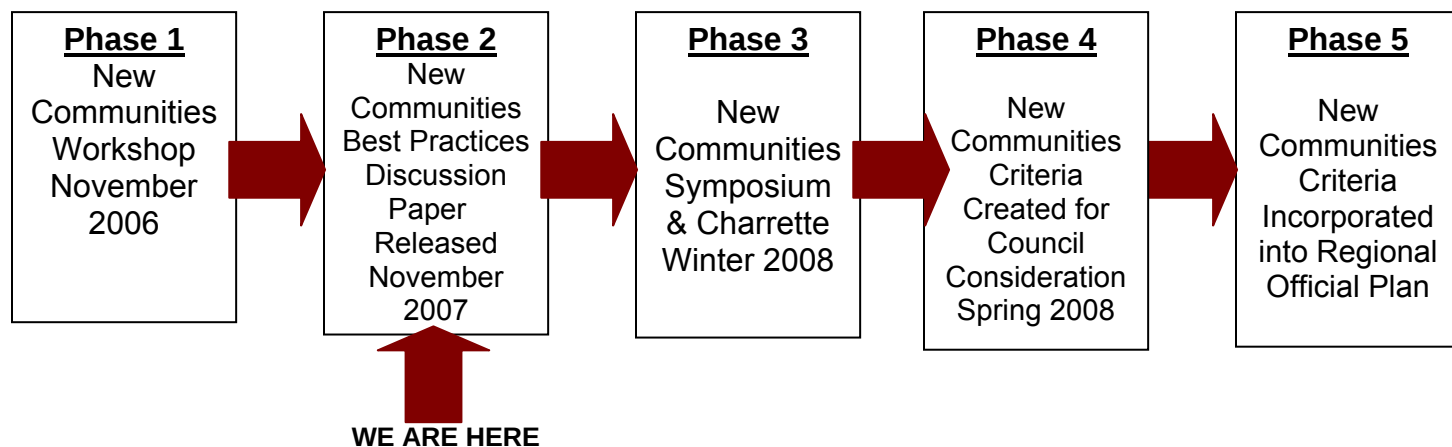
The above best practices and elements for York Region consideration will be used to assist in forming the basis for the development of criteria for the new communities of York Region.

Many of the best practices presented in this paper take significant steps in moving the Regional sustainability agenda forward. Many of the ideas are beyond the jurisdiction of York Region, and require a Regional role in partnerships, advocacy and education. It is not intended that York Region engage in each action listed above, but rather that this document stimulate meaningful discussion on how the Region's new communities can develop.

The above elements for consideration can be categorized into key 5 areas which the Region may wish to undertake appropriate action:

- I. Leadership:** Demonstrate leadership and commitment to sustainable community initiatives by piloting best practice elements in Regional projects.
- II. Advocacy:** Be an advocate for legislative and regulatory changes which would enable the development of more sustainable communities.
- III. Partnerships:** Engage key partners in assisting in the implementation of appropriate best practices.
- IV. Criteria:** Creating strong and clear criteria for sustainable community development at a Regional and Local level assists in a successful program.
- V. Evaluation and Recognition:** Projects and decisions benefit from a sustainability evaluation and/or decision making tool and recognition of innovation.

The New Communities Strategy is a component of York Region's Growth Management Planning For Tomorrow Strategy. Following the release of the Best Practice paper, York Region will be consulting with local municipal partners, the development industry and Regional stakeholders on best practices. Following the release of the paper, York Region is proposing to host a New Communities Symposium and Charrette and gathering further input on how to proceed with the creation of criteria for new communities.



The New Communities Strategy is a 5 phase approach. In November 2006 the Region hosted the New Communities charrette which generated a number of recommendations on how to move forward on new communities. One of the key recommendations was to create a best practices discussion paper that lays out how the Region's new communities could be different with respect to energy, waste, transportation, health, live/work relationship and other issues raised in the workshop.

Following the release and distribution of the Best Practices for New Communities discussion paper, a New Communities Symposium and Charrette will be held in early 2008 around the theme areas of the best practices paper. This will be both an active learning and design session; taking the lessons learned from the best practices and principles paper, and applying them to community design in York Region. The

Symposium and Charrette will be open to local municipal staff, key stakeholders, the development community, and Local and Regional Councillors.

With the findings of the best practice paper, and the symposium and charrette, New Communities Criteria will be created to inform the development of the whitebelt and infill communities of York Region which will update the existing policies of the Regional Official Plan.

The criteria will be based on the best case studies reviewed in the best practices document, and the lessons learned through the New Communities Charrette. The criteria will be presented to Regional Council in Spring 2008 for consideration. Currently, there are 18 policies within section 5.2.7 of the Regional Official Plan which inform how communities in the Region are developed. The criteria will form the basis for new community development policies in the Regional Official Plan.

*We look forward to hearing from you comments on this paper and all Planning for Tomorrow initiatives. Your comments are welcome through York Region's website at www.york.ca (click on the "Planning for Tomorrow" icon on the main page), or in writing to e-mail **futureyork@york.ca** or:*

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