

# livinggreen masterplan

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# table of contents

<b>Acknowledgements</b>	ii		
<b>Executive Summary</b>	1		
<b>1 Introduction</b>	5		
1.1 Vision	6		
1.2 Purpose	7		
1.3 Goals	7		
1.4 How the Living Green Master Plan Links to the Strategic Plan and other Corporate Initiatives	8		
Figure 1: Strategic Pillars for Change	8		
1.5 Development of the Living Green Master Plan	9		
Figure 2: Research and Engagement	10		
1.5.1 Research	10		
1.5.2 Staff and Stakeholder Workshops	11		
1.5.3 Public Event	12		
1.5.4 Regular Meetings with City Staff, Environmental Stakeholders and Elected Officials	12		
1.6 Setting Priorities	13		
<b>2 A Strategic Framework for Action</b>	15		
Figure 3: Strategic Framework for Action	16		
2.1 Actions to Set an Example	17		
2.1.1 Transportation	18		
2.1.2 Natural Heritage	21		
2.1.3 Water	22		
2.1.4 Waste	25		
2.1.5 Energy	25		
2.1.6 Organization and Policy	26		
2.2 Actions to Encourage Others	31		
2.2.1 Urban Form	32		
2.2.2 Air	34		
2.2.3 Energy	35		
2.2.4 Education Programs	36		
2.3 Actions to Compel Others	39		
2.3.1 Urban Form	40		
2.3.2 Natural Heritage	40		
<b>3 Decision Support Process</b>	43		
Figure 4: Decision Support Process	44		
<b>4 Measuring Environmental Performance in Mississauga</b>	45		
Table 1: Summary of Indicators	48		
<b>5 Future Challenges</b>	57		
5.1 Energy Security	58		
5.2 Food Security	58		
5.3 Health Security	59		
<b>6 Appendices</b>	61		
Appendix A: Action Plan	62		
Appendix B: Decision Support Process User Guide	78		
Appendix C: Decision Support Process Worksheet	79		
Appendix D: Case Studies	81		
Appendix E: Key Messages from Workshops	83		
Appendix F: Organizations Engaged in the LGMP Process	95		
Appendix G: Bibliography	96		
Appendix H: List of Key Terms and Acronyms	100		

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# Executive Summary

## The First Environmental Master Plan

The Living Green Master Plan (LGMP) is Mississauga's first environmental master plan. It is primarily a document to prioritize City policies and programs into actions to meet the environmental objectives of the Strategic Plan. It identifies 49 actions for the City and its partners to implement over the next 10 years.



*What's in the LGMP*

## Purpose

The purpose of the LGMP is to:

- Identify priority environmental actions;
- Instil environmental consciousness in the corporate DNA;
- Measure the City's environmental performance; and
- Ensure residents, community groups and businesses have the information they need to "live green" in their homes and communities.

## Goals

The goals of the LGMP are to identify the actions that will help the City:

- Implement the Strategic Plan vision;
- Choose priorities and allocate resources;
- Support better integration among City departments on matters related to the environment;
- Develop baseline information, targets and indicators to measure success;
- Provide education and raise public awareness to help residents be green where they live and work; and
- Foster partnerships and collaboration.

## Link to the Strategic Plan

The Strategic Plan is Mississauga's visionary document. Since 2009, it has shaped and directed strategic decision-making for the City of Mississauga. The five Strategic Pillars for Change are Move, Belong, Connect, Prosper and Green.

While all the Pillars contribute to creating an environmentally responsible Mississauga, the "move," "connect" and "green" pillars are the most relevant to the LGMP. The Strategic Plan states that the City can have a positive long-term impact on the environment by modifying people's behaviours in respect to the way the City:

- Moves people and goods; and
- Approves buildings and where it puts them.

Transportation and urban form are two policy and program areas where municipalities have clear jurisdiction and can undertake actions that significantly reduce environmental impact. The LGMP notes that

Mississauga has been pro-active in bringing forward programs and policies in these two areas that, in turn, help reduce impacts on the environment and mitigate climate change.

## How the LGMP was Developed

The LGMP brought together elected officials, City staff from all departments, the public, representatives of the community, businesses, conservation authorities, post-secondary educational institutions, NGOs and other orders of government.

The process was organized into four stages:

- Research;
- Staff and stakeholder workshops;
- Public events; and
- Interviews and discussions with City staff.

In total, more than 300 people participated in the workshops and public events. Dozens of community-based organizations, agencies and other governments were represented. The study team also held more than 50 meetings and interviews.

## The Strategic Framework

The LGMP strategic framework identifies three roles for the City and 49 corresponding actions to meet the objectives of the Strategic Plan. The 49 LGMP actions are grouped in the following categories:



*Strategic Framework for Action*

### Set an Example

The City is in a much better position to encourage or compel others to change their behaviour if it is setting an example for change. There are 26 recommended actions for City leadership.

### Encourage Others

The City cannot address Mississauga's environmental challenges alone. It requires the efforts and experience of every resource available to the City. There are 17 recommended actions.

### Compel Others

Mississauga can use well-publicized and fairly applied regulations to compel behaviour change, create a level playing field in the market place and ensure that no one receives an unfair advantage. There are six suggested actions for this role.

## The Decision Support Process

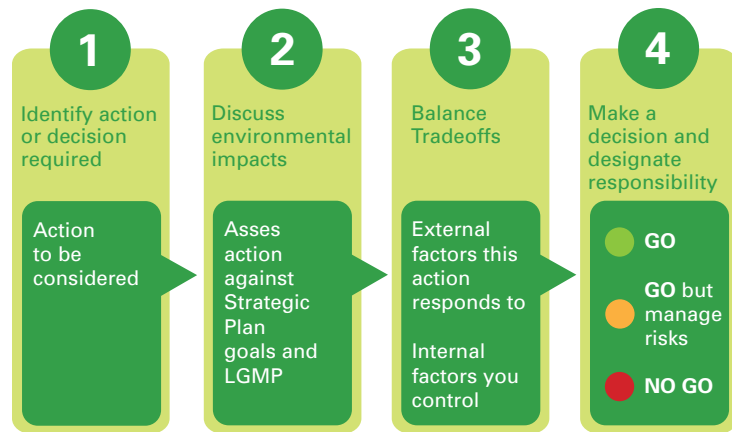
The LGMP includes a Decision Support Process (DSP) that was developed as a made-in-Mississauga approach to enable staff to work together to understand the environmental impact of every decision or action.

The DSP is designed to:

- Guide an integrated decision-making process regarding the potential environmental impacts of a particular policy, action or decision;
- Facilitate a process that brings people together to arrive at a balanced decision;
- Identify key issues, interests and assumptions;
- Analyze and balance competing interests; and
- Increase transparency in decision-making.



The LGMP contains a step-by-step guide to using the DSP and worksheet to aid initially in the process.



*Decision Support Process*

## Measuring Environmental Performance

The LGMP provides a three-step approach to evaluating Mississauga's environmental performance.

### 1. Develop Indicators and Collect Baseline Data

Indicators provide the City with a critical starting point for measuring environmental performance and beginning the process of collecting baseline data. The LGMP states that it is preferable to establish indicators at the neighbourhood level as this provides more meaningful information to residents, businesses and others.

The LGMP indicators were selected in three ways:

1. Where possible, the LGMP indicators were adapted from the city-wide indicators in the Strategic Plan;
2. The LGMP included indicators suggested by City staff; and
3. To fill gaps, best-practice neighbourhood-level indicators were selected.

There is no limit to how many indicators the City could measure, yet measuring indicators is costly and requires significant resources. Therefore, the LGMP typically includes a minimum of two indicators per environmental sector. This provides the City with a starting point for measuring environmental performance and a starting point to guide the collection of baseline data.

### 2. Set Targets

The City is undertaking (or is about to undertake) a wide range of comprehensive master planning studies across the municipality. The LGMP identifies this as an opportunity for each of these studies to set targets. Seven actions contained in the LGMP identify the studies and suggest how to go about setting targets.

### 3. Review and Align LGMP Indicators

City staff will review and align the LGMP indicators with targets established by other master planning processes. This will ensure that the indicators measure what the City needs to measure. This plan recommends that the appropriateness of the indicators be reviewed every five years.

The Strategic Plan reports on its indicators every year. It is recommended that the City also report on LGMP indicators annually where possible.

## Priorities

The LGMP examined more than 60 existing corporate actions and 80 corporate plans and policies. With so many plans and policies, it is often difficult for decision-makers to set priorities. However, the LGMP sets out six priorities as a guide to the allocation of resources. They are:

### 1. Build on Environmental Success

Mississauga is on the right track and must continue to:

- Expand the public transit system and alternative forms of transportation;
- Promote green development standards;
- Expand the natural areas system and protect the urban forest;
- Expand flood management plans;
- Upgrade stormwater quality and develop green infrastructure;
- Green its municipal facilities (energy efficiency, waste reduction and water conservation); and
- Implement environment policies contained in its new Official Plan.

## **2. Create an Environment Office**

In order to be successful at changing people's behaviour, the City needs an environment office that can:

- Provide advice to City Council on environmental priority setting;
- Ensure interdepartmental collaboration and strategic alignment;
- Ensure that the City collects baseline information and sets targets to measure progress; and
- Respond to requests from residents, staff and elected officials.

## **3. Raise Public Awareness**

To educate residents about actions they can take to live green in their homes and daily lives, develop:

- An environmental education strategy that includes a list of Top 10 "can-do" activities.

## **4. Collect Baseline Data**

To measure environmental performance and navigate the complex sciences of climate change, energy and water, undertake:

- A water-usage analysis;
- An audit of corporate water usage;
- An audit of corporate solid and organic waste;
- An air modelling and monitoring program in co-operation with the Region of Peel; and
- An infrastructure vulnerability assessment in co-operation with the Region of Peel.

## **5. Understand Mississauga's Energy Future**

To prepare for a low-carbon future undertake:

- Greenhouse gas inventories;
- An assessment of energy efficiency and renewable fuel strategies to determine what will work in Mississauga; and
- A Community Energy Plan.

## **6. Build Partnerships and Collaborations**

To reach outside the corporation and connect with residents, environmental and community groups, agencies, NGOs and the business sector, implement:

- An environmental grant program;
- An Air Quality Management Partnership;
- A Sustainable Neighbourhood Retrofit Action Plan;
- An Environmental Design Award; and
- Collaboration on Climate Change Adaptation.

# 1 introduction





## 1.1 vision



Mississauga is a world-class green city. Its innovative approaches to carbon emission reduction have inspired the world. Smog advisories are a thing of past. As a net exporter of clean, renewable energy, Mississauga's energy cost certainty attracts talent and businesses from around the world and ensures economic prosperity.

Mississauga has built a great public transit system. Every neighbourhood has fast, reliable public transit and cycling routes.

Redevelopment and intensification have created energy-efficient, compact, mixed-use developments to accommodate people and businesses. People walk to work, recreation and shopping. People have a strong sense of community and are proud of Mississauga's clean air, land and water. The actions of every resident and business conserve water, reduce waste as well as nurture and support the environment.

Mississauga's rivers and streams teem with fish. New wetlands and natural areas along with a regenerated off-shore waterfront provide habitat for indigenous aquatic species and wildlife.

Mississauga is a healthy place where people choose to live, work and play.

## 1.2 Purpose

The Living Green Master Plan (LGMP)<sup>1</sup> is Mississauga's first environmental master plan. It builds on the Strategic Plan vision of a clean and healthy natural environment with healthy people, clean air and water, all in a sustainable energy-efficient urban form. The Plan organizes the City's current and future environmental policies and programs in a strategic framework for action.

The purpose of the LGMP is to:

- Identify priority actions to meet the environmental objectives of the Strategic Plan, Official Plan and other corporate plans;
- Instill a corporate culture where City staff and elected officials consider the environmental impact of their decisions, practices, policies, activities, operations, strategic investments, administrative organization and future growth;
- Identify how the City can measure its environmental performance at both a neighbourhood and city-wide level; and
- Ensure that residents, community groups and businesses have the information to contribute to "living green" in their homes, businesses and neighbourhoods.

## 1.3 Goals

The LGMP identifies the actions that the City will take to address its environmental challenges and goals for the next 10 years. They are:

### Implement the Strategic Plan Vision

The Strategic Plan is a visionary document. All five Strategic Pillars for Change contain goals with environmental impact. However, three Pillars for Change in particular – "move," "connect" and "green" – are advancing the City in the right direction on environmental matters. Mississauga already has numerous environmental policies, programs, standards and strategies that help to reduce the City's environmental impact. Indeed, the study team counted more than 60 existing corporate actions and more than 80 corporate plans and policies that relate to the environment. By organizing actions and identifying priorities, the LGMP moves the City toward implementing the Strategic Plan vision.

### Choose Priorities and Allocate Resources

The challenge most often identified by City staff during the LGMP consultation process was securing the time and resources to fully implement plans or policies. The goal of the LGMP is to create a strategic framework through which decision-makers determine priorities and commit the level of resources required to successfully implement them. The LGMP also includes a Decision Support Process (DSP) and worksheet that assists decision-makers in determining priorities and raising consciousness about environmental impact. The DSP is also a tool to guide future decisions and act on environmental opportunities that arise after the LGMP is prepared.

### Support Better Integration Among City Departments

The City's environmental programs and policies are often designed without the benefit of understanding how they contribute to broader environmental objectives. A goal of the LGMP is to set out the administrative structure and processes that result in better information sharing and co-ordination across City departments on matters related to environment.

### Develop Baseline Information, Targets and Indicators to Measure Success

The study team was often asked how Mississauga was doing relative to other municipalities. The short answer is, "We don't know." Mississauga doesn't have the baseline information it needs to evaluate environmental performance. For example, Mississauga does not have an up-to-date community greenhouse gas (GHG) inventory to report on how GHG emissions are changing over time.

One goal of the LGMP is to establish baseline information and targets in support of the environmental goals in the Strategic Plan and other City policies. Baseline information provides a measurement, calculation or location to be used as a basis for comparison. Targets offer a meaningful way to evaluate progress. Indicators measure movement toward an outcome.

### Provide Education, Public Awareness to Help Residents Live Green.

In Mississauga, information for residents, elected officials and community groups about what they can do on an individual or neighbourhood basis to live greener lives is not readily available. A goal of the LGMP is to ensure that residents and businesses can more easily obtain the information or direction they need to reduce their impact on the environment.

<sup>1</sup> For a complete list of key terms and acronyms, See Appendix H

### Foster Partnerships and Collaboration

Other orders of government have primary responsibility for potable water, waste collection and recycling, water and sewage pumping and treatment and air-quality monitoring and modelling. The decisions and actions of many City departments impact the environment and contribute to climate-change adaptation, enhancing the natural areas system, stormwater management, the movement of people and goods, as well as approving how and where buildings are built. Outside the realm of government, many community groups, organizations, authorities and residents have an important role to play in environmental stewardship. A goal of the LGMP is to create a City Environment Office to work as a facilitator and build partnerships inside and outside the municipal corporation.

## 1.4 How the Living Green Master Plan Links to the Strategic Plan and other Corporate Initiatives

Since 2009, the Strategic Plan has shaped and directed decision-making for the City of Mississauga. It is the result of an extensive public engagement process that began in 2007 and connected more than 100,000 people to a conversation about Mississauga's future. The Strategic Plan consists of two parts. The first includes a Vision Statement and five areas where the City has determined that change must occur to deliver the Mississauga of the future. The second part is the Action Plan and includes the actions, indicators, targets and funding approaches for each of the five Strategic Pillars for Change.

The five Strategic Pillars for Change are **move**, **belong**, **connect**, **prosper** and **green** (See Figure 1).

### Strategic Plan Pillars for Change

While all the Pillars contribute to creating an environmentally responsible Mississauga, **move**, **connect** and **green** are the most relevant to the LGMP. The objectives of these three Strategic Pillars, as they relate to the LGMP, are:

#### MOVE - Developing a transit-oriented city by:

- Reducing private automobile use and developing compact mixed-use development;
- Building a reliable and convenient transit system that is frequent, clean, safe, reliable and convenient and within walking distance of every home; and
- Adding capacity through strategic investment in transit, streets and active mobility options.

#### CONNECT - Completing neighbourhoods by:

- Developing walkable, connected neighbourhoods that give residents the ability to engage safely in all aspects of their everyday lives; and
- Providing transportation mobility choices.

#### GREEN - Living green by:

- Promoting technologies and tactics to conserve energy and water, reduce emissions and waste, improve air quality and protect the natural environment;
- Conserving, enhancing and connecting natural environments; and
- Promoting a green culture by changing behaviours to minimize impact on the environment and contributing to reversing climate change.



**Figure 1**  
Strategic Pillars for Change



The LGMP aligns with the Strategic Plan in its understanding that Mississauga can have a positive long-term impact on the environment by changing people's behaviours in respect to the way the City:

- Moves people and goods; and
- Builds buildings and where it puts them.

Transportation and urban form are two policy and program areas where municipalities have clear jurisdiction and can undertake actions that significantly reduce environmental impact. As an "Our Future Mississauga" speaker Larry Beasley<sup>2</sup> noted, "The best transportation strategy is actually a land-use strategy."

Mississauga has been pro-active in bringing forward programs and policies that help reduce the impact on the environment and reverse climate change. The Official Plan establishes regulations to promote Transportation Demand Management (TDM) and compact mixed-use urban form in appropriate areas, as well as to protect and enhance the Green System, as defined in the Official Plan. The 2010 Mississauga Green Development Strategy sets out actions to encourage the private sector to adopt practices that result in greener buildings and less stormwater impact on natural water bodies.

In terms of buildings, the LGMP recognizes that the current Mississauga Green Building Standard for Municipal Buildings and Facilities establishes the standards by which the City sets an example with its own buildings and facilities.

The City has committed significant resources toward building a reliable and convenient transit system, adapting roads to accommodate active means of transportation, and facilitating cycling and walking. The LGMP acknowledges that the upcoming Mississauga Transportation Strategy will recommend concrete actions to continue to move the City in this direction for the longer term.

The LGMP also recognizes that the upcoming Mississauga Natural Heritage System Strategy will recommend actions to conserve, enhance, expand and connect Mississauga's natural areas.

<sup>2</sup> Larry Beasley is the retired Director of Planning for the City of Vancouver. He is now the Distinguished Practice Professor of Planning at the University of British Columbia and the founding principal of Beasley and Associates, an international planning consultancy.

In terms of conserving water, the LGMP, like the Strategic Plan, recognizes that the pumping and distribution of water in Mississauga falls under the jurisdiction of the Region of Peel. Nevertheless, the LGMP recommends that the City initiate a water-use analysis to establish neighbourhood baseline information and to better understand how water is used in Mississauga. As solid waste is also under Peel's jurisdiction, the City can focus its waste reduction and diversion efforts specifically on its own operations.

In terms of conserving energy, the LGMP recognizes the successes of the City's Corporate Energy Management Plan in increasing energy efficiency. At a broader community level, the LGMP sees the need for a new GHG inventory and a Community Energy Plan to establish a framework for actions like renewable energy production as suggested by the Strategic Plan.

A GHG inventory would also provide baseline data for the carbon emissions reduction indicator in the Strategic Plan.

Like the Strategic Plan, the LGMP provides indicators for evaluating environmental performance and progress in Mississauga. The indicators set out in the Strategic Plan provide a way to evaluate environmental performance on a city-wide basis. The LGMP approach is to suggest indicators that could also be applied at the neighbourhood level since local metrics provide more specific information to residents and businesses.

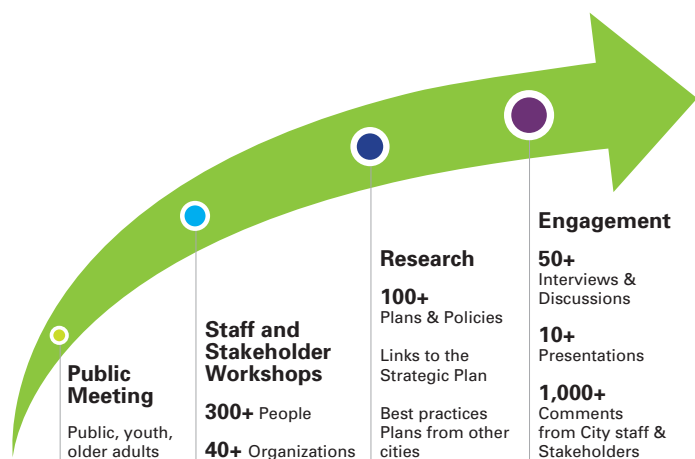
Through actions fostered by the Strategic Plan and other corporate initiatives, the City will offer residents choices and create opportunities for behaviour modification that will reduce their impact on the environment. In this way, the LGMP reinforces and builds on the work begun in the Strategic Plan.

## 1.5 Development of the Living Green Master Plan

An important part of developing the LGMP was to identify and bring together all the people and groups that contribute to the efforts the City, its partners and the community are making to reduce environmental impacts and move forward on the goals of the Strategic Plan.

The stakeholders that were consulted included elected officials, City staff from all departments, community representatives, the public, representatives of businesses, conservation authorities, post-secondary educational institutions and other orders of government. Discussions with representatives from these groups allowed the study team to learn and share information about environmental policies, plans, projects and initiatives that have an impact in Mississauga. The process of developing the LGMP was highly co-operative, fostering new partnerships and working relationships inside and outside the City that, in turn, will be important for implementing the plan.

The process of developing the LGMP involved four stages: research; engagement with City staff and community representatives through a series of presentations and workshops; a public consultation event; and discussions and extensive reviews with City staff.



**Figure 2**  
*Research and Engagement*

These four components and what was learned from each are summarized below:

### 1.5.1 Research

During the summer of 2010, the study team reviewed the array of existing environmental strategies, policies, programs and initiatives in Mississauga as well as those conducted by the City's local, regional and provincial partners (*See Appendix G for documents reviewed*).

The team reviewed a number of environmental and climate change Master Plans from select cities including Guelph, Windsor, New York City, Chicago, Toronto and Copenhagen.

The study team also became familiar with the environmental focus of the City, how Divisions worked with one another to integrate environmental actions within the City, how the City collaborated with external agencies and other levels of government and how departmental studies, master planning documents and other policies were linked to the Strategic Plan in seven key areas (transportation, urban form, the natural areas system, air, water, waste and energy).

### Findings

The study team found that Mississauga was moving in the right direction toward achieving the goals set out in the Strategic Plan, but that challenges remain. The goals in the Strategic Plan were found to be consistent with those in a number of other cities' environmental plans.

The following is a brief summary of our findings in each of the key areas. The icons that correspond to the seven areas listed below are used throughout the plan to help organize the actions and indicate the environmental benefits they can achieve.



#### Transportation

The City has invested in higher order transit, which supports reduced car use, compact mixed-use development and reduction of GHGs.

However, the City will be challenged with funding an improved transit system that can compete with the private automobile in meeting the needs of residents and commuters. Providing more higher order transit and



improved frequency of service will require increased resources and funding from other governments, as well as increased levels of City investment.



### **Urban Form**

Intensification priorities in the Official Plan direct new growth to nodes and corridors and create more compact forms of mixed-use development, while maintaining stable neighbourhoods.

Integrating transportation and land-use planning while transforming the urban form to be more supportive of active modes of transportation (such as cycling and walking) and public transit will require City departments to identify project opportunities and ensure implementation.



### **Natural Areas System**

Established policies are moving in the right direction to enhance, restore and expand Mississauga's Natural Areas System, but growing it will involve balancing a variety of City departmental priorities like stormwater management, flood control and creating new active park space, especially as the city continues to grow. Another challenge, as identified in the Strategic Plan, is planting one million native trees and protecting them so they grow to maturity.



### **Air**

The City's Clean Air Strategy and fleet greening, Idle-free campaign, Smart Commute Mississauga initiative and fuel choices for transit help reduce air pollutants and greenhouse gases. However, the City has direct control over only 10 per cent of its airshed.

Clearly, therefore, the City has a major role to play in working with the Ministry of Environment and others to develop a new national Air Quality Management system and pilot a plan to monitor, model and improve local air quality.



### **Water**

The City can be more environmentally pro-active by adopting stormwater management criteria and best practices such as rainwater harvesting, green roofs, bio-retention, permeable pavement, soakaway pits and

swales. Meanwhile, stormwater and drainage best practices are having a positive influence on private development.



### **Waste**

Waste management is the responsibility of the Region of Peel, but Mississauga can do more to increase the diversion rates in City-owned and operated facilities.



### **Energy**

The City's Corporate Energy Management Plan is reducing energy use in its facilities. An updated inventory of GHGs and city-wide energy consumption are required to set incremental targets to meet the Strategic Plan's goals and the recently adopted Region of Peel Climate Change Strategy.

## **1.5.2 Staff and Stakeholder Workshops**

Between July 2010 and June 2011, four sets of workshops were held with staff from City departments and external stakeholders representing other orders of government, conservation authorities, businesses, community organizations and non-profit groups.

In total, more than 300 people were engaged in the workshops and public events, representing dozens of community-based organizations, agencies and other governments (*See Appendix F*).

### **Findings**

At the first workshop, held on July 26, 2010, stakeholders identified expectations for the LGMP. These were:

- Be simple, realistic, practical, achievable, flexible and innovative;
- Include a significant education component;
- Include regular measurement, monitoring and reporting;
- Integrate all of Mississauga's plans, policies and by-laws to co-ordinate with the Strategic Plan; and
- Foster a co-ordinated approach among City departments and with external organizations, including other governments.

The second set of workshops was held on October 22, 2010 and focused on getting feedback about the approach to the LGMP and the seven areas of the environment that the plan addressed at the time (land, water, air,

energy, waste, transportation and climate change). The stakeholder group understood the need to examine the various areas but urged the LGMP to break down silos and link areas of the environment, not deal with them separately.

In response, the study team formulated a strategic framework that was organized around three roles for the City of Mississauga:

- Set an example;
- Encourage others; and
- Compel others through regulation.

On January 31, 2011, a third workshop was held for external stakeholders that sought feedback on an interim draft plan that contained 75 recommendations.

The external stakeholders felt that the draft and its suggested actions:

- Addressed well the areas of the environment;
- Contained positive ideas, but that the document was difficult to read and too long;
- Needed timelines associated with the actions;
- Needed to be more clearly integrated with the Strategic Plan;
- Needed to clearly address environmental education and the public awareness gap; and
- Needed to be recognized as an ongoing process.

The final set of workshops on June 16, 2011 presented the revised set of draft actions and sought further clarification on gaps, factual errors or red flags. Participants were:

- Pleased that the plan presented the actions under the three roles for the City of Mississauga;
- Pleased that the second draft was clearer; and
- Looked for further identification of what the plan means to the average resident.

*(See Appendix E for key messages from the workshops.)*

### 1.5.3 Public Event

A one-day event on April 7, 2011 introduced the draft LGMP to the public with special sessions targeted at youth and older adults, City leaders, environmental organizations and the community.

#### Findings

Feedback generated at this event corroborated the approach to the LGMP, focusing on the three roles Mississauga can play (Set an Example, Encourage Others, Compel Others). Participants also emphasized the importance of investing in transit and the need to highlight the role of the community in the plan.

### 1.5.4 Regular Meetings with City Staff, Environmental Stakeholders and Elected Officials

The study team also held more than 50 meetings and conversations with City staff including managers and directors who participated on the internal project Working Team, Steering Team and Environmental Network Team, as well as environmental stakeholders and elected officials. A presentation and discussion was held with the Extended Leadership Team.

The study team developed more than a dozen presentations that were presented for information and feedback to the working team, steering team, Environmental Advisory Committee, General Committee and at workshops on the direction the plan was taking, as well as specific recommendations related to LGMP actions. External environmental stakeholders were also selected for involvement in this LGMP consultation process. In addition, the study team conducted one-on-one interviews with staff and convened separate workshops to review and comment on recommended actions. The study team received and responded to more than 1000 comments.

#### Conclusions

From the review of the policies and strategies, workshops with City staff and stakeholders, and from interviews with City staff, a number of issues and gaps were identified:

- Although there were many City “environmental” initiatives, there were no clear priorities;
- Limited funding and staff resources to advance these initiatives;

- Limited baseline information to set targets, metrics and implementation timelines, and to measure performance;
- The need for better information-sharing and co-ordination among City departments and external agencies, such as conservation authorities;
- The need for outreach to residents, community organizations and businesses that want to work with the City on environmental initiatives;
- The need for public awareness and education to help residents reduce their impact on the environment; and
- The need to link outcomes of City environmental initiatives to more than just the “green” pillar of the Strategic Plan.

In October 2010, the Extended Leadership Team directed the LGMP project team to focus on areas where Mississauga has the most opportunity to influence change (transportation, urban form, built form and natural area systems). At the same time, stakeholders from external groups told the City it could exercise an effective role even in areas where it didn’t have jurisdiction and resources (such as water and waste). Many representatives of community groups and external agencies continue to feel that the City should show leadership as a corporation through advocacy, education and partnering with external groups to create more robust roles for the community.

## 1.6 Setting Priorities

The LGMP examined all existing City environment-related plans, policies and initiatives. With more than 60 corporate actions and more than 80 corporate plans and policies, every department at the City addresses environmental issues at some level. But with so many plans and policies, it is often difficult for decision-makers to set priorities.

To guide priority setting the LGMP offers the following advice:

### 1. Build on Environmental Success

The first priority for Council, and perhaps the most important one, is to stay the course. The key issue is appropriate allocation of staff and resources. Among the existing and planned programs and initiatives that show that Mississauga is on the right track are its plans to:

- Expand the public transit system;
- Expand alternative forms of transportation;

- Implement green development standards;
- Protect and expand the natural areas system and the urban forest;
- Expand flood management plans;
- Improve stormwater quality; and
- Green its municipal facilities (energy efficiency and water) and infrastructure.

### 2. Create an Environment Office

In order to be successful in changing people’s behaviours and ensuring the LGMP is implemented, the City needs an Environment Office that can:

- Provide advice to City Council on environmental priority setting;
- Ensure interdepartmental collaboration and strategic alignment;
- Ensure that the City collects baseline information and sets targets to measure progress; and
- Respond to requests from residents, staff and elected officials.

An important priority will be to realign the administrative structure to signal the importance the City places on achieving its transformational green vision. This includes:

- A Mississauga Environment Office led by a Director;
- An interdepartmental LGMP Steering Team; and
- An enhanced role for the Environmental Advisory Committee.

### 3. Raise Public Awareness

Mississauga needs to raise public awareness and educate residents about actions they can take to live green in their homes and daily lives. This includes developing:

- A list of Top 10 “can-do” activities for residents, businesses and staff to support the priority areas of the LGMP.

### 4. Collect Baseline Data

The City will also need to collect the information that staff and elected officials can use to measure environmental performance and navigate the increasingly complex worlds of climate change, energy and water. This includes:

- A city-wide water-use analysis
- Audit of corporate water usage in City-owned and operated facilities;
- Corporation-wide internal waste audit;
- Air modelling and monitoring program;
- Infrastructure vulnerability assessment; and
- Transportation target modal splits

## **5. Understand Mississauga's Energy Future**

The visionary action in the Strategic Plan's "green" pillar commits Mississauga to developing in a way that will reduce fossil fuel use. This will require a long-term, co-ordinated and integrated approach that carefully matches energy-efficiency strategies for buildings and transportation with alternative technology and renewable fuel options. Three steps to help Mississauga move closer to its long-term goal are:

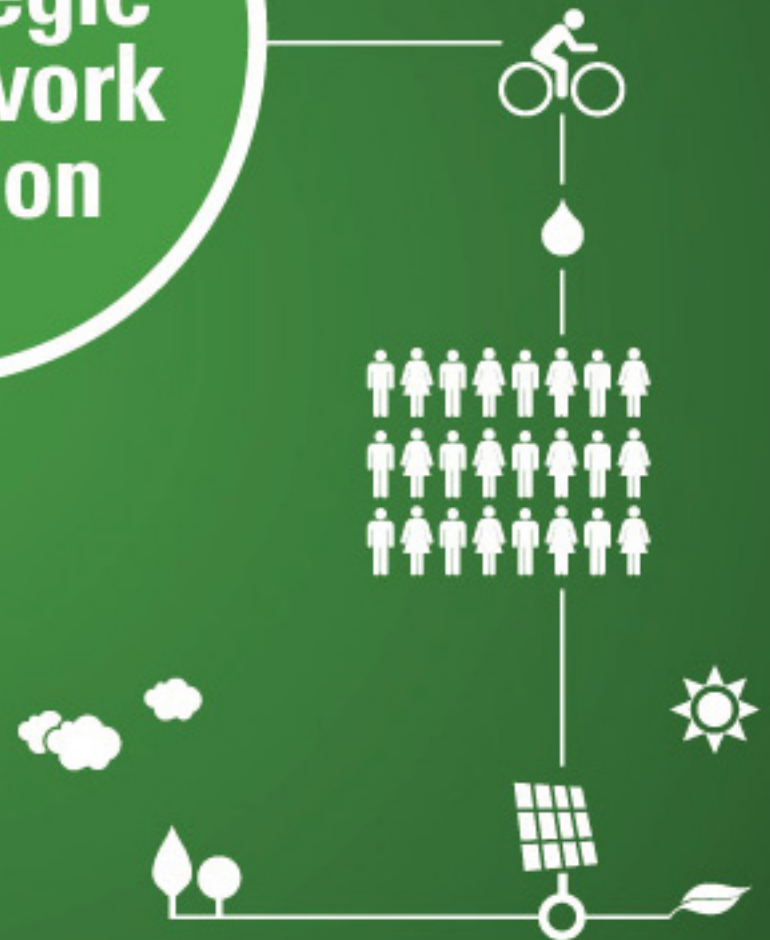
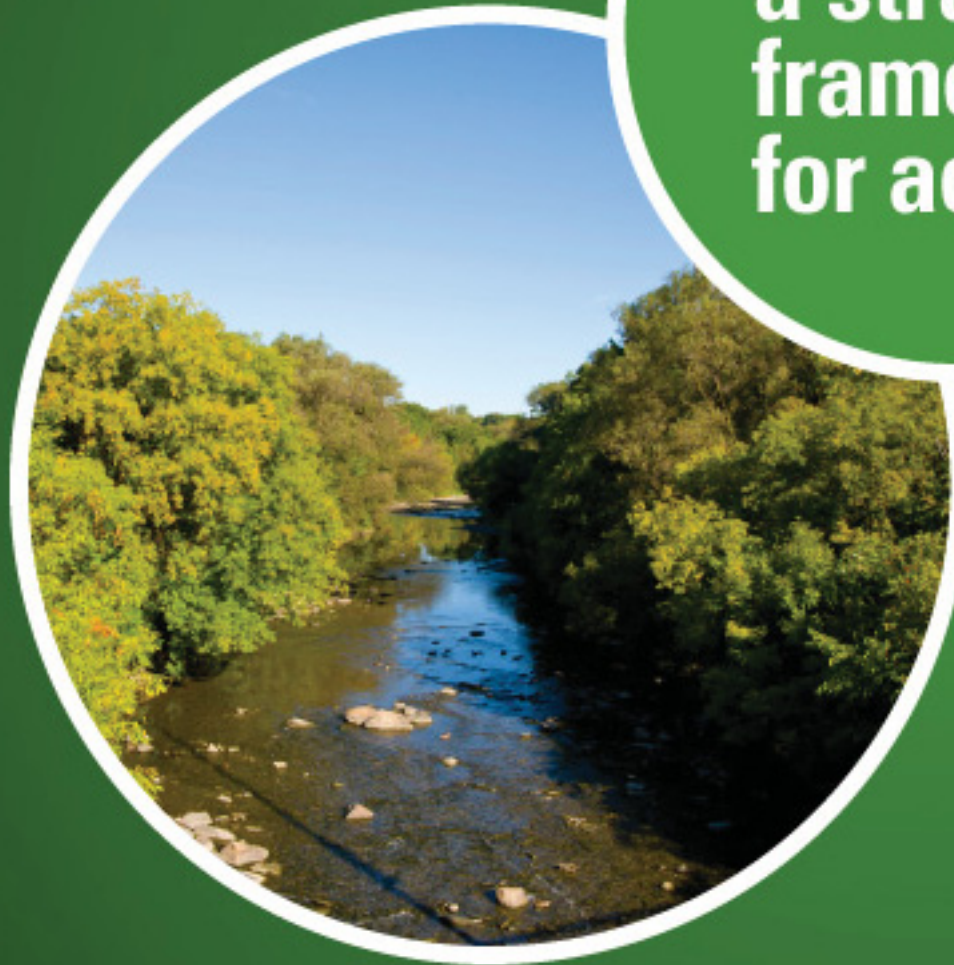
- A greenhouse gas inventory that collects data on electricity and natural gas, transportation fuel use, and the quantity and composition of waste and disposal methods;
- An assessment of the applicable energy-efficiency and renewable fuel strategies to determine what combination will work best in Mississauga; and
- A Community Energy Plan to integrate energy issues associated with transportation, supply and energy end-use.

## **6. Build Partnerships and Collaborations**

Partnerships are an important way to reach outside the corporation and connect with residents, community groups, the business sector and the broader public sector to change peoples' behaviours in compelling and cost-effective ways. Actions to leverage partnerships and collaboration are:

- A Mississauga Environmental grant program;
- Air Quality Management Partnership;
- Sustainable Neighbourhood Retrofit Action Plan;
- Environmental Design Awards; and
- Collaboration on Climate Change Adaptation.

## 2 a strategic framework for action





The LGMP is primarily a document to prioritize City policies and programs into actions to meet the objectives of the Strategic Plan.

Many of the Plan's recommendations impact on more than one area of the environment and involve more than one City department or partner agency. For example, the Green Development Strategy impacts on stormwater run-off, energy use, air quality and urban form.

Staff and external partners want the LGMP to reinforce linkages between departments and partner agencies as well as connections among areas of the environment rather than support silo-like divisions. The LGMP strategic framework identifies three roles for the City and corresponding actions to meet the objectives of the Strategic Plan.

The three ways the City interacts with others when effecting behavioural change are:

- Set an example;
- Encourage others; and,
- Compel others.



**Figure 3**  
*Strategic Framework for Action*

### Set an Example

As a corporation, the City can, through its actions, demonstrate best practices, lead by example and raise interest and awareness to help advance change. The City is in a much better position to encourage or compel others to change their behaviour if it is setting an example for change.

### Encourage Others

The City cannot address Mississauga's environmental challenges alone. Adapting to climate change and an increasingly complex energy and water landscape in the context of economic and population growth is a complex job. It requires the efforts and experience of every resource available to the City. Collaboration within and between City departments; with local and regional governments; and with the broader public sector and its agencies and authorities can build partnerships for change. Public awareness campaigns are a compelling and cost-effective way to encourage residents and community and business groups to change their behaviour and live green.

### Compel Others

Building Codes and planning regulations have long represented a core element for achieving safe, healthy, energy-efficient and prosperous communities across Canada. The application of building codes and planning acts has only recently been identified as a practical and long-term solution for raising the minimum environmental performance of buildings and communities, while simultaneously providing a means to stimulate innovation. Well-publicized and fairly applied codes and regulations create a level playing field and ensure that no one receives an unfair advantage.

The LGMP Action Plan is contained in Appendix A. It provides a summary of all the actions contained within the plan, categorized according to the strategic framework for action. The Action Plan also indicates the areas of the environment that will benefit from the action and identifies the lead actors, partners and timeframe for each action.

## 2.1 actions to set an example





## 2.1.1 Transportation

### Public Transit

**Action 1: Maximize investment in the expansion of public transit in areas where transit-supportive development exists or is planned for the future.**

Mississauga is at a critical moment in its development – the majority (95 per cent) of its greenfield lands are built out, much of its infrastructure is developed and the city cannot expand its boundaries. The City is also facing challenges with congestion on its roadways. Yet with limited land available, this road network cannot continue to expand.

The City understands that if it wants to accommodate future growth, it must adopt new, more efficient and more compact approaches to the way it has traditionally moved people and goods, and built buildings. The City's new Official Plan (OP) sets a path for how Mississauga will evolve and intensify into the future.

A key direction contained in the new OP involves improving and expanding public transit. It also envisages that the City's transit network be supported by multi-modal nodes and corridors, offering high densities of residents and jobs to utilize these transit services.

Mississauga is in an excellent position to become a more transit-oriented city, particularly as its road network is relatively new and functional. The City has wide roads that are capable of being redesigned to accommodate new transit infrastructure like Bus Rapid Transit and Light Rail Transit, bike lanes and wider sidewalks for pedestrians. Large land parcels for future development are also available at key nodes, such as in the downtown.

Overall, the LGMP strongly supports this integrated and best-practice approach to urban development and transportation planning. Moreover, the LGMP considers that sustained, increased transit investment is

fundamental to the city's future health, competitiveness, prosperity, sustainability and overall success.

### Regional Transportation Network

**Action 2: Lobby for funding to improve the regional transportation system.**

Movement occurring throughout the Greater Golden Horseshoe (GGH) Region places significant pressures on Mississauga's transportation network and infrastructure. Mississauga is a key part of the larger regional transportation network. People from this broader region are continually moving in and out of Mississauga for work, shopping, learning or to gain access to Lester B. Pearson International Airport. Every day thousands of people drive through Mississauga on the 400 series highways. High levels of growth to the west will place increasing pressure on the city's road network, highways passing through Mississauga and the existing transit system.

By virtue of its position as the GGH's transportation and logistics hub, Mississauga will likely require increased levels of regional investment in programs and infrastructure to offset demands from people and goods flowing through the city to points east and west. The business community, the Mississauga Board of Trade, the Greater Toronto Airports Authority, Metrolinx/GO Transit and local partners will need to work together to ensure that the regional component of Mississauga's transportation system keeps pace with growing demand. The City will be challenged to fund a local, improved higher order transit system, as well as advocate for increased resources and funding from other orders of government to support regional improvements such as two-way GO service and high-occupancy vehicle lanes on the 400 series highways.

### Transportation Strategy

The City has developed an Interim Transportation Strategy (April 2011) which is a five-year action plan with 46 recommendations to advance the development of a multi-modal network through design and implementation of transit, cycling and pedestrian facilities. The Province is developing guidelines for transportation master plans, and the City will update its Interim Transportation Strategy once they are released.



The following five actions involve key environmental considerations that should be taken into account in the update of the Transportation Strategy.

## Transportation Demand Management Initiatives

**Action 3: Evaluate Transportation Demand Management (TDM) initiatives to date and existing modal split; and work collaboratively to implement TDM measures across the City of Mississauga.**

**Action 4: Invest in the expansion of alternative forms of transportation, including cycling, walking and car-sharing.**

Transportation Demand Management (TDM) encompasses making fewer trips, developing and using options to avoid driving alone, ride-sharing, locating destinations closer to where people live and work, and putting more people within walking distance of many of the goods and services they access on a daily or weekly basis.

The City is already serving residents and commuters by investing in TDM. Some TDM initiatives include the promotion of ride-sharing, the Cycling Master Plan, paid parking at City-operated parking in the City Centre and other main street areas, investing in the trails system for walking and cycling, as well as supporting Smart Commute Mississauga and the newly established Pearson Area Smart Commute. These efforts could be complemented by the development of comprehensive parking strategies.

It will be critical for the City to expand its TDM activities to reduce the number of single-occupancy vehicle trips, leading to significant reduction in congestion levels.

It will also be critical to target commuters at peak hours. Car use makes up approximately three-quarters (76 per cent) of peak-period trips.<sup>3</sup>

Mississauga will be challenged with creating stronger transit connections to key employment areas such as the Airport Corporate Centre, Meadowvale and the rest of the Greater Golden Horseshoe.

Going forward, the City would be well served to monitor and evaluate TDM efforts against indicators of sustainability (*See Table 1*).

Additional TDM initiatives include increasing opportunities for alternative transportation (walking, cycling and car sharing). The LGMP strongly encourages investing in these alternative modes to offer transportation choices for Mississauga's residents. This not only contributes to a higher quality of life, but also offers human health and environmental benefits (i.e., less air pollution from vehicle emissions). It will also preserve the capacity of the road system to meet expected growth and contribute to the emergence of more vibrant, attractive, mixed-use and self-sustaining neighbourhoods.

## Set Targets

**Action 5: Develop targets for modal splits in the Transportation Strategy.**

The Interim Transportation Strategy identifies modal split targets for transit. Modal split targets for cycling and walking are yet to be developed. Once data for cycling and walking is collected and a baseline is established, the City can start to set targets for these modes and develop tailored initiatives to encourage such alternative transportation. It will be important that these targets be realistic and achievable to articulate the City's transportation goals and help guide decisions when investing in transportation infrastructure.

The City should report on progress in meeting targets and use multi-modal data to evaluate the effectiveness of its transportation policy and investments.

<sup>3</sup> City of Mississauga, Interim Transportation Strategy (Table 7.4)

## Green Transportation Infrastructure

### **Action 6: Develop guidelines that advance new or rehabilitated transportation infrastructure that supports natural ecological functions.**

There is a growing interest in changing the way we think about nature, using a new economic language that recognizes nature as a form of capital, or green infrastructure, with substantial value. The goal of green infrastructure in this context is to reduce the environmental impacts of travel and, at the same time, perform ecological functions such as cleansing and infiltrating run-off and cleaning the air.

Many of the negative environmental impacts associated with private automobile uses can be mitigated and/or eliminated through comprehensive design and substituting green infrastructure where engineering standards call for grey or hard infrastructure.

Mississauga has demonstrated the importance of green infrastructure by installing bioswales and other stormwater management measures to address run-off from roads. The City has also shown significant foresight through its program to replace all street lighting and traffic signals with light-emitting diodes (LED).

The City should build on these important measures and develop consolidated green transportation infrastructure guidelines that provide direction for how all of Mississauga's roads and transportation infrastructure could be better utilized to support natural ecological functions. Green transportation infrastructure can create mutually reinforcing environmental benefits by creating additional habitats for plants and wildlife, enhancing air quality, reducing energy use and GHG emissions, mimicking natural hydrological cycles, increasing groundwater infiltration and expanding biodiversity. *(See Appendix D for Calgary case study on green infrastructure guidelines for transportation corridors.)*

Mississauga should also consider adapting the U.S. Greenroads™ rating system to baseline the performance of its roads and road projects and set appropriate targets for improvement over time.

City staff responsible for developing and implementing green transportation guidelines should regularly make progress reports to the City's Environmental Advisory Committee.

## Network Efficiencies

### **Action 7: Study the efficiency of the transit network on priority corridors to speed up the system and make it more competitive and more attractive to commuters.**

Mississauga's transit network speed has been decreasing as a result of buses being held up on the city's increasingly congested road network. Mississauga should undertake a Transit Priority Study to review the efficiency of priority corridors, develop priorities for improving the system and understand where transit is under the most pressure from competing modes of transportation. This review would inform the City on how to maximize existing transit resources and where to invest future resources to increase the efficiency of priority routes.



## 2.1.2 Natural Heritage

### Natural Heritage System Strategy

**Action 8: Include in the Natural Heritage System Strategy guidelines to:**

- **Develop neighbourhood green system and naturalization targets that support the Natural Heritage System Strategy;**
- **Involve a wide range of private and public stakeholders;**
- **Develop a strategic restoration strategy;**
- **Identify an action plan and resources to implement recommendations in existing studies;**
- **Develop an Invasive Species Management Plan that identifies priority management areas for invasive plant and insect species, and includes replanting strategies and preventive programs; and**
- **Increase minimum vegetation protection zone setbacks for all regulated areas and natural area features.**

The distinctive pre-settlement Mississauga landscape experienced a combination of glacial events, soils, precipitation and topography and thousands of years of interaction with native people. Mississauga's past gave rise to the myriad forms of native vegetation and wildlife it supports today. The remnants of these early landscapes, which endure as part of Mississauga's natural areas system, are important reminders and connections to its past, as well as fundamental to the present day quality of life. They are integral to clean air, land and water, support vital ecological functions and contribute to the health and spiritual well-being of Mississauga's residents.

As Mississauga looks to the future, the protection, preservation, restoration and expansion of these natural areas will be paramount.

The urbanization of Mississauga and its previous land uses have fractured the natural landscape. As a result, some natural areas are small and isolated, placing limitations on their ability to be self-supporting, to maintain natural ecological processes and to support a diverse array of flora and fauna. Moreover, given that the urban form and structure of Mississauga is largely determined, it creates challenges for the city to grow and connect its natural areas system. In this context, the City will need to design and deliver innovative programs that are able to focus on improving the quality of biodiversity within the existing natural areas system as well as expanding it, both on public and private lands, to make it sustainable for generations to come.

In response to this challenge, the City has proposed the development of a Natural Heritage System Strategy (NHSS) in 2012-2013. Such a strategy is critical for the City to seize opportunities to enhance and expand the natural areas system, set natural areas targets and develop policies to support the system's strategic and co-ordinated growth.

A NHSS will also offer an excellent opportunity to develop strong partnerships with key stakeholders such as private land owners, conservation authorities, community-based conservation groups, school boards and resident groups.

As part of the NHSS, the City should also take the opportunity to prepare a Strategic Restoration Strategy that identifies where to undertake habitat creation, restoration and enhancement activities that will have the largest contribution to the goal of expanding and further connecting the natural heritage system.

Likewise, the NHSS should include an invasive species management plan. Priority areas should be identified based upon a review of the Natural Areas Survey and through City staff experience. Conservation authorities could provide an important partnership opportunity to help tackle these issues. Groups such as Credit Valley Conservation (CVC) and Toronto and Region Conservation Authority (TRCA) have conducted research, created management plans and established invasive species protocols that can help guide City staff in developing the NHSS. For example, City Parks Operations staff should be educated with regard to invasive species and risks of spreading invasive plants through maintenance activities. In addition, when drawing up plant lists for park developments and redevelopments, native species of trees and shrubs

should be used where suitable and invasive ornamental plants should be avoided in horticultural displays.

The NHSS should also develop an action plan and resources to implement recommendations in existing plans and documents related to natural heritage including: the Mississauga Natural Area Survey; Mississauga Official Plan Natural Area and Greenbelt policies; Mississauga Landscape Scale Analysis; Peel's Significant Woodlands and Wildlife Habitat study; CVC's Terrestrial Ecosystem Enhancement Model; Mississauga Urban Forest Management Plan; TRCA's Terrestrial Natural Heritage System Strategy; TRCA Etobicoke-Mimico Watersheds Plan; and Peel Urban Forestry Strategy.

Lastly, the NHSS offers the opportunity to identify areas to grow the natural heritage system. Mississauga's Natural Areas System occupies nine per cent of the city's land area and is largely focused on the Credit River. More specifically, the City should work with conservation authorities to prescribe minimum vegetation protection zones from the edge of natural features (i.e., streams, significant woodlands, valley lands, wetlands). This would ensure that future development is set further back from the natural areas system and would add more area to the edge of the existing natural areas system. Such a measure would also help support a larger system of green infrastructure. In the Pickering Seaton community, for example, developers were required to maintain a minimum 30-metre setback close to wetlands, watercourses or Areas of Natural and Scientific Interest and 15 metres from woodlots. Such efforts will be critical, given constraints on available land in Mississauga.



### 2.1.3 Water

#### **Mississauga Green Building Standard for Municipal Buildings and Properties**

**Action 9: Audit corporate water usage in City operations and City-owned and operated facilities; and develop strategies to reduce water use.**

**Action 10: Audit City buildings and properties to assist retrofitting and planning for new facilities to achieve the standards the City requires for private developments as per the Green Development Strategy.**

**Action 11: Develop guidelines that require low-impact development features (including the use of indigenous species in landscaped areas) for all existing and new City projects.**

The City recently adopted the Mississauga Green Building Standard for Municipal Buildings, requiring the achievement of a LEED Silver rating for new buildings and renovations. For example, the Garry W. Morden Fire Training and Mechanical Centre is built to LEED silver standards.

The City should take these efforts one step further and audit its water usage with a goal of reducing potable water use in City operations and City-owned facilities. This action would demonstrate the importance of water conservation efforts. Conserving water results in less energy required to pump water and fewer chemicals used to treat water. This reduced demand for potable water and energy would also reduce infrastructure requirements. Major cost savings could be made if conservation efforts led to postponing the expansion and construction of expensive infrastructure such as water treatment and conveyance infrastructure. The City should showcase the results of these water conservation efforts through signage and public promotion to the community (both residents and businesses) to promote best practices across Mississauga.

Additionally, to set an example, the City should review stormwater discharge on City-owned facilities and, where necessary, retrofit these properties to achieve the same standards currently required for new development by the Green Development Strategy and the OP (Section 6.5.2.2). At the same time, the City should build demonstration projects at its facilities such as rain gardens that would help local residents and businesses understand how they can manage stormwater run-off on their own properties.

To complement these efforts, the City should also pay special attention to natural ecological functions on its properties by reviewing land around municipal buildings and maintaining plantings so they can thrive. These efforts would effectively demonstrate how even small gardens can contribute to the natural environment, by allowing increased habitat for birds and butterflies, etc. These gardens should also act as demonstration projects for the community to learn about native species and how to effectively grow them in their own gardens.

## Stormwater Management

### **Action 12: Ensure that the Stormwater Quality Control Strategy Update addresses:**

- **Ways that stormwater management infrastructure can protect and enhance the natural areas system;**
- **Increased requirements for Pollution Prevention Planning for businesses with the potential for discharge of contaminants;**
- **Adopting and promoting the use of green infrastructure (as set out in Stage One Green Development Strategy) to treat stormwater run-off before it flows into the city's natural water bodies;**
- **Updating stormwater management criteria based on standards developed by the conservation authorities;**
- **Impacts of erosion and prioritizing watercourse erosion works; and**
- **Identifying stormwater funding opportunities.**

Mississauga was once farmland and orchards. When it rained, the earth would absorb the water, rejuvenate the groundwater flows and eventually

flow back to the region's rivers, streams, wetlands and lakes. Today, much of Mississauga is covered with hard surfaces. When rain falls or snow melts on these hard surfaces, it creates high volumes of surface run-off, rather than slowly filtering into the ground and washing over the natural landscape. This surface run-off picks up a multitude of pollutants that, in turn, contaminate streams, rivers and receiving water bodies. In addition, today's more frequent and intense storms place increased pressure on stormwater infrastructure.

In response, the City has spent significant effort improving stormwater management practices and has been adopting a wide range of best-practice approaches. It is currently undertaking a Storm Water Quality Control Strategy Update to be completed by the end of 2011.

One of the important desired outcomes of this study will be an emphasis on an interdepartmental collaborative approach to stormwater management. The City's planning, engineering, transportation and parks planning departments should work together so that stormwater management infrastructure protects and enhances the natural areas system.

The Stormwater Strategy Control update should also investigate discharges from industries and ensure that Pollution Prevention Planning is being effectively undertaken. Current discharge treatment measures should be reviewed to determine if there is a more environmentally sustainable way to manage these discharges. The City should also continue to build relationships with the private sector to contribute to improved water quality throughout the city.

The City and conservation authorities (who share responsibility for Mississauga's natural hydrological system) have been implementing best-practice approaches to stormwater management for many years. In addition, Region of Peel Council has identified improving stormwater management as a priority. Partnerships among the City, the Region and conservation authorities should be strengthened to maximize knowledge transfer. For example, the planning and design guidelines developed by TRCA and CVC in 2010, *Low Impact Stormwater Management Planning and Design Guide*,<sup>4</sup> can assist Mississauga's planners and other professionals with stormwater management best practices such as

<sup>4</sup> Weblink to TRCA Stormwater criteria: <http://www.trca.on.ca/protect/water-management/storm-water-management.dot>.

rainwater harvesting, green roofs, bio-retention, permeable pavement, soakaways and swales, many of which have been incorporated into Mississauga's existing Green Development Strategy.

TRCA has recently developed stormwater management criteria for each of its watersheds on the basis of level of control (water quality), flood flow management and frequent flow management (erosion control). The City could be guided by the TRCA's extensive exercise in updating its own stormwater management criteria and prioritizing watercourse erosion works.

To effectively implement the plan, it is also important that the Storm Water Quality Control Strategy Update identifies external stormwater funding opportunities.

## Flood Management

### **Action 13: Expand and develop additional flood management plans.**

In 2009, Mississauga experienced significant flooding in the Cooksville Creek area. Flooding issues in the city will likely worsen if the predicted impacts of climate change are fully experienced. Extreme weather events can also damage property through more excessive snow, sleet or hail. The City needs to prepare for potential flooding through the development of stormwater and flood management plans. *(See Appendix D for Toronto's Downspout Disconnection Program.)*

## Water Conservation

### **Action 14: Conduct a water-use analysis to understand patterns of water usage in Mississauga; and develop land-use and associated strategies for water conservation.**

The Region of Peel is responsible for potable water supply, water and sewage treatment and their conveyance. Recognizing that water conservation is an important element in terms of overall water management, the Region's Water Smart Peel program aims to raise conservation awareness and education by: providing residents and businesses information on their water use; encouraging water efficient practices through incentives; and aiming to reduce individual daily water consumption by 10 per cent by 2015. Although water is not a City responsibility, water conservation is

important to Mississauga because water conveyance is energy intensive. Over 60 per cent of the electrical energy used by the Region of Peel is for water and wastewater treatment and distribution.<sup>5</sup> Potable water needs to be pumped throughout the city, and once it is used, it is pumped to a processing plant where it is treated and returned to Lake Ontario.

Mississauga's taxpayers make a major contribution to this regional expenditure. Therefore, understanding how water and wastewater is distributed and used throughout the city is an important part of understanding how energy is used in Mississauga.

The relationship between water and energy is also influenced by urban form. For example, pumping water to serve the upper storey of a condominium tower requires significantly more energy than serving a mid-rise residential building. As Mississauga continues to plan for population and employment growth through intensification, built form will be an important consideration. As energy costs rise, providing water service to high-rise buildings will also become more expensive. Understanding how water is used in different parts of Mississauga will have implications for how the City zones areas slated for intensification. When water is conserved, considerable amounts of energy embedded in that water are also conserved.

Water-use analysis will enable the City and the Region to have detailed baseline information to measure and celebrate the success of water conservation programs in the future.

<sup>5</sup> Plugging the Leaks, Best Practices in Water and Waste Water Management, OGRA's Milestones, February 2007, cited at <http://www.ogra.org/lib/db2file.asp?fileid=17185>





## 2.1.4 Waste

### Waste Audit and Diversion

**Action 15: Conduct a corporation-wide waste audit including parks, public spaces, community facilities and special event venues to establish a baseline against which corporate waste reduction and recycling efforts can be measured.**

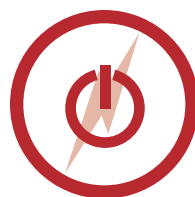
**Action 16: Develop a plan to increase diversion rates for recyclables and organic material from City parks and forestry operations and from City-owned and operated facilities.**

Like any large city, Mississauga is a major generator of waste. However, the City does not have direct control over waste management, as this responsibility lies with the Region of Peel. As a result, any corporate waste management initiatives that the City develops should be done in conjunction with the Region.

While the City recycles some of its waste, including hazardous items such as fluorescent tubes and printer cartridges, the overall diversion rates from City-owned and operated facilities are not tracked. It would be useful to establish a baseline of waste diversion for recyclables and organics to guide waste management policy and practice in City facilities. A comprehensive waste audit of City-owned and operated facilities, parks, public spaces and special event venues would establish such a baseline.

The audit should also include organic waste from parks and forestry operations. Baseline information can be used to support innovative measures for dealing with recyclable and compostable materials entering the waste stream.

*(See Appendix D for Markham's Zero Waste Strategy).*



## 2.1.5 Energy

### Greenhouse Gas and Energy Use Inventory

**Action 17: Update corporate and community inventories for Greenhouse Gas emissions and Criteria Air Contaminants.**

The City of Mississauga prepared both a corporate and community GHG inventory in 2000 based on 1998 data. These inventories are now out of date and cannot be used to effectively evaluate the contribution of existing or new initiatives to lower local energy use and associated GHG emissions.

The City is planning to update its corporate GHG emissions inventory, including criteria for air contaminants. This update should begin by establishing physical, organizational and operational boundaries for the inventory to ensure a consistent baseline against which progress can be measured.

As part of the Peel Climate Change Strategy, the City, in partnership with the Region of Peel, should also update its community emissions GHG inventory. As part of both inventory updates, the City should ensure information is collected in a manner that allows it to illustrate the information on a map.

## Corporate Energy Efficiencies

**Action 18: Continue to identify, invest in and implement energy efficiency and renewable energy actions outlined in the City's Corporate Energy Management Plan (2009); and report on revenue generated from renewable energy and on cost savings from corporate energy efficiency measures.**

The City has had much success with corporate efforts to increase energy efficiency resulting in cost savings. Examples include retrofitting and upgrading City-owned buildings by adding energy-efficient lighting and controls, garage lighting dimmers, rooftop snow sensors connected to heating coils and LED traffic signals and lights. The City has also developed its own means of local energy production at the Hershey Centre by installing solar photovoltaic panels.

In 2013, the Ministry of Energy will require that municipalities report on the energy use and GHG emissions of their corporate facilities. The City should continue to set an example by building on its excellent and diverse program.

## 2.1.6 Organization and Policy

### Green Procurement

**Action 19: Include training on green procurement options as part of staff training on existing procurement policies and procedures.**

**Action 20: Determine corporate priorities regarding the procurement of green goods and services and develop the culture, policies and practices to support these priorities.**

The City's Purchasing By-law (374-2006) includes the following principle: "Efforts shall be made to acquire goods and services that will conserve energy and help to preserve and protect the ecosphere." This principle and other supporting procurement documents have enabled many green purchases, including:

- Green power;
- LED traffic signals;
- Green roofs;
- Energy-efficient lighting retrofits and building automation systems installations;
- Solar photovoltaic panels at the Hershey Centre;
- Use of recycled products certified under the Environmental Choice Program for all janitorial paper products, paper towels and toilet paper at all City facilities;
- Hybrid vehicles for parking enforcement, leadership team and inspectors; and,
- Hybrid transit buses.

Despite provisions for green purchasing, City staff lack clear direction to what extent they can weigh factors such as the sustainability of a product or service over other considerations such as price. For generic products in particular, specifications need to provide flexibility so that green products can be considered.

In addition, in many cases the green option is more expensive, and there may be no pure economic benefit or business case for spending the additional money. Coupled with this, budgets are frequently determined well in advance of the procurement process, at which time the total lifecycle cost of the product may not have been considered. As a result, the window of opportunity to consider greener but higher cost options identified at the time of purchase may not be viable.

It is important that procurement policies and practices continue to support and advance the City's green initiatives. The City should enable green procurement where green options are available. To this end, the culture and practices of the City need to:

- Require green services and products;
- Include a willingness to pay for green services and on-shore products that may cost more;
- Include an evaluation process that considers vendor business practices and their commitment to sustainability, environmental and ethical practices, and to the entire supply chain;
- Invest time and effort into thorough research, budgeting and planning for lifecycle procurement; and
- Consider the impact of the services the City consumes.



Once corporate priorities regarding green procurement are established, policies and practices should be updated accordingly.

## Corporate Environmental Policies

### **Action 21: Review and update Corporate Policy and Procedure on Corporate Environmental Principles (Policy Number 09-00-01).**

The City currently has a corporate policy with principles that relate to the environment. However, this policy is outdated and needs to be reviewed and updated to read as a comprehensive environmental policy for the City. This policy must be updated to address corporate issues, such as use of the decision support process tool, telecommuting arrangements, telemeetings and no bottled water in the Civic Centre.

## Corporate Reports

### **Action 22: Ensure that all corporate reports include a mandatory Strategic Plan section for all five Pillars for Change, including Living Green.**

City corporate reports currently include mandatory sections such as financial impact. The Strategic Plan section is presently not a mandatory section, but is meant to describe how the subject of the report links to the plan. One way to help instil a corporate culture that considers the environmental impact of decisions is to require that all corporate reports include a section that specifically addresses how a project or initiative advances the goals of (as a minimum) the three Pillars for Change most relevant to the environment (Move, Connect and Green) and, where applicable, the corresponding LGMP action(s).

## Organizational Structure:

### **A Made-in-Mississauga Approach**

Organizational changes will need to occur to ensure the effective implementation of the LGMP. These changes primarily involve a strengthened environmental office that can build relationships within and across City departments.

## Mississauga Environment Office

### **Action 23: Rename the Environmental Management Section of the Community Services Department as the Mississauga Environment Office, a Division of the Community Services Department**

To demonstrate the importance of environmental policies, some cities create a distinct office responsible for all environmental functions. Typically, this office has dedicated staff and budgets to direct environmental programs across the municipal corporation. Such programs include information sharing, communications, training and educating staff, community outreach, and monitoring and evaluating environmental performance. The strength of this centralized approach is that dedicated staff are able to focus their efforts on environmental issues without competing priorities. The weakness is that staff in line departments can feel that environmental impacts are someone else's responsibility.

Other cities spread environmental responsibility across municipal departments. This approach is useful because it helps instil a sense of accountability among all employees. This decentralized approach can have greater reach and more potential for success in improving the day-to-day operations of a larger number of staff members and departments. The weakness is that without staff tasked with keeping environmental responsibility in the forefront of the municipality's consciousness, these concerns can fall by the wayside when staff are busy with other responsibilities.

Currently, the City of Mississauga has a small Environmental Management Section (EMS) within Community Services that is focused primarily on ensuring that the planning, implementation and monitoring of environmental operations and activities are co-ordinated across the corporation. It is also responsible for developing environmentally sustainable best practices and improving environmental program effectiveness through information sharing and communication of environmental initiatives to both internal and external audiences. EMS also directly manages a number of environmental projects and represents the City on a variety of external task forces, committees and advisory groups.

Currently, the management of specific environmental functions is the responsibility of line Departments and Divisions. For example,

Transportation and Works is responsible for the management of stormwater, water courses and retention ponds while Facilities and Property Management is responsible for the management of waste, water and energy systems in City facilities, and Planning and Building is responsible for the management of the Green Development Strategy. This decentralized approach spreads the responsibility for good environmental practices, performance measurement and accountability across all City departments.

The Mississauga Environment Office (MEO) model proposed in the LGMP is a strengthened hybrid “made-in-Mississauga” approach that capitalizes on having both the dedicated staff of the centralized approach and the line department expertise of the decentralized approach. Given the way that environmental responsibility has been woven into the Strategic Plan and subsequent City line department initiatives, this cost-effective hybrid approach is a best fit for Mississauga.

By establishing an environmental office that will function as a facilitator, collaborator and builder of partnerships, Mississauga will ensure that there are staff who provide the strategic focus for environmental goals. They can also leverage City resources by working with outside groups to ensure information sharing, communications, training and educating staff, community outreach and reporting on environmental performance. The MEO will also directly manage a number of environmental projects.

To support the directions outlined in the LGMP, the EMS will adopt a much expanded and strategic way of working in the corporation as well as in the community as a facilitator, collaborator and builder of partnerships. To reflect this change, EMS will be renamed the MEO under the leadership of a dedicated Director reporting to the Commissioner of Community Services.

## **Roles and Tasks of the Mississauga Environment Office**

### **Environmental Priority Setting and Strategic Alignment**

To implement the LGMP, the MEO will work with a wide range of staff across the City administration to bring environmental focus and strategic alignment to corporate initiatives. It will ensure interdepartmental collaboration and build the community partnerships required to deliver priority environmental actions, including community energy planning and GHG reduction, expanded public environmental education and reporting on environmental performance.

To ensure alignment of environmental priorities across City departments:

- The MEO Director will lead a new interdepartmental team called the LGMP Steering Team (*See Action 26*);
- Both the Director and Manager will lead a variety of project teams that are formed to implement specific LGMP Actions; and
- For Project Teams not appropriate to be led by the MEO Director or Manager, (e.g., master plans and technical strategies), the Manager and other MEO staff will participate on those teams, where appropriate.

To ensure that the City articulates a clear and consistent set of messages on environmental matters:

- MEO staff will act as an information referral and clearing house for decision-makers and elected officials seeking advice or information on environmental issues. Where the MEO is not the provider of detailed information, it will be able to provide referrals to the appropriate source;
- MEO staff will monitor and assess new and emerging environmental initiatives, regulations and policies; and
- The MEO Director or Manager will represent the City on a variety of external task forces, committees and advisory groups such as the Ministry of the Environment air-quality management partnership.

### **Establish Baselines and Targets, and Measure Progress**

To ensure that environmental performance can be measured and reported:

- The MEO will be responsible for making sure that baseline information is collected and that targets are established. Data collection and monitoring will likely be the responsibility of City departments. The MEO will be responsible for assembling data and reporting on key performance indicators.

### **Partnerships and Collaboration**

To ensure that residents, community organizations, businesses, agencies, NGOs and other orders of government are engaged:

- MEO staff will establish new, and build on existing, community partnerships. This is critical to the successful implementation of one-third of the LGMP recommended actions;
- MEO staff will co-ordinate environmental initiatives with conservation authorities, other agencies, NGOs and other orders of government; and

- MEO Director will assist elected officials and respond to the growing community expectation that the City will play a role in new initiatives to protect the environment, even in areas that may be outside of the City's direct responsibility (e.g., waste reduction, conserving potable water, reducing greenhouse gas emissions and renewable power generation).

#### **Public Outreach, Awards and Education**

To ensure that residents have the information they need to make choices and change their behaviour:

- MEO staff will respond to growing demands to showcase the City's environmental initiatives and respond to the increasing number of requests for information;
- MEO staff will prepare and submit award applications regarding City environmental initiatives; and
- MEO staff will provide information on how residents and others can reduce their environmental impact where they live and work.

#### **Staffing and Reporting Structure**

**Action 24: Establish a Director position to lead the Mississauga Environment Office (MEO).**

**Action 25: Report through the business planning and budget process on a new staff and reporting structure for the MEO.**

As the Mississauga Environment Office will be primarily responsible for connecting departmental conversations, initiatives and resources both inside the City and with other governments and community and business groups, a Director-level position will convey the importance the City places on environmental action. As the interdepartmental LGMP Steering Team will comprise Director-level staff, the lead MEO staff position will be the new Director of Environment.

Resourcing is critical to ensuring that the MEO can organize and support the interdepartmental approaches and collaborative working relationships inside the City, among the different orders of government and in the community. The key feature of the proposed MEO hybrid approach is that a small group of professionals are able to work with many people,

departments and organizations and maintain a high level of service. This approach maximizes efficiency and avoids duplication.

#### **Interdepartmental LGMP Steering Team**

**Action 26: Create an interdepartmental LGMP Steering Team chaired by the MEO Director.**

A cornerstone of the collaborative decision-making model proposed, and fundamental to implementing the LGMP, is the creation of an interdepartmental LGMP Steering Team (ST) chaired by the MEO Director. The ST will be responsible for environmental strategic alignment across the corporation through collaborative decision-making, priority setting and the allocation of resources required to implement priority environmental actions identified in the LGMP. In addition, the ST will evaluate and prioritize new opportunities to improve the city's environmental sustainability, using the collaborative decision-making process provided in Section 3 of this plan.

The ST would comprise key Directors from all City departments and would report through the Chair to the Leadership Team (LT). After priority action items have been established by the LGMP ST and endorsed by LT, the ST will assign responsibility for implementation of priority actions to the interdepartmental project action teams. These teams will be led by the department/division that is responsible for that action or project and will have members from other departments/divisions, including MEO. These typically smaller project action-specific teams will replace the existing Environmental Network Team, which is a large interdepartmental committee that meets monthly to discuss all corporate environmental issues. MEO would either lead or be represented on the interdepartmental project action teams.



## 2.2 actions to encourage others







## 2.2.1 Urban Form

### Green Development Strategy

**Action 27: Report to the Environmental Advisory Committee every six months on the Stage One Green Development Standards implementation, specifically:**

- Stormwater management for roads, parking lots and buildings; and
- Low-impact development techniques.

**And on efforts to develop:**

- Education materials for homeowners about what they can do regarding stormwater retrofits; and
- Awareness and education materials to promote Stage One Green Development Standards.

The City has an existing exemplary Green Development Strategy (GDS) that advocates for new and private developments to include best-practice and sustainable technologies. This strategy provides guidance on both building more efficient buildings and creating more sustainable outdoor areas by applying low-impact development techniques. While the GDS is not mandatory, it is hoped that its approach will become “business as usual” across the City of Mississauga.

The GDS has experienced many successes, yet has also undergone many challenges in implementation. One of the key challenges is that it has no built-in monitoring mechanism. This means that the Green Development Taskforce responsible for implementing the GDS is not required to report on its progress. A lack of reporting also means that other key challenges for the taskforce such as inadequate resourcing to undertake education programs are also going unnoticed. Empowering the GDS Taskforce will be critical to implementing the strategy.

### Environmental Grants Program

**Action 28: Create an Environmental Community Grants Program. Start by drafting terms of reference and a funding structure to support and showcase community-based environmental initiatives.**

The City of Mississauga should create a grants program to strengthen the capacity of local community-based environmental groups. This program would provide funds to eligible organizations to work with the City to achieve the LGMP’s goals, as well as the environmental components of the Strategic Plan and the Official Plan. The grants would provide groups with a stable source of revenue to support staff and attract and retain volunteers.

Community-based organizations like the Riverwood Conservancy are often able to build the networks and private-sector partnerships that are essential for achieving municipal strategic objectives. The funding program would acknowledge the very important work and high level of commitment delivered by these environmental groups, as well as their efficiency and competency in delivering environmental programs.

### Sustainable Neighbourhood Retrofit Action Plan

**Action 29: Develop a program to expand the Sustainable Neighbourhood Retrofit Action Plan to other neighbourhoods in Mississauga.**

The Sustainable Neighbourhood Retrofit Action Plan (SNAP) is currently a pilot project administered by the Toronto and Region Conservation Authority in co-operation with local partners, including the City of Mississauga. SNAP brings together residents, businesses, community groups, government agencies and conservation authorities to develop an action plan for change that fits the needs of a particular neighbourhood. SNAP projects are also largely focused on naturalizing the environment, improving water quality and conservation. SNAP measures include the promotion of rainwater harvesting, eco-friendly landscaping, low-impact development, tree planting, energy and water conservation, energy efficiency, renewable energy projects and other actions that can be taken by local residents, businesses and the municipality.

Another benefit of the SNAP project is that the areas selected are small so the impacts of implementing SNAP projects can be measured over time.

Currently, the only City SNAP project is in the Etobicoke Creek watershed. The LGMP recommends that SNAP be expanded to other Mississauga neighbourhoods.

## Community Gardens

**Action 30: Support the development of community gardens and ensure that every neighbourhood has access to at least one community garden.**

Mississauga's food security is currently dependent upon a globally linked industrial food system. This food system is potentially vulnerable to threats from climate change and more localized challenges such as urban development on arable land.

However, the City can build on existing food security efforts. For example, section 7.7 of the new OP supports urban agriculture, while existing programs established by EcoSource (a local not-for-profit organization) have encouraged greater local access to fresh foods through the development of community gardens and sustainable urban agriculture plots throughout Mississauga. The City, in partnership with community-based environmental groups, should continue to grow and expand this program and the number of community gardens in order to increase access to fresh and nutritious food.

## Environmental Design Award

**Action 31: Launch a new design award to complement Mississauga's Urban Design Awards. The award would address two areas:**

- Investment in green infrastructure for the benefit of the public realm; and
- Sustainable land-use management that integrates land-use, transportation and green infrastructure.

Award programs build and maintain momentum. They also generate interest and motivate behavioural change. The City of Mississauga has

successfully established award programs to acknowledge its employees and to recognize outstanding urban design and architecture.

To complement Mississauga's Urban Design Awards, the City should launch a new environmental design award. The award would recognize outstanding achievements in two areas:

- Investment in green infrastructure in new and existing development that benefits the public realm;
- New and existing development that exemplifies sustainable land-use management through integrated land-use, transportation and green infrastructure (such as low-impact development techniques) that support ecological functions and/or innovative alternative transportation activities.<sup>6</sup>

## Eco-Industrial Parks

**Action 32: Develop partnership opportunities to build on the success of Partners in Project Green and expand eco-industrial parks across the city.**

Mississauga has many large industrial and office parks that offer significant opportunity for improved environmental performance. These parks should be redeveloped and retrofitted into eco-industrial parks over time. This would allow these employment lands to have a stronger ecological focus and contribute to a greener economy.

The City is a partner in Partners in Project Green: A Pearson Eco-Business Zone. This pilot provides an excellent model to develop similar projects elsewhere in Mississauga. It has also created strong links among the City, conservation authorities and the private sector that should be leveraged in the development of similar projects across Mississauga.

<sup>6</sup> For example, active transportation (biking, walking and pedestrian environments, including cafés), stormwater best-management practices, encouragement of alternative technologies and renewable fuels, redevelopment of contaminated lands, minimization of waste, encouragement of green or white roofs to address heat-island effect, the creation of wildlife links and recreational opportunities.



## 2.2.2 Air

### Air Quality Management Partnership

**Action 33: Improve local air quality and help develop a national Air Quality Management System as a municipal partner of the Oakville-Clarkson Air Zone Pilot committee.**

**Action 34: Continue to implement the recommendations targeted at municipalities in the Dr. Balsillie Task Force Action Plan.**

**Action 35: Evaluate the effectiveness of the City's five-year "Greening Our Fleet" program (2006 – 2011) and develop a plan to further reduce GHG emissions and air contaminants from City vehicles over the next five years, as called for in the Dr. Balsillie Task Force Action Plan.**

**Action 36: Respond to repeated complaints about idling vehicles by providing enhanced education and more enforcement of the Idling Control By-law, as called for in the Dr. Balsillie Task Force Action Plan.**

The majority of Mississauga's airshed pollutants are generated by faraway sources in the United States or from major regional infrastructures such as the 400 series highways and Pearson International Airport. At times, Mississauga experiences air pollution that is above acceptable standards for some pollutants. The City has limited authority to combat local air pollutants through a variety of mechanisms such as car idle-free by-laws, planning approaches and fleet conversions.

The Ministry of the Environment (MOE) is responsible for regulating air quality and for issuing Certificates of Approval. These powers provide MOE with the jurisdiction and power to actively intervene and bring about improvements in Mississauga's air quality. Clearly, sustainable

improvements to the City's air quality require a strong local partnership led by the MOE.

In 2009, the Province of Ontario appointed Dr. David Balsillie to be the one-person Southwest Greater Toronto Area Air Quality Task Force with a mandate to develop an action plan to improve air quality in the southwest GTA. On June 25, 2010, the Task Force Action Plan was released and included 35 recommendations to improve air quality and reduce associated health impacts in the Oakville-Clarkson airshed. The majority of these actions were aimed at the Province, some were directed at the regional municipalities of Halton and Peel, others at the local municipalities of Oakville and Mississauga, and a handful for industry.

The Action Plan's most significant recommendation called upon the Province to establish an Airshed Management System for the Oakville-Clarkson area that takes into account the cumulative impacts of multiple sources of emissions. On August 17, 2011, the Province announced a pilot project within the Oakville-Clarkson airshed to improve local air quality and contribute to the development of a new national Air Quality Management System.

As a member of the newly formed Pilot Project committee, the City will support the MOE to pilot a new air management system based on cumulative impacts as set out in the Dr. Balsillie Task Force Action Plan.

Mississauga has taken significant steps to address the nine dust, traffic, environment and land-use issues identified in the Balsillie Action Plan for municipal action and will continue to do so. The City should further address two of the plan's action items aimed at municipalities by evaluating the effectiveness of its five-year "Greening Our Fleet" program (2006 – 2011) and developing a plan to further reduce GHG emissions and air contaminants from City vehicles over the next five years. The City should also provide greater enforcement of engine idling, especially for large diesel trucks, by responding to repeated complaints with enhanced education and more enforcement of the existing Idling Control By-law.



## Air Modelling and Monitoring Program

**Action 37: Support the Region of Peel's efforts to establish an air modelling and monitoring program that will provide baseline data and an accurate picture of air quality in the geographical region of Peel, including the Clarkson Airshed.**

The City has limited capacity to monitor air quality. With only one provincial Air Quality Index monitoring station and limited community monitoring stations, Mississauga does not have access to detailed local data on air quality across the city. As a result, it is difficult to determine air quality issues and to monitor progress in improving air quality over the long term.

The Province recognizes this gap and that degradation of local air quality can pose serious impacts on human health. High levels of pollution, especially from fine particulate matter, can lead to increased rates of respiratory and cardiopulmonary disease and death. As a result, the Province has committed to increasing mobile air monitoring and to continue monitoring sources of emissions.

The Region is in the early stages of increasing its monitoring and modelling capacity. This creates an immediate opportunity for the City to work with the Region of Peel to establish new monitoring and modelling programs that will provide the data to create an accurate picture of air quality in the City and Region. A baseline should be created to monitor progress over time.



## 2.2.3 Energy

### Community Energy Plan

**Action 38: Prepare an integrated community energy plan to establish roles and responsibilities in Mississauga's energy community and create a road map for advancing selected energy strategies.**

**Action 39: Assess energy efficiency and renewable fuel strategies that are feasible in Mississauga as part of the cost-benefit analysis identified in the Peel Climate Change Strategy.**

**Action 40: Determine how to optimize the use of alternative energy sources through community energy planning in Mississauga as part of the feasibility study identified in the Peel Climate Change Strategy.**

The City should develop a Community Energy Plan (CEP). CEPs integrate energy issues associated with transportation, supply and end-use.

A number of communities across Canada (Hamilton, London, Calgary and Guelph, for example) are developing CEPs to better manage development impacts related to energy use, greenhouse gases and air quality while achieving broader community objectives related to housing, transportation, job creation and local economic development.

CEPs in Canada have focused on engaging local members of the community, usually major stakeholders such as local gas and electric distribution companies, large industries and other energy consumers, to develop a vision for energy reduction that extends out from 25 years to 100 years. CEPs are often divided between broader community-related initiatives and municipal corporate activities.

The Peel Climate Change Strategy calls for a joint feasibility study to determine how to optimize alternative energy sources through community energy planning. The study should include consideration of district energy, distributed energy, micro grids and micro utilities, all of which are capable of optimizing renewable fuels. The study should also include the identification of demand-side management practices, including improved building energy efficiency, integrating renewable and local energy sources to reduce dependence on fossil fuels, and engaging the community to manage its own energy use and delivery more effectively.

Along with the update to the greenhouse gas and energy inventory and the assessment of cost-effective energy strategies, the study would enable Mississauga and the Region of Peel to sort out who does what among regional energy players and determine whether energy planning is best delivered at a regional or municipal level. In any case, the development, implementation and delivery of various energy management and GHG reduction programs in Mississauga would be a key component of any regional environmental strategy.

## Infrastructure Vulnerability

### Action 41: Undertake an infrastructure vulnerability assessment.

Mississauga needs to prepare for the potential impacts of extreme weather events on public infrastructure and private property resulting from climate change. The City and conservation authorities are already concerned with flooding, and the conservation authorities are working on initiatives for real-time flood forecasting and warning. (In 2009, Mississauga experienced significant flooding in the Cooksville Creek area.)

Flooding will likely worsen if the predicted impacts of climate change are fully experienced. Extreme weather events can also damage property through excessive snow, sleet or hail. Moreover, the city may also experience drought and lower water levels.

There are a number of actions that Mississauga should take to be prepared for these potential conditions. First, the City should assess all its key infrastructure pieces to determine what is vulnerable to extreme weather events. This should be done in tandem with Peel Region's infrastructure vulnerability assessment as part of the Peel Climate Change Strategy. This study would provide recommendations on how

infrastructure could be adapted to better withstand these potential impacts. This study should also make recommendations on the impact of extreme weather events on the life span of infrastructure. Mitigation measures should then be developed, maximizing the cost-benefit ratio for proposed approaches.

## 2.2.4 Education Programs

### Living Green Public Education Campaign

#### Action 42: Develop a Living Green Public Education Campaign that encourages community action in environmental priority areas.

If Mississauga is going to Live Green, people's behaviours will have to change. A recent survey indicated that more than 95 per cent of Mississauga respondents were either "very willing" or "somewhat willing" to make lifestyle changes in energy or water use to reduce their impact on the environment.<sup>7</sup>

At the same time, many residents have indicated that the "environment" seems to be an overwhelming issue. They say they don't know what to do in their homes or on their properties to make a difference.

A Living Green Public Education Campaign would provide accessible, plain-language information about actions that can be taken now to start Living Green. There are many initiatives already underway by the City, the Region, the conservation authorities, EcoSource and many others that the City can promote. (Also, see *Appendix D for Richmond Hill's Healthy Yards Program*). This education campaign could be billed as a Top 10 of what one can do as a resident, a business or a neighbourhood.

<sup>7</sup> Peel Region Residents' Attitudes toward the Region of Peel, Environics Research Group, Nov. 2009.

Many elected officials have indicated that they would be pleased to act as advocates for change, but that they need this kind of information to distribute to residents. Action 42 will address topics that respond to key issues identified by stakeholders, such as:

- Implementing the Green Development Strategy/ Low Impact Development (rain gardens, downspout disconnect);
- Supporting Transportation Demand Management– use transit, walk, cycle, car pool, ride share, etc.;
- Fostering the green system by planting native species and creating natural habitats for birds, bats, butterflies, etc.;
- Promoting Peel's efforts to address low recycling rates in multi-residential buildings;
- Preserving and expanding the urban forest by planting, maintaining and protecting native trees on public and private lands;
- Living in more compact, walkable and mixed-use communities;
- Increasing awareness about energy efficiency, ensuring that efforts cover transportation as well as buildings and big-picture GHG reduction;
- Connecting with school age children (K-12) through partnerships with the school boards, parent groups, environmental groups and conservation authorities to empower youth (and their families) on environmental issues; and,
- Raising awareness of existing environmental programs across the city (both City-run and those managed by others such as the Region, conservation authorities, EcoSource, etc.).

The City should also partner with other levels of government or conservation authorities that have been undertaking significant research and data collection in Mississauga. Such research and data collection will be essential to the success of the LGMP. Work to establish baselines and monitor indicators on an ongoing basis can be facilitated in partnership with these institutions.

## Research Partnerships

### Action 43: Investigate opportunities for research partnerships.

Mississauga is fortunate to be home to high-quality post-secondary institutions. These schools, such as the University of Toronto Mississauga (UTM) and Sheridan College, provide excellent partnership opportunities. For example, UTM offers courses that allow students to work on environmental projects. Partnering with such programs offers opportunities for research and encourages students to be environmental stewards.



## 2.3 actions to compel others







## 2.3.1 Urban Form

### Transportation Demand Management and Development Approval

#### **Action 44: Integrate Transportation Demand Management measures into the development approval process.**

Through master plans and the new Official Plan, the City of Mississauga is aggressively promoting a wide range of Transportation Demand Management (TDM) strategies that influence trip-making by planning land uses that support mobility choices, encourage active transportation infrastructure and address parking management requirements. To better facilitate the application of TDM strategies and policies, the City could develop a TDM checklist to help screen and evaluate development applications, corporate transportation infrastructure projects and the transportation services provided by other levels of government within Mississauga. This approach has recently been developed in the study “TDM Supportive Guidelines for Development Approvals” prepared by the Association for Commuter Transportation of Canada that provides guidelines for implementing such a process. Current work being undertaken by the Region of Waterloo, local area municipalities and Markham Centre may also provide the City with a useful reference for developing such a checklist.

### Urban Form

**Action 45: Apply land-use principles that enhance the public realm and establish vibrant urban life and sustainable land management for new developments in areas identified for intensification. In stable neighbourhoods, ensure new developments respond to the characteristics and environmental conditions of each neighbourhood, while contributing to environmental performance city-wide.**

Mississauga’s new Official Plan sets out a clear direction for how the City will transform itself from an edge city to a great city. The OP was developed to align with the Strategic Plan and translates its five pillars into policies that commit Mississauga to establish a city:

- Comprised of complete, compact communities that are connected in terms of street networks;
- That is people-focused in terms of creating destinations and transit accessibility;
- Celebrates Mississauga’s culture and diversity;
- Sets the bar for good urban design and architecture;
- Supports innovation and local employment needs;
- Invests in the public realm; and
- Champions sustainable land-use development both in areas identified for intensification and in stable neighbourhoods.

These best-practice, sustainable planning directions should be tailored to reflect the local characteristics of each Mississauga neighbourhood. The achievement of higher-density in appropriate areas will be critical to improving environmental performance.



## 2.3.2 Natural Heritage

### Green System

#### **Trees**

**Action 46: Amend the Street Tree By-law (91-75) and the Tree Permit By-law (474-05) to include single trees and further measures to restrict tree removals and ensure consistency with the Official Plan.**

Trees contribute to Mississauga’s urban forest, which provides a range of benefits for both people and wildlife. The urban forest in Mississauga contains 2.1 million trees, with more than one-half of them on private property. The urban forest contributes to maintaining biodiversity, provides a tree canopy and shade, reduces the urban heat-island effect, cleanses the

air, helps to manage stormwater and enhances wildlife habitat corridors. In this context, mature trees, particularly native trees, make a much more significant ecological contribution than small ornamental trees. It is important that the City maintains a strong focus on the importance of native trees, protecting the larger trees and growing its urban forest.

The City is currently amending Street Tree By-law 91-75, which deals with trees on public property, in an effort to preserve and protect the urban forest.

In addition, City staff are currently reviewing Tree Permit By-law 474-05, which deals with trees on private property. Mississauga's Tree Permit By-law currently requires private property owners to obtain a permit before removing five or more trees that are 15 centimetres (six inches) or wider in diameter during one calendar year. While the Tree Permit By-law regulates the removal of trees on private property, it does not apply to the removal of fewer than five trees within a given year or to trees that are less than 15 centimetres in diameter. Mississauga should examine the opportunity to further restrict tree removals on private property.

#### **Valley Lands**

**Action 47: Consider introducing a regulatory tool to protect and enhance the green system.**

Mississauga's valley lands contain more than 80 per cent of the City's natural areas system.<sup>8</sup> These valley lands make up the most crucial component of the City's natural heritage system, providing a wide range of services and ecological benefits. These benefits include, but are not limited to: creating aesthetic appeal; providing habitat for native plants and linkages for animal life; maintaining genetic diversity; providing valuable hydrological benefits; and contributing to the spiritual well-being and health of Mississauga's residents and visitors. As such, it is critical that these areas are preserved for generations to come.

To offer greater protection and recognition of these valley lands, City staff should investigate the feasibility and benefits of developing a regulatory tool similar to the City of Toronto's Ravine and Natural Features Protection By-law that restricts certain types of activities within the regulated area (e.g., dumping and removal of trees) unless a permit is acquired.

<sup>8</sup> City of Mississauga, "Mississauga's Natural Areas – What Everyone Should Know About Our Protected Areas (2006)."

#### **Naturalization**

**Action 48: Modify the Nuisance Weeds and Tall Grass Control By-law (0267-2003) and the Property Standards By-law (654-98) to ensure that they do not unduly restrict naturalization efforts on private property.**

Naturalization is a planned approach to landscaping and planting, which allows for the natural processes of growth and change to be less restricted. As a result, the landscape is encouraged to become more natural rather than ornamental. Native plants are re-introduced and bird and wildlife populations are able to re-establish themselves. Mississauga has naturalized many areas across the City, improving both the quality and quantity of its natural areas system.

Naturalization efforts on private land in the City of Mississauga are often challenged by the Nuisance Weeds and Tall Grass Control By-law and the Property Standards By-law. While there is an important need for such by-laws, they should be reviewed to ensure that they do not unduly restrict naturalization efforts on private property and are consistent with the intent of the Official Plan and natural areas policies.

#### **Erosion Control**

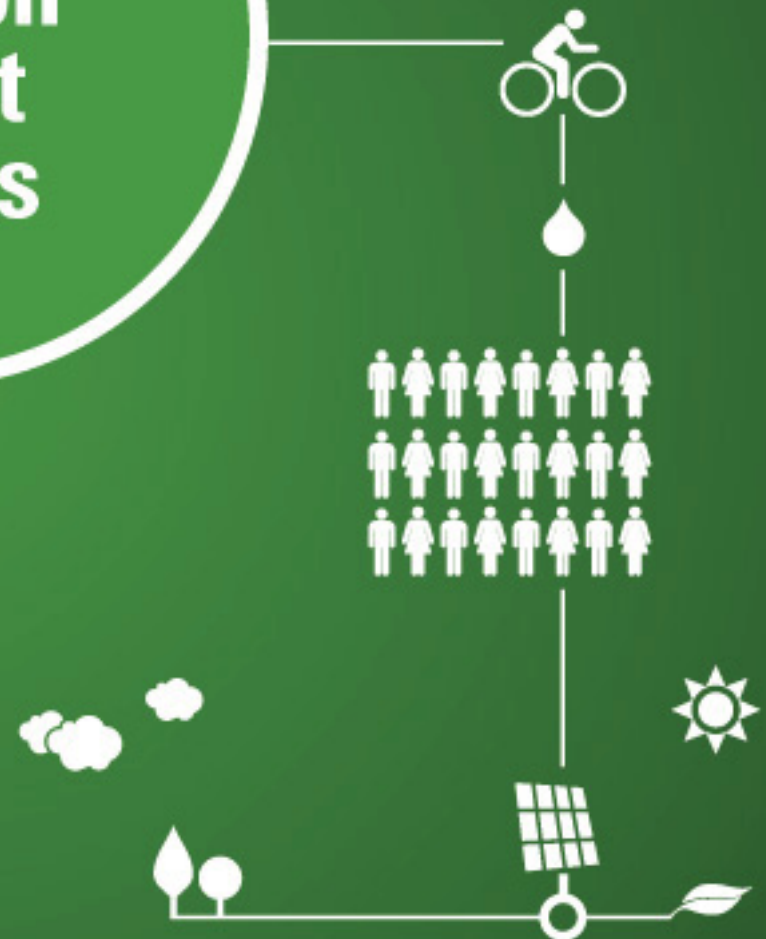
**Action 49: Increase monitoring and enforcement of the Erosion and Sediment Control By-law (512-91).**

Erosion is the process by which geologic materials are transported to another location. It can occur naturally by wind, water, ice or animals burrowing, or it can result from human land uses such as industrial agriculture, deforestation and urban sprawl. There are many serious environmental consequences that result from erosion, such as loss of private and public property, sedimentation of watercourses, increased flooding and the destruction of eco-systems.

In response to these challenges, the City has implemented Erosion and Sediment Control By-law (512-91). The purpose of this by-law is to control soil erosion and sedimentation related to development. The City should review the by-law along with its monitoring and enforcement to determine if the resources are adequate to achieve its goals.



# 3 decision support process



The Decision Support Process (DSP), illustrated below, developed as a made-in-Mississauga approach, enables staff to work together to understand the environmental impact of every decision or action they take. The DSP was developed from a set of best practices of highly successful and well-utilized decision-making tools and frameworks used by the American Public Works Association, the City of Olympia and member cities of the Sustainable Cities: PLUS Network.

The DSP is designed to:

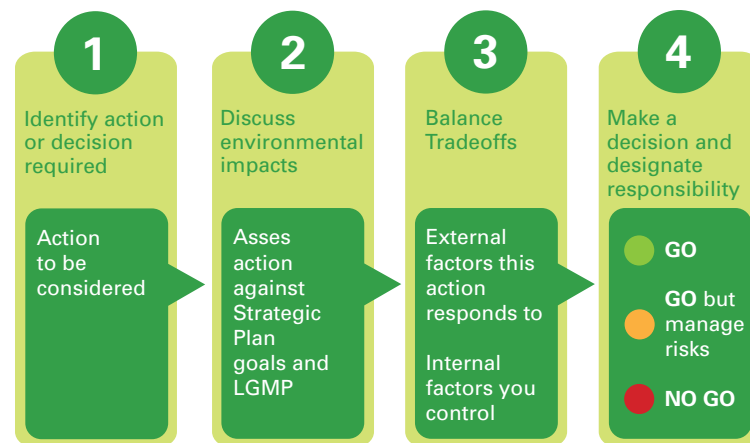
- Guide an integrated decision-making process regarding the potential environmental impacts of a particular policy, action or decision;
- Facilitate a process that brings people together to arrive at a balanced decision;
- Identify key issues, interests and assumptions;
- Analyze and balance competing interests; and
- Increase transparency in decision-making.

In utilizing the DSP, participants identify the strengths, opportunities and challenges that a particular action or decision presents in each of the pillars identified in the Strategic Plan, as well as the overall environmental and economic impacts of the action. Through this process, participants consider the information required to make an informed and balanced decision (*See Appendix B – Decision Support Process User Guide.*)

The DSP is not a formula to solve problems, nor is it a calculator – it will not provide simple answers to complex questions. It will not generate instant answers. Instead, the DSP is designed to help weave the thread of environmental consciousness into the fabric of decision-making. It helps staff to be explicit about their assumptions and to make these assumptions known to other participants in the decision-making process. Finally, the DSP brings together key players to identify strategic issues and discuss them in a way that arrives at an informed and balanced decision based on all available information.

It should be noted that the LGMP study team reviewed a number of existing life-cycle decision-making tools available in software format. Unlike the DSP, these tools are based on a set of assumptions that are hidden from the user. They also require the input of substantial amounts of accurate data (much of which the City of Mississauga does not yet have)

and they can be cost-prohibitive in terms of software licenses and consulting required from software developers.<sup>9</sup>



**Figure 4**  
*Decision Support Process*

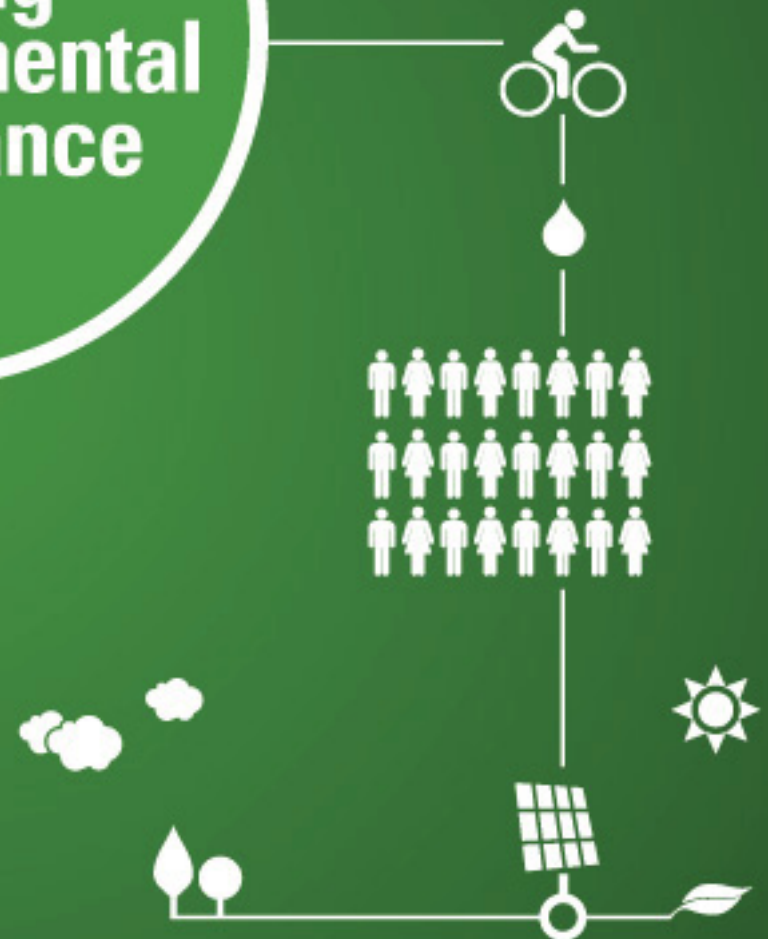
Appendix C contains a worksheet to help guide decision-maker(s) through the DSP. This worksheet is designed to bring people together to balance environmental tradeoffs and develop a shared understanding of the internal and external risks associated with actions or decisions taken by City staff. It is important to emphasize that this is just a worksheet – it is the underlying process that is important. For example, when the consulting team spoke with representatives of the American Public Works Association and the City of Olympia that had used similar tools, they said that while they had used a worksheet, it was no longer required as a balanced approach to decision-making had become embedded in the organization's culture. It is simply the way that all departments now approach decision-making.

This is the ultimate goal of this DSP - that it leads City staff to a point where they instinctively consider the environment in all decisions.

<sup>9</sup> The data assembly and analysis costs of building a tool to determine the environmental impact and life-cycle costs of green and white roofs, for example, was in excess of \$100,000, according to one university professor we interviewed. This was just to build it, not maintain it.



# 4 measuring environmental performance



## Importance of Measuring Environmental Performance

Measuring environmental performance allows Mississauga to see how it is tracking internally, how neighbourhoods across the City are performing and how Mississauga compares to other municipalities.

This section explains how the tracking indicators were selected, how targets will be selected, and the timing for reviewing and updating the indicators.

## Indicators and Baseline Data

The Strategic Plan selected seven green indicators of progress.<sup>10</sup> These indicators provide measures of environmental performance on a city-wide scale. Meanwhile, the City has expressed an interest in having the LGMP develop measures at a neighbourhood scale. Such a local approach would provide meaningful information to residents, businesses and others, while still collecting data that can be aggregated to a city-wide level for comparison with other municipalities.

In addition to the indicators in the Strategic Plan, the LGMP selected 18 additional indicators that can be scaled to both the city-wide and neighbourhood levels. They were selected in the following manner:

- Six of the LGMP indicators were based on or adapted from indicators in the Strategic Plan. Data for these indicators can be collected at a neighbourhood level. The Strategic Plan will continue to report on them at the city-wide level.
- Six of the LGMP indicators were suggested by City or Region of Peel staff. These indicators either: a) build on existing baseline information that has been collected or b) provide data that reflects environmental performance that cannot be solely attributed to one particular project or service (e.g., behaviour change, drop in auto ownership, etc.).
- Six indicators were selected to augment the City's current environmental indicators. Best-practice, neighbourhood-level indicators were used. These indicators are based on their ability to provide a measure of progress toward a general environmental goal such as compact urban form or better air quality rather than specific actions in the LGMP.

<sup>10</sup> Tons/percentage of carbon emissions reduction; percentage of energy used from renewable energy sources; number of cubic metres of water used per capita; number of buildings achieving City approved green development standards; total number of trees planted; natural areas; number of new green initiatives started in the city.

There is no limit to how many indicators the City can measure, yet measuring indicators is costly and requires significant resources. Therefore, the LGMP includes a minimum of two indicators per environmental sector. This provides the City with a starting point for assessing environmental performance and a guide to collecting baseline data.

## Targets

The City is undertaking (or is about to undertake) a wide range of comprehensive master planning studies. These master plans provide an excellent opportunity to establish environmental targets. However, they must be underpinned by baseline data so they can set realistic and achievable targets, rather than aspirational ones. These targets will then provide the City with clear goals, as well as a meaningful way to evaluate progress from a baseline that is regularly updated.

The LGMP provides the following advice on when and how to set targets for each environmental sector:

## Transportation

### Target to be set in Transportation Strategy (2012-13)

Action 5 of the LGMP suggests the importance of developing target modal splits as part of the Transportation Strategy. Suggestions are also outlined under Action 6 that encourage the application of the U.S. Greenroads™ rating system to assess the performance of new or the expansion of existing road projects in Mississauga and then set appropriate targets for improvement.

## Urban Form

### Targets to be set by LGMP Steering Team (2012)

Mississauga's Official Plan outlines a range of targets and goals for urban form. In addition, the City should consider collecting data on best-practice indicators, such as applying the U.S. LEED™-ND 2009 as an approach to assess the level of sustainable land-use management, and then set appropriate targets for improvement relative to national performance averages.

## Natural Heritage

### Targets to be set by the Natural Heritage Systems Strategy (2012-13)

The City is commencing the development of a Natural Heritage System Strategy in 2012. The City already maintains a comprehensive inventory of natural areas. Action 8 recommends that with the development of the Natural Heritage System Strategy, relevant city-wide and neighbourhood level targets may be established.

## Air

### Targets to be set as part of New Air Quality Management System (2012-13)

Action 33 calls upon the Ontario Ministry of Environment to provide leadership in establishing an Air Quality Management System. It also recommends that the City work with MOE, the City of Oakville, the Region of Halton and the Region of Peel Public Health Units, as well as local citizen groups to provide targets, policies and strategies for the region including the Clarkson Airshed for reducing air pollution.

## Water

### Targets to be set in Stormwater Control Strategy Update (2012) and Water-Use Analysis

The City of Mississauga is currently updating its Stormwater Quality Control Strategy. The strategy is expected to improve baseline information. The LGMP identified two actions to help set targets and expand baseline information. Action 12 suggests that the City's stormwater management criteria (guidelines and targets) be consistent with those of the Conservation Authorities. Action 14 suggests that targets for conservation be evaluated as part of a water-use analysis.

## Energy

### Target to be set in Community Energy Plan (2013-14)

The City of Mississauga prepared a GHG inventory in 2000 based on 1998 baseline data. This inventory is now out of date. Action 17 calls upon Mississauga, in collaboration with the Region of Peel, to update its community GHG and energy use inventory (baseline). Action 38 identifies how Mississauga can set targets for GHG and energy reduction through the preparation of a community energy plan.

## Waste

### Corporate Targets to be set in Waste Audit (2012-13)


Waste collection and disposal is the responsibility of the Region of Peel. Action 15 recommends a corporate-wide waste audit to establish a baseline for corporate waste-reduction efforts. Action 16 suggests working with the Region of Peel to evaluate increasing the diversion rates of organic waste and recyclables in City-owned facilities.

## Review and Align LGMP Indicators

Once detailed targets are set, City staff will need to review and update the indicators contained in the LGMP to ensure they continue to measure progress toward current targets. In some cases, additional indicators are needed to ensure effective tracking and monitoring. Indicators should be reviewed every five years.

Based on the above considerations, the LGMP recommends that the City begin to measure the following environmental indicators and continually review and refine these indicators and the data collection process to ensure it is reporting on critical environmental performance.



**Table 1: Summary of Indicators**

Sector	Indicator	Description	Metric	Rationale	Target
 Transportation	<b>Indicator 1:</b> Rides per capita and annual revenue ridership <sup>11</sup>	Rides per capita ties the level of municipal transit ridership to the City's population, with the annual revenue ridership providing an overall indicator.	Number of transit rides per capita and total annual revenue ridership.	Rates of transit ridership tend to increase when trip origins and destinations are sufficiently close to transit corridors and nodes, resulting in reduced traffic congestion and GHG emissions. The annual rides per capita is an indication of how well transit is received and used by the population.	MiWay to set target in 2012-2013.
	<b>Indicator 2:</b> Number of vehicles per household <sup>12</sup>	Number of vehicles per household indicates personal travel options across the municipality. High vehicle ownership could imply less likelihood of utilizing public transit.	Number of vehicles identified for each household.	Rates of vehicle ownership influence the way people move around the City. In general, households with higher vehicle ownership have increased transportation options and may be less likely to take transit, carpool, cycle or walk, particularly at off-peak hours. Targeting areas with low rates of vehicle ownership may increase efforts to invest in alternative transportation.	Transportation Strategy to set target in 2012-2013.
	<b>Indicator 3:</b> Cycling ridership on key routes <sup>13</sup>	Cycling ridership on key routes indicates the degree to which the City is able to provide appealing cycling facilities along key corridors.	Number of cyclists using key cycling routes at count locations.	Cycling volume is measured through the Region of Peel's Cordon Count Program, as well as by site-specific counts conducted by the City of Mississauga at key locations. The City is embarking on an ambitious implementation strategy of its Cycling Master Plan, with focused efforts on supports for cycling in strategic areas (i.e., downtown, Port Credit). Continuing to collect data on this indicator would help illustrate how effective these efforts have been over time.	Transportation Strategy to set target in 2012-2013.

<sup>11</sup> This indicator was recommended by MiWay Mississauga. MiWay collects ridership data, but does not currently set targets.

<sup>12</sup> Recommended by the City's Transportation and Works Department.


<sup>13</sup> Recommended by the City's Transportation and Works Department, as data collection has already begun as part of the Interim Transportation Strategy.



Sector	Indicator	Description	Metric	Rationale	Target
 <b>Transportation</b>	<b>Indicator 4:</b> The active transportation modal split for Mississauga residents <sup>14</sup>	Active transportation modal splits indicate the degree to which Mississauga is providing a comfortable environment for walking and cycling.	Percentage of Mississauga residents that engage in active transportation.	Active transportation currently represents 5.2 per cent of all trips in Mississauga (cycling represents 0.3 per cent and walking represents 4.9 per cent). The percentage of residents utilizing active transportation options reflects the quality of the public realm and the pedestrian experiences being offered across the city. Having higher numbers of residents utilizing active transportation reduces congestion and GHG emissions.	Transportation Strategy to set target in 2012-2013.
 <b>Urban Form</b>	<b>Indicator 5:</b> Daily destination proximity <sup>15</sup>	Daily destination proximity indicates the degree to which dwellings are located sufficiently close to daily destinations such as grocery stores, restaurants or coffee shops and pharmacies.	Percentage of dwellings within 400 metres of daily destination.	Daily destinations within walking distance increase the likelihood that household members will choose to walk or cycle rather than drive to use these services. Shifting these short local trips from automobiles to walking or bicycling reduces transportation energy demand, traffic congestion and associated GHG emissions as well as pavement allocated to automobiles.	LGMP ST to set target in 2012.

<sup>14</sup> Based on indicator contained in *Our Future Mississauga – Action Plan*.

<sup>15</sup> Recognized best-practice indicator derived from Equilibrium Communities Initiative.





Sector	Indicator	Description	Metric	Rationale	Target
 <b>Urban Form</b>	<b>Indicator 6:</b> Natural Area proximity	Natural Area proximity indicates the degree to which dwellings are sufficiently near natural areas for residents to use.	Metric to be determined by Natural Heritage System Strategy in 2012-2013	Access to convenient, sufficient natural areas is important for increasing the livability of dense, compact patterns of development. Moreover, natural areas represent an opportunity for tree planting and naturalization efforts. Quality natural areas within convenient walking distance increase the likelihood that households will integrate regular visits with daily life. It may also contribute to greater community acceptance of density and a better appreciation and understanding of nature and ecological functions. This helps create complete, livable, diverse, ecological neighbourhoods and enhances quality of life.	Natural Heritage Systems Strategy to set target in 2012-2013.
	<b>Indicator 7:</b> Park proximity	Parks should generally be accessible for residents within 800 metres of their dwelling and be located as centrally as possible within a residential area.	Metric set in City's Official Plan – percentage of residential areas within 800 m of a City park	Convenient, sufficient public parks for congregating and recreating is important for increasing the livability of dense, compact patterns of development. Moreover, parks represent an opportunity for tree planting, naturalization efforts and recreational facilities. Parks within convenient walking distance increase the likelihood that households will integrate regular use of these amenities with daily life. It may also contribute to greater community acceptance of density and a better appreciation and understanding of nature and ecological functions in balance with healthy living. This helps create complete, livable, diverse, ecological neighbourhoods and enhances quality of life.	100 per cent of residents within a residential area are within 800 m of a City park

Sector	Indicator	Description	Metric	Rationale	Target
 <b>Natural Heritage</b>	<b>Indicator 8:</b> Tree canopy intensity <sup>16</sup>	Tree canopy intensity indicates the degree to which tree canopy coverage is sufficient to support ecological functions.	Percentage of Mississauga with tree canopy cover.	Tree canopy is fundamental to several key ecological functions such as stormwater management, carbon sequestration (carbon capture and storage), heat-island mitigation, habitat protection and air-quality improvement. Trees help to manage stormwater by absorbing rainfall and reducing surface run-off. They improve urban air quality by absorbing carbon dioxide. They also increase urban habitat and mitigate the urban heat-island effect through cooling and shading. An increase in tree canopy intensity contributes to more ecological, efficient and livable communities and neighbourhoods.	Natural Heritage Systems Strategy to set target in 2012-2013.
	<b>Indicator 9:</b> Natural heritage system coverage <sup>17</sup>	Natural heritage system indicates the extent to which ecological functions and value is preserved and protected.	Percentage of natural heritage areas.	Protecting, restoring and enhancing natural areas helps enhance biodiversity and may serve several ecological functions. Natural areas also contribute to livability and provide an opportunity for people to connect with nature, fostering a sense of stewardship and providing respite and recreational opportunities.	Natural Heritage Systems Strategy to set target in 2012-2013.
 <b>Air</b>	<b>Indicator 10:</b> Criteria air contaminants <sup>18</sup>	Criteria air contaminants include ozone, fine particulate matter, nitrogen dioxide, sulphur dioxide and others.	To be developed as part of the new national Air Quality Management System.	Elevated levels of air pollution can have serious human health impacts. Measuring criteria air contaminants, including ozone, fine particulate matter, nitrogen dioxide, sulphur dioxide and others will provide data on the most detrimental contaminants that can cause respiratory and cardiovascular problems.	MOE to set target as part of the new Air Quality Management System.

<sup>16</sup> This Indicator is adapted from Our Future Mississauga – Action Plan.

<sup>17</sup> This Indicator is adapted from: “Natural Areas (In hectares)” in the *Our Future Mississauga – Action Plan*. Information related to rationale, metric and calculation method is adapted from the best-practice indicator in the Equilibrium Communities Initiative.


<sup>18</sup> This indicator was recommended by Peel Health.

Sector	Indicator	Description	Metric	Rationale	Target
 Air	<b>Indicator 11:</b> Annual average respirable particulate matter (PM <sub>2.5</sub> ) concentration <sup>19</sup>	The annual average respirable particulate matter (PM <sub>2.5</sub> ) measured in the air.	To be developed as part of the new national Air Quality Management System.	Particulate matter refers to airborne solid and liquid particles that can include acid aerosols, metal fumes, organic compounds, smoke, dust and pollen. Respirable particulate matter (PM <sub>2.5</sub> ) has a diameter of 2.5 micrometres or less. PM <sub>2.5</sub> can penetrate deep into the lungs and has been more strongly linked to negative health impacts than larger particulate matter PM <sub>10</sub> .	MOE to set target as part of the new Air Quality Management System.
 Energy	<b>Indicator 12:</b> Renewable energy generation <sup>20</sup>	The amount of electrical and thermal energy demand met by renewable technologies at the neighbourhood level.	Annual percentage increase in amount of renewable energy.	Renewable energy sources, including passive and active solar, natural ventilation, wind and biofuels incur far lower environmental costs and generate far fewer GHG emissions than non-renewable fossil fuel sources. With rising fossil fuel prices, renewable energy will also be more cost effective. Production of renewable energy helps to create more resilient and efficient communities and neighbourhoods.	Community Energy Plan to set target in 2015-2016.
	<b>Indicator 13:</b> Greenhouse gas emissions for buildings and transportation <sup>21</sup>	GHG emissions for buildings and transportation at the neighbourhood level.	Total GHG for buildings and transportation at the neighbourhood level.	Scientists agree that GHG emissions are contributing to global climate change. The changing climate will impact Mississauga's local economy, community life, visitor experiences as well as the local natural environment. Climate change and GHG emissions require solutions at all levels, and reducing Mississauga's contribution represents a commitment to stewardship of the natural environment, environmental responsibility and long-term sustainability.	Community Greenhouse Gas Inventory and Community Energy Plan to set target in 2013-2014.

<sup>19</sup> Recognized best-practice indicator derived from *City of Hamilton - Vision 2020*.

<sup>20</sup> This Indicator is based on: "Percentage of energy used from renewable sources" in the *Our Future Mississauga – Action Plan*. It is adapted in response to a request from Property and Facilities Management.

<sup>21</sup> This Indicator is based on: "Total percentage of carbon emission reduction" in the *Our Future Mississauga – Action Plan*. Information related to rationale, metric and calculation method is adapted from the recognized best-practice indicator derived from the Resort Municipality of Whistler, *Whistler2020*.

Sector	Indicator	Description	Metric	Rationale	Target
 <b>Water</b>	<b>Indicator 14:</b> Impervious surface intensity <sup>22</sup>	Impervious surface intensity indicates the extent to which a new or existing development infiltrates or generates stormwater run-off with the potential for pollutants (salt, oil, debris, etc.).	Effective impervious area per hectare.	Urban stormwater run-off can damage natural habitat and hydrological functions by contributing to flooding, stream erosion, water quality degradation and water temperature instability. The amount of effective impervious surface – such as roads, parking lots and roofs – that drain directly to hard-piped infrastructure or directly into receiving water bodies can cause negative stormwater effects. The larger the impervious surface area, the greater the potential for detrimental effects.	Stormwater Quality Control Strategy Update to set target in 2012.
	<b>Indicator 15:</b> Water quality protection <sup>23</sup>	Water quality protection indicates the extent to which a new or existing development protects human and aquatic functions of watercourses and water bodies.	Percentage of watershed that employs water quality controls.	New or existing developments that provide water quality controls protect the aquatic functions found in adjacent watercourses and Lake Ontario. They also protect human uses such as recreation and our drinking water source. Further, they may also protect terrestrial habitats by assisting in preserving wetlands and other valleyland features.	Stormwater Quality Control Strategy Update to set target in 2012.
	<b>Indicator 16:</b> Potable water consumption <sup>24</sup>	Potable water indicates the extent of water consumption across neighbourhoods.	Number of cubic metres of water used per person.	<p>Reducing demand for potable water reduces adverse effects on water quality and quantity in the natural water system, including rivers, lakes and aquifers. Reducing potable water use also reduces energy consumed in treatment and conveyance of municipally treated water. As well, reducing potable water consumption leads to more efficient, ecological, resilient and livable communities and neighbourhoods.</p> <p>The LGMP recommends conducting a water-usage analysis and developing land-use and associated strategies for water conservation (Action 14). This would improve the quality of information collected on this indicator in the strategic plan.</p>	Water Use Analysis to set target in 2013 (including results of Region of Peel's Water Efficiency Plan Update 2012).

<sup>22</sup> This indicator was recommended by the City's Transportation and Works Department.

<sup>23</sup> This Indicator is based on: "Number of cubic metres of water used per person" in the *Our Future Mississauga – Action Plan*. Information related to rational, metric and calculation method is adapted from the best-practice indicator derived from the Equilibrium Communities Initiative.

<sup>24</sup> Recognized best-practice indicator derived from the Resort Municipality of Whistler, *Whistler2020* and Victoria, Australia *Community Indicators Victoria*.

Sector	Indicator	Description	Metric	Rationale	Target
 Waste	<b>Indicator 17:</b> Corporate waste management performance <sup>25</sup>	This indicator measures the total tonnes of solid waste generated by City activities and total amount of material recycled from City facilities.	Total amount of corporate waste deposited in the landfill.  Total amount of material recycled from City facilities.	Waste management is the Region of Peel's responsibility. Yet the City of Mississauga is a large generator of waste and needs to take responsibility for the waste it produces. Reducing waste at City-owned and operated facilities could also reduce the City's operating budget. As such, effective and sustainable waste management goes hand-in-hand with good local governance and sound municipal management.	Waste Audit to set target in 2012-2013.
	<b>Indicator 18:</b> Neighbourhood waste diversion <sup>26</sup>	Recycling refers to the materials diverted from landfill and is indicative of the community's commitment to sustainable practices.	Estimated proportion of materials diverted from landfill by City ward.	Recycling is a key component to community solid waste reduction and to reducing greenhouse gas emissions and energy use.	Region of Peel's target of 70 per cent reduction of waste to disposal by 2016.

<sup>25</sup> Recognized best practice indicator derived from the Resort Municipality of Whistler, *Whistler2020* and Victoria, Australia *Community Indicators Victoria*.

<sup>26</sup> Recognized best practice indicator derived from the Resort Municipality of Whistler, *Whistler2020* and Victoria, Australia *Community Indicators Victoria*.



## **Reviewing Indicators**

As discussed above, it will be critical to review the above indicators as detailed master planning work is undertaken and baseline data is collected. It is most likely that once this work is undertaken there will be a need to collect additional indicators to ensure effective tracking and monitoring of environmental progress is taking place. Likewise, detailed work may reveal that some of the above indicators are no longer useful for measuring progress and they can be removed. It is recommended that the City review indicators every five years to evaluate applicability in measuring progress towards an identified target.

## **Reporting on Indicators**

The Strategic Plan reports on its indicators annually, and many of the LGMP indicators will be able to benefit from these efforts. The LGMP does not aim to replace this reporting process - rather it aims to maximize the benefits of this process by reporting on data at the neighbourhood level (where possible) and then aggregate the results to be city wide. Development of this neighbourhood level data would not only help the City measure its environmental performance, but it would help Departments across the City measure their progress and performance. In some instances, data to report on the proposed LGMP indicators may not be available for some years. These indicators rely on external work or investments being undertaken and are outside the jurisdiction of the City. It is recommended that LGMP indicators be reported on annually (where possible) once a baseline has been developed.



# 5 future challenges



Our world is faced with diverse, complex and impending environmental challenges. They stem largely from a soaring global population that is consuming more and more of the earth's finite resources. Rapid consumption of the world's dwindling oil supply is of particular concern. Moreover, these high levels of consumption are associated with increased carbon emissions that are compounding threats of global climate change.

Mississauga is not immune to these challenges and has responded with initiatives to protect our community and its citizens. However, given the city's current level of oil dependency – represented in single-vehicle use and an economy intrinsically linked to goods movement – Mississauga is particularly vulnerable to these global threats. The City must therefore accelerate efforts to address these global challenges both now and into the future.

## 5.1 Energy Security

Mississauga relies heavily on its position as a logistics hub. It is home to Pearson International Airport, handling around 30 million passengers a year with a plane landing every 60 seconds. It also benefits from easy access to the 400 series highways, which has contributed to the city being home to some 200 trucking companies. From Mississauga, these logistics companies can connect in 24 hours or less with 164 million consumers in markets such as Chicago, New York, Boston, Philadelphia, Cleveland and Montreal.<sup>27</sup>

This proximity to transportation infrastructure and major markets along the Eastern Seaboard and in the Midwest significantly increases the attractiveness of Mississauga as a global headquarters and for international business offices, as well as for Canadian companies. The City is currently home to more than 60 *Fortune* 500 companies.<sup>28</sup>

In the longer term, Mississauga must be aware that the City's long-term economic future is vulnerable if global connections and patterns of movements change due to spiking fuel prices. It is critical that Mississauga continually consider appropriate responses to these issues.

<sup>27</sup> Mississauga, Ontario, Canada – Transportation Profile, [http://www.mississauga.ca/file/COM/2011\\_Transportation.pdf](http://www.mississauga.ca/file/COM/2011_Transportation.pdf).

<sup>28</sup> See [www.mississauga.ca/portal/business/profilefactsandmaps](http://www.mississauga.ca/portal/business/profilefactsandmaps).

Mississauga could increase its energy security by shifting toward more sustainable energy sources and local supply. While the City benefits from province-wide efforts to green Ontario's grid, the City remains vulnerable to spikes in oil or natural gas prices and the increasing costs of transmission.

The Downtown 21 Plan discusses District Energy solutions for the City. These options could be important to consider in both the short and longer term, particularly if there is a shift to sustainable fuel sources such as biomass.

While peak oil and rising gasoline and natural gas prices underpin Mississauga's future challenges, related is the prospect of diminished property tax revenues as a result of significantly reduced residential property values in areas that are heavily car dependent. Under market value assessment, municipal revenues are linked to the market value of various property classes. Some analysts<sup>29</sup> suggest that at a certain price point for gasoline, the market for residential property in areas that are heavily car dependent will collapse. Worst case scenarios call for property values to plummet to about 20 per cent of current values. The resulting reduction of municipal revenue would be considerable.

## 5.2 Food Security

Mississauga's food security is currently dependent upon a globally linked industrial food system. In the future, this food system is potentially vulnerable to emerging challenges and threats. Some of these include: the growing global water crisis; increased frequency of extreme weather events; land degradation from intensive or monoculture-based farming; rising fuel prices that impact transportation and food costs; and widespread crop disease such as stem rust that is significantly impacting wheat crops. Many of these challenges could become even more severe as the effects of climate change increase.

Mississauga's food security also faces more localized threats. These include urban development on arable land in Peel Region and to the west of the city, as well as overly intensive and monocultural farming practices that are leading to degradation of the quality of available farm land.

<sup>29</sup> Nicole Foss cited at <http://www.postpeakededucation.com/Nicole-Foss/A-Century-Of-Challenges>.

In the longer term, Mississauga will need to carefully consider these food security challenges by understanding how it can maintain access to locally sourced healthy foods.

The City can also meet these challenges by building on existing food security efforts. For example, EcoSource, a local not-for-profit organization, has encouraged greater local access to fresh foods through the development of community gardens and sustainable urban agriculture plots such as Hillside Park Community Garden and at the Garden of the Valley in Mississauga Park. The new Official Plan supports such urban gardening, community gardening and the creation of rooftop gardens. Farmers' markets are encouraged by the Official Plan, especially in Intensification Areas. Efforts to expand the number of community gardens would increase food security and help foster a greater sense of community.

The City could also encourage local aquaculture to provide fresh, reasonably priced and sustainable access to fish. As well, Mississauga could consider boosting the number of farmers' markets, increasing accessibility to fresh and nutritious food.

In addition to adding to local food security, the provision of healthier foods would also help to target the massive societal costs incurred in regard to diet-related illnesses. The Region of Peel's cost for treating diabetes, alone, is projected to be approximately \$715 million in 2025.

## 5.3 Health Security

Mississauga and Canada currently have relatively healthy and well-serviced urban populations. Yet, internationally, many problems exist at the local level that can lead to health issues. These include airborne pollutants that can be highly toxic, tainting of water sources and contamination of land.

Climate change will likely present new health challenges. These could include deaths from extremely warm or cold temperatures and even communicable exposure to potentially fatal infections such as Lyme disease and West Nile virus. For example, starting in 2002, North America experienced an unprecedented outbreak of the West Nile virus, which

spread to Mississauga and the Region of Peel. As of February 14, 2003, there were 100 Peel residents with laboratory evidence of West Nile virus infection from the 2002 season (47 suspect cases, 30 probable cases and 23 confirmed cases, including two deaths).<sup>30</sup>

The City will need to be cognizant that warmer temperatures could also result in accelerating the multiplication of West Nile within insects and increase the chances of human infection.

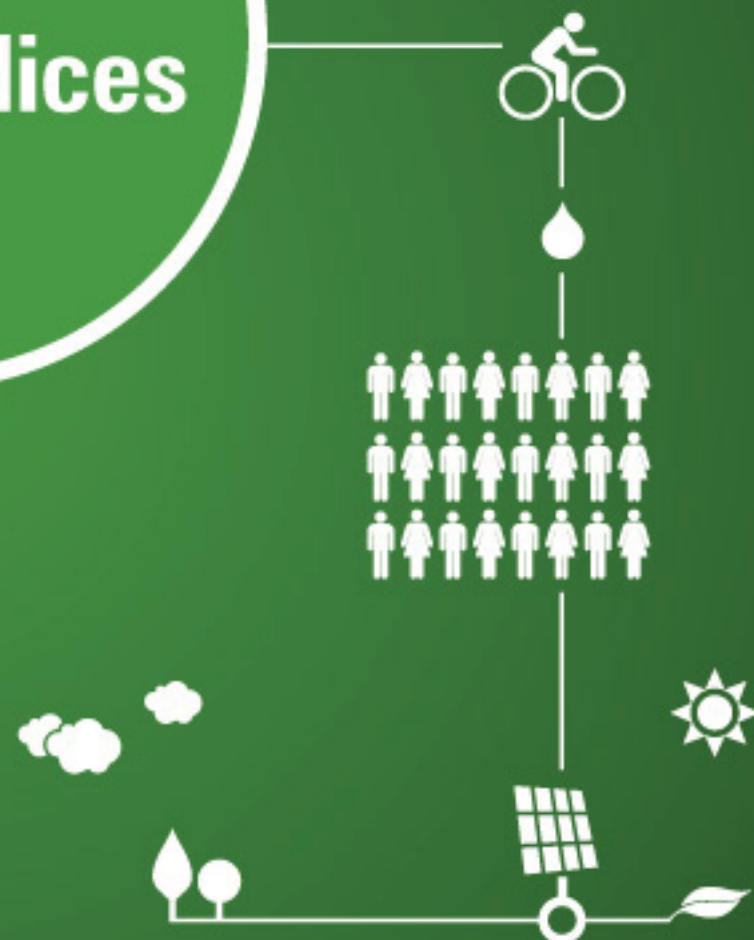
Overall, ensuring good air, water and land quality will be critical to people's health. Moreover, advocating for the expansion of public health initiatives that could respond to climate change impacts within the Region of Peel are critical for City residents and visitors to stay strong and healthy long into the future.

<sup>30</sup> Accessed at: [lin.ca/Files/5051/ac819.pdf](http://lin.ca/Files/5051/ac819.pdf).




















# 6 appendices








## Appendix A: Action Plan

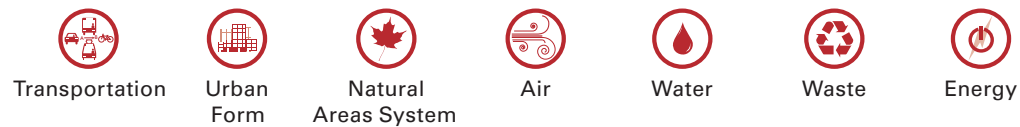
Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Set an Example						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
<div></div> <div>Transportation</div>	<div></div>	Public Transit	<b>Action 1: Maximize investment in the expansion of public transit in areas where transit-supportive development exists or is planned for the future.</b>	Transportation and Works	Mississauga business community, Mississauga Board of Trade, Greater Toronto Airports Authority, Metrolinx/GO Transit, Region of Peel	<div>•</div>	<div>•</div>	<div>•</div>	<div>•</div>	<div>•</div>
	<div></div>	Regional Transportation Network	<b>Action 2: Lobby for funding to improve the regional transportation system.</b>	Transportation and Works			<div>•</div>	<div>•</div>	<div>•</div>	<div>•</div>
	<div></div>	Transportation Strategy	<b>Action 3: Evaluate Transportation Demand Management (TDM) initiatives to date and existing modal split; and work collaboratively to implement TDM measures across the City of Mississauga.</b>	Transportation and Works	Smart Commute Mississauga, Region of Peel	<div>•</div>	<div>•</div>	<div>•</div>	<div>•</div>	
			<b>Action 4: Invest in the expansion of alternative forms of transportation including cycling, walking and car-sharing.</b>	Transportation and Works	Planning and Building	<div>•</div>	<div>•</div>	<div>•</div>	<div>•</div>	<div>•</div>
			<b>Action 5: Develop targets for modal splits in the Transportation Strategy.</b>	Transportation and Works			<div>•</div>			





### Legend:

						
Transportation	Urban Form	Natural Areas System	Air	Water	Waste	Energy








Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Set an Example						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
 Transportation	   	Transportation Strategy	<b>Action 6: Develop guidelines that advance new or rehabilitated transportation infrastructure that supports natural ecological functions.</b>	Transportation and Works				•		
			<b>Action 7: Study the efficiency of the transit network on priority corridors to speed up the system and make it more competitive and more attractive to commuters.</b>	Transportation and Works				•		




**Legend:**



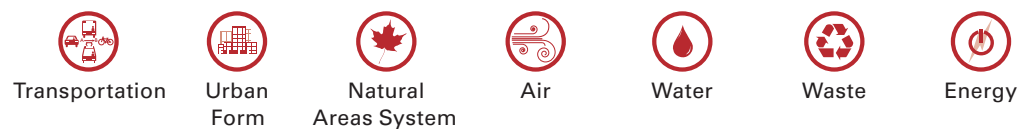
Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Set an Example						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
 Natural Heritage	  	Natural Heritage System Strategy	<b>Action 8: Include in the Natural Heritage System Strategy guidelines to:</b> <ul style="list-style-type: none"> <li>• Develop neighbourhood green system and naturalization targets that support the Natural Heritage System Strategy;</li> <li>• Involve a wide range of private and public stakeholders;</li> <li>• Develop a strategic restoration strategy;</li> <li>• Identify an action plan and resources to implement recommendations in existing studies;</li> <li>• Develop an Invasive Species Management Plan that identifies priority management areas for invasive plant and insect species; and includes replanting strategies and preventive programs; and</li> <li>• Increase minimum vegetation protection zone setbacks for all regulated areas and natural area features.</li> </ul>	Community Services	Conservation Authorities, Region of Peel, Planning and Building, Transportation and Works		•	•		

**Legend:**





						
Transportation	Urban Form	Natural Areas System	Air	Water	Waste	Energy

Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Set an Example						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
 Water	 	Mississauga Green Building Standards for Municipal Buildings and Properties	<b>Action 9: Audit corporate water usage in City operations and City-owned and operated facilities; and develop strategies to reduce water use.</b>	Facilities and Property Management	Community Services (including Fire)				•	
			<b>Action 10: Audit City buildings and properties to assist retrofitting and planning for new facilities to achieve the standards the City requires for private developments as per the Green Development Strategy.</b>	Facilities and Property Management	Community Services, Transportation and Works, Planning and Building			•		
			<b>Action 11: Develop guidelines that require low-impact development features (including the use of indigenous species in landscaped areas) for all (existing and new) City projects.</b>	Facilities and Property Management	Community Services, Transportation and Works				•	

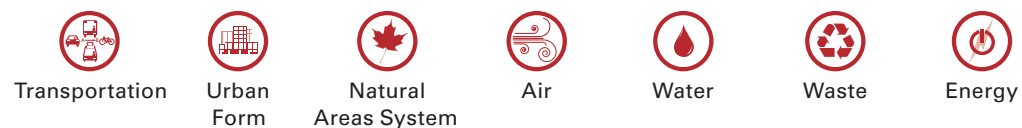
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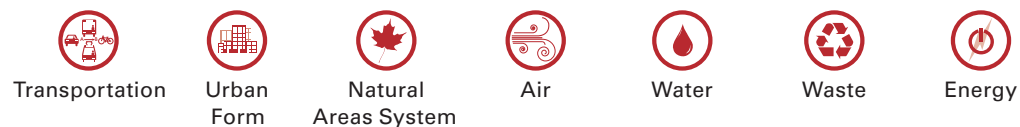
Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Set an Example						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
 Water	  	Stormwater Management	<b>Action 12: Ensure that the Stormwater Quality Control Strategy Update addresses:</b> <ul style="list-style-type: none"> <li>• Ways that stormwater management infrastructure can protect and enhance the natural areas system;</li> <li>• Increased requirements for Pollution Prevention Planning for businesses with the potential for discharge of contaminants;</li> <li>• Adopting and promoting the use of green infrastructure (as set out in the Stage One Green Development Strategy) to treat stormwater run-off before it flows into the city's natural water bodies;</li> <li>• Updating stormwater management criteria based on standards developed by the conservation authorities;</li> <li>• Impacts of erosion and prioritizing watercourse erosion works; and</li> <li>• Identifying stormwater funding opportunities.</li> </ul>	Transportation and Works	Planning and Building, Community Services, Conservation Authorities, Region of Peel					
		Flood Management	<b>Action 13: Expand and develop additional flood management plans.</b>	Transportation and Works	Conservation Authorities					




**Legend:**










Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Set an Example						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
 Water	 	Water Conservation	<b>Action 14: Conduct a water-use analysis to understand patterns of water usage in Mississauga; and develop land-use and associated strategies for water conservation.</b>	Transportation and Works	Region of Peel, Mississauga Environment Office, Conservation Authorities, Community-Based Partners			•		
 Waste		Waste Audit and Diversion	<b>Action 15: Conduct a corporation-wide waste audit including parks, public spaces, community facilities and special event venues to establish a baseline against which corporate waste reduction and recycling efforts can be measured.</b>	Facilities and Property Management	Community Services, Region of Peel			•		
			<b>Action 16: Develop a plan to increase diversion rates for recyclables and organic material from City parks and forestry operations and from City-owned and operated facilities.</b>	Community Services	Facilities and Property Management, Region of Peel,			•		











**Legend:**



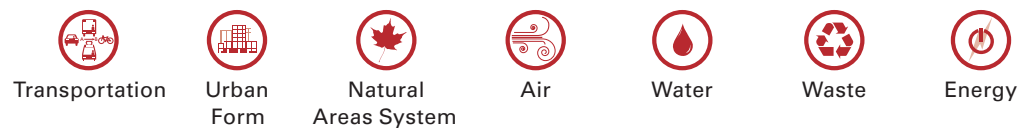
Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Set an Example						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
 Energy		GHG and Energy Use Inventory	<b>Action 17: Update corporate and community inventories for Greenhouse Gas emissions and Criteria Air Contaminants.</b>	Mississauga Environment Office	Facilities and Property Management, Transportation and Works, Community Services, Region of Peel	•	•			
		Corporate Energy Efficiencies	<b>Action 18: Continue to identify, invest in and implement energy efficiency and renewable energy actions outlined in the City's Corporate Energy Management Plan (2009); and report on revenue generated from renewable energy and on cost savings from corporate energy-efficiency measures.</b>	Facilities and Property Management			•			

**Legend:**

						
Transportation	Urban Form	Natural Areas System	Air	Water	Waste	Energy

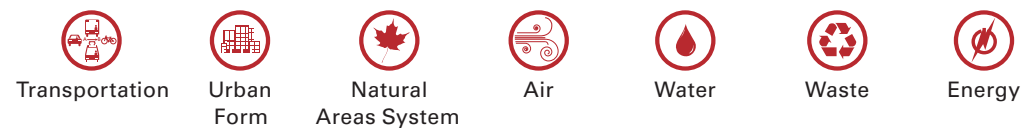
Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Set an Example						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
Organization and Policy	    	Green Procurement	<b>Action 19: Include training on green procurement options as part of staff training on existing procurement policies and procedures.</b>	Materiel Management	Mississauga Environment Office		•	•		
			<b>Action 20: Determine corporate priorities regarding the procurement of green goods and services and develop the culture, policies and practices to support these priorities.</b>	Material Management	Mississauga Environment Office		•			
	    	Corporate Environmental Policies	<b>Action 21: Review and update the Corporate Policy and Procedure on Corporate Environmental Principles (Policy Number 09-00-01).</b>	Mississauga Environment Office			•			
		Corporate Reports	<b>Action 22: Ensure that all corporate reports include a mandatory Strategic Plan section for all five Pillars for Change, including Living Green.</b>	Mississauga Environment Office			•			









**Legend:**










Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Set an Example						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
Organization and Policy		Mississauga Environment Office	<b>Action 23: Rename the Environmental Management Section of the Community Services Department as the Mississauga Environment Office, a division of the Community Services Department.</b>	Community Services			•			
			<b>Action 24: Establish a Director position to lead the Mississauga Environment Office (MEO).</b>	Mississauga Environment Office			•	•		
			<b>Action 25: Report through the business planning and budget process on a new staff and reporting structure for the MEO.</b>	Mississauga Environment Office			•			
		Interdepartmental LGMP Steering Team	<b>Action 26: Create an interdepartmental LGMP Steering Team chaired by the MEO Director.</b>	Mississauga Environment Office	Leadership Team		•			

**Legend:**


















Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Encourage Others						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
 Urban Form	  	Green Development Strategy	<b>Action 27: Report to the Environmental Advisory Committee every six months on the Stage One Green Development Standards implementation, specifically:</b> <ul style="list-style-type: none"> <li>• Stormwater management for roads, parking lots and buildings; and</li> <li>• Low-impact development techniques.</li> </ul> <b>And on efforts to develop:</b> <ul style="list-style-type: none"> <li>• Education materials for homeowners about what they can do regarding stormwater retrofits; and</li> <li>• Awareness and education materials to promote Stage One Green Development Standards.</li> </ul>	Planning and Building		•	•	•	•	•
	   	Environmental Grants Program	<b>Action 28: Create an Environmental Community Grants Program. Start by drafting terms of reference and a funding structure to support and showcase community-based environmental initiatives.</b>	Mississauga Environment Office	Community-based environmental groups		•			








**Legend:**


						
Transportation	Urban Form	Natural Areas System	Air	Water	Waste	Energy



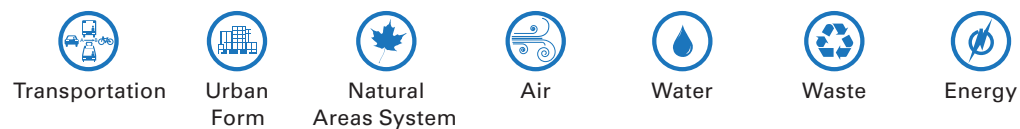
Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Encourage Others						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
 Urban Form	    	Sustainable Neighbourhood Retrofit Action Plan (SNAP)	Action 29: Develop a program to expand the Sustainable Neighbourhood Retrofit Action Plan to other neighbourhoods in Mississauga.	Transportation and Works	Conservation Authorities, Planning and Building, Community Services, Region of Peel	•	•	•	•	•
	 	Community Gardens	Action 30: Support the development of community gardens and ensure that every neighbourhood has access to at least one community garden.	Community Services	Community-based environmental groups		•	•	•	•
	   	Environmental Design Award	Action 31: Launch a new design award to complement Mississauga's Urban Design Awards. The award would address two areas: <ul style="list-style-type: none"> <li>Investment in green infrastructure for the benefit of the public realm; and</li> <li>Sustainable land-use management that integrates land-use, transportation and green infrastructure.</li> </ul>	Mississauga Environment Office	Environmental Advisory Committee, Planning and Building, Community Services		•			
	  	Eco-Industrial Parks	Action 32: Develop partnership opportunities to build on the success of Partners in Project Green and expand eco-industrial parks across the city.	Economic Development Office	Conservation Authorities, Planning and Building, businesses			•		




**Legend:**

						
Transportation	Urban Form	Natural Areas System	Air	Water	Waste	Energy








Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Encourage Others						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
 Air		Air Quality Management Partnership	<b>Action 33: Improve local air quality and help develop a national Air Quality Management System as a municipal partner of the Oakville-Clarkson Air Zone Pilot committee.</b>	Mississauga Environment Office	Ministry of the Environment, Oakville-Clarkson Air Zone Pilot Project Committee (Oakville, Halton and Peel Public Health Units and local businesses, industry and citizen groups)	•	•	•		
			<b>Action 34: Continue to implement the recommendations targeted at municipalities in the Dr. Balsillie Task Force Action Plan.</b>	Mississauga Environment Office	Transportation and Works, Planning and Building	•	•	•	•	•
			<b>Action 35: Evaluate the effectiveness of the City's five-year "Greening Our Fleet" program (2006 – 2011) and develop a plan to further reduce GHG emissions and air contaminants from City vehicles over the next five years, as called for in the Dr. Balsillie Task Force Action Plan.</b>	Mississauga Environment Office	Transportation and Works, Community Services	•	•			
			<b>Action 36: Respond to repeated complaints about idling vehicles by providing enhanced education and more enforcement of the Idling Control By-law, as called for in Dr. Balsillie Task Force Action Plan.</b>	Transportation and Works	Mississauga Environment Office	•	•	•	•	•








**Legend:**










Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Encourage Others						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
 Air		Air Modelling and Monitoring Program	<b>Action 37: Support the Region of Peel's efforts to establish an air modelling and monitoring program that will provide baseline data and an accurate picture of air quality in the geographical region of Peel, including the Clarkson Airshed.</b>	Mississauga Environment Office	Region of Peel		•			
 Energy		Community Energy Plan	<b>Action 38: Prepare an integrated community energy plan to establish roles and responsibilities in Mississauga's energy community and create a road map for advancing selected energy strategies.</b>	Mississauga Environment Office	OPG, OPA, Hydro One, Enersource, Enbridge, City Departments, Region of Peel				•	
			<b>Action 39: Assess energy efficiency and renewable fuel strategies that are feasible in Mississauga as part of the cost-benefit analysis identified in the Peel Climate Change Strategy.</b>	Mississauga Environment Office	Region of Peel, Facilities and Property Management			•		
			<b>Action 40: Determine how to optimize the use of alternative energy sources through community energy planning in Mississauga as part of the feasibility study identified in the Peel Climate Change Strategy.</b>	Mississauga Environment Office	Region of Peel, Local Utilities			•		










**Legend:**

						
Transportation	Urban Form	Natural Areas System	Air	Water	Waste	Energy








Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Encourage Others						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
Education Programs		Infrastructure Vulnerability	<b>Action 41: Undertake an infrastructure vulnerability assessment.</b>	Transportation and Works	Region of Peel			•		
	     	Living Green Public Education Campaign	<b>Action 42: Develop a Living Green Public Education Campaign that encourages community action in environmental priority areas.</b>	Mississauga Environment Office	Corporate Communications, Planning and Building, Community Services, Transportation and Works, Corporate Services, Region of Peel, Community Environmental Groups		•	•	•	•
		Research Partnerships	<b>Action 43: Investigate opportunities for research partnerships.</b>	Mississauga Environment Office	Post-secondary institutions, conservation authorities, other levels of government		•	•	•	•







**Legend:**

						
Transportation	Urban Form	Natural Areas System	Air	Water	Waste	Energy








Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Compel Others						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
 Urban Form	 	TDM and Development Approval	<b>Action 44: Integrate Transportation Demand Management measures into the development approval process.</b>	Transportation and Works	Planning and Building, development industry			•		
	     	Urban Form	<b>Action 45: Apply land-use principles that enhance the public realm and establish vibrant urban life and sustainable land management for new developments in areas identified for intensification. In stable neighbourhoods, ensure new developments respond to the characteristics and environmental conditions of each neighbourhood, while contributing to environmental performance city-wide.</b>	Planning and Building	Transportation and Works, Community Services, development industry	•	•	•	•	•

**Legend:**

						
Transportation	Urban Form	Natural Areas System	Air	Water	Waste	Energy

Sector	Additional Environmental Benefits	Subsector	Action	Lead(s)	Partner(s)	Timeframe				
Compel Others						(2011) Existing	(2012) Year 1	(2013-2014) Years 2-3	(2015-2016) Years 4-5	(2017-2021) Years 6-10
 Natural Heritage	  	Green System	<b>Action 46: Amend the Street Tree By-law (91-75) and the Tree Permit By-law (474-05) to include single trees and further measures to restrict tree removals and ensure consistency with the Official Plan.</b>	Community Services	Planning and Building		•	•	•	•
			<b>Action 47: Consider introducing a regulatory tool to protect and enhance the green system</b>	Community Services	Planning and Building, Conservation Authorities			•		
			<b>Action 48: Modify the Nuisance Weeds and Tall Grass Control By-law (0267-2003) and the Property Standards By-law (654-98) to ensure that they do not unduly restrict naturalization efforts on private property.</b>	Community Services	Planning and Building		•			
	 	Erosion Control	<b>Action 49: Increase monitoring and enforcement of the Erosion and Sediment Control By-law (512-91).</b>	Transportation and Works		•	•	•	•	•

**Legend:**

						
Transportation	Urban Form	Natural Areas System	Air	Water	Waste	Energy



## Appendix B – Decision Support Process User Guide

### Step 1. Identify the topic, action or decision required: be specific to help focus the discussion.

### Step 2. Discuss environmental impacts in relation to the Strategic Plan goals and the LGMP:

The Decision Support Process User Guide (DSP) is a blueprint for collaborative decision-making. The Strategic Plan provides a useful set of questions as a framework for the environmental impact discussion you will want to have with colleagues about proposed policies and actions.

How much closer does this take us to how we want to move people and goods?  
How much closer does this take us to a sustainable and compact urban form?  
How much does this reduce waste?  
How much does this reduce energy use?  
How much does this reduce water use?  
How much does this improve the natural areas system and public realm?  
How much does this improve water quality?  
How much does this improve air quality?

To answer these questions you may need to invite more people to join in the conversation (i.e., City staff that will be impacted by the decision and City staff that hold high levels of knowledge in the environmental sectors most impacted by the decision.)

### Step 3. Balance tradeoffs:

#### 3a. External factors: What external factors is this action responding to?

The fact that you are thinking about a decision or an action is in response to an external factor. Whether it is a directive or suggestion from an elected official or residents, or the effects of climate change or new regulations from another order of government, it's fairly certain that you do not control the external condition. In this case you will probably want to discuss with your colleagues (but from your own experience

and perspective) how effectively you think the City can respond to these factors. Effectiveness will be related to cost, technology, scale and a host of other factors that become part of the balancing act.

#### 3b. Internal factors: What are the internal factors you can control?

Cost, technology, scale, stakeholders are some of the internal factors that the City may be able to control. Therefore, they become considerations of strength or weakness in your analysis. How effectively you can respond to the external factors will determine whether you consider them to be an opportunity, challenge or a threat. Uncertainties can also be controlled. We routinely manage risks in everything we do, but the more knowledge and collaborative input we have, the more we can frame uncertainty and manage risk.

### Step 4. Make a decision and designate responsibility:

- Green light: Go
- Yellow light: Go, but manage risks
- Red light: No Go

The DSP does not offer a prescriptive or numerical way to determine what constitutes a green light over a yellow light. Generally speaking, a highly positive impact on the environment with a minimum of uncertainty with respect to cost, technology or other factors will indicate a green light. A balance of strengths and challenges with some well-understood uncertainties suggests a yellow light. Many challenges will likely indicate a red light.

Once a green or yellow light decision is reached, it is critical to designate responsibility for the action. City staff that are responsible for moving the action forward can also informally share their progress with others involved in the decision-making process. This knowledge exchange will help build relationships across City departments. It will also allow City staff to be more strategic when developing their own actions, so they can complement existing initiatives and build on experiences gained using the DSP.

## Appendix C – Decision Support Process Worksheet

Describe the action (or project) being considered:

### Discuss the Environmental Impact in Relation to the Strategic Plan Goals and the LGMP

How much closer does this take us to how we want to move people and goods?

How much closer does this take us to a sustainable and compact urban form?

How much does this reduce waste?

How much does this reduce energy?

How much does this reduce water use?

How much does this improve the natural area system and public realm?

How much does this improve water quality?

How much does this improve air quality?

Balance Tradeoffs	Factors:	How effectively can you respond to these factors?
What external factors is this action responding to? (Examples: climate change, regulations, conservation authorities, resident demands, Council)		
What are the internal factors you control? (Examples: cost, technology, scale, actors)		How certain are you that you can control these factors?



## Appendix D – Case Studies

### Sustainability Block — Vancouver

Capers Block is a “Sustainability Block” in Vancouver, built along West 4th Avenue, one of the City’s major shopping streets. The project, occupying the site of a former auto dealership, exemplifies high-quality urban design features, a true mixed-use development (with retail at grade along West 4th Avenue, office space on the second floor and two to three levels of residential above), as well as a highly efficient building from an environmental sustainability perspective.

The Capers Block offers a high-quality urban design, with the buildings constructed right to the property line to create an active streetscape for pedestrians. Retail uses have been designed to have relatively narrow storefronts and individualized materials, colours and signage to add diversity and interest for pedestrians. Buildings have small courtyards to provide places for people to sit, rest and people-watch. Residents and visitors have transit options with major bus routes that run along West 4th Avenue.

The other critical component of this project is the high-performance building. The built form on site has been developed to incorporate a filtered water system, garbage recycling and a double-walled rainscreen for durability and noise reduction. The courtyards also offer benefits to the site acting as light wells, providing residents with both views and sun light. The building is serviced by a geothermal energy system and high-efficiency gas fireplaces.

<http://www.toolkit.bc.ca/tool/sustainability-block>

### Green Infrastructure Guidelines for Transportation Corridors-Calgary

Recognizing the positive impact that green infrastructure could have on transportation corridors, the City of Calgary has developed guidelines to carry out the development and maintenance of green infrastructure city-wide.

Through a series of workshops, Calgary first identified policy issues, operations issues, and by-law or design standards issues that needed to

be addressed through the guidelines. They also developed policies and implementation targets, operations practices and infrastructure standards.

The City also adopted three overarching principles for green infrastructure. Water: Mimic Natural Hydrology; Air: Mitigate Greenhouse Gas Emissions; Habitat: Enhance Urban Biodiversity. Each of these principles has a series of strategies associated with it. For example, water strategies include: maximizing on-site infiltration, reducing effective impervious area, slowing run-off and balancing water demand with rainfall.

Additionally, each strategy has a series of potential actions. For “maximizing on-site infiltration,” such actions include swales, infiltration planters and galleries.

By creating detailed guidelines supported by multiple stakeholders, the city developed a base of common knowledge, allowing understanding to guide and support implementation.

[http://www.calgary.ca/docgallery/BU/planning/pdf/plan\\_it/results\\_green\\_infrastructure.pdf](http://www.calgary.ca/docgallery/BU/planning/pdf/plan_it/results_green_infrastructure.pdf)

### The Zero Waste Strategy-Markham

The Town of Markham has committed to promoting, facilitating and demonstrating Zero Waste strategies to protect the environment and increase sustainability. Says Mayor Frank Scarpitti: “Zero Waste may not be a literal target, but by aiming for zero, we are making much greater progress and gaining a clearer vision.”

The first goal of this policy was to make municipal facilities Zero Waste through recycling and reuse. The Markham Civic Centre (with more than 500 employees) went Zero Waste in 2006 in order to demonstrate the behaviour they wanted residents to adopt. The town launched the project by undertaking a waste audit of the facility’s dumpster and found more than 90 per cent of the waste could have been diverted from the landfill stream. As a result, it replaced all office wastebaskets with paper recycling bins and installed 45 recycling centres for organics, paper, glass and plastic. The large dumpster was locked and waste reviewed by a caretaker. Although some staff pushback was expected, a strong communications and education campaign led to an understanding that nightly waste pick-up from offices was a luxury homeowners lacked.

As a result, Civic Centre staff showed that they were ready and willing for change.

This was just the first step in a multi-stage incremental process. The town has since required all suppliers and users of its facilities to conform to the Zero Waste policy, which includes provisions for recycled content in materials such as shipping containers and paper plates and cups, a ban on all polystyrene products and the discouragement of single-use packaging such as bottled water.

Users of community facilities are provided with a copy of the policy when they submit an event application so they can take action to minimize waste. Markham also developed portable Zero Waste recycling units that can be easily dismantled, stacked for storage and transported from event to event. The goal for all town facilities, including the fire department, is 95 per cent waste diversion.

<http://www.markham.ca/Markham/Departments/WstMgt/zerowaste.htm>

### **Healthy Yards Program-Richmond Hill**

The Healthy Yards Program is organized and delivered by the Natural Heritage section of Richmond Hill's Parks and Recreation Department. Its goal is to naturalize residential green space. Key actions include resident education and assistance with native plant selection that will help create new habitats for native species, increasing the ecological functions provided by residential yards.

The Healthy Yards Program offers two native species plant kits each April and May to residents through the town's website. There is a limit of one kit per resident at a nominal charge. Included are either two trees/shrubs with 18 wildflowers, or five trees/shrubs with 18 wildflowers. Rain barrels are also available.

All plants are approved native species and contribute to re-establishing the municipality's natural heritage. Included with the kit is information on naturalization, alternatives to pesticides and the role of native plant species in combating invasive species, reducing water consumption and reducing maintenance costs and time.

Richmond Hill also publishes three Native Species Selection Guides for residents that are available for download on the city's website.

[http://www.richmondhill.ca/documents/healthy\\_yards\\_info\\_sheet.pdf](http://www.richmondhill.ca/documents/healthy_yards_info_sheet.pdf)

### **Downspout Disconnection Program-Toronto**

Toronto's stormwater is a leading cause of pollution in Lake Ontario, the Toronto Harbour and neighbouring watersheds. As a result, Toronto has adopted a wide range of green infrastructure initiatives to address its stormwater pollution problems.

One such initiative is the City's Downspout Disconnection Program. This was a voluntary program from 1998 until November 2007, during which time the city disconnected residences for free and provided rain barrels to protect residential foundations. Each year, \$1.5 million in funding was provided, and efforts were targeted at areas that experienced localized flooding or had significant impacts on Toronto's beaches. Approximately 26,000 downspouts were disconnected through the voluntary program.

However, in 2007 City Council ended the voluntary program due to limited participation. In its place, the city adopted a Mandatory Downspout Disconnection Program. Now, all downspouts are to be disconnected at the cost of the homeowner, but low-income families are able to receive financial assistance.

[http://www.toronto.ca/water/protecting\\_quality/downspout.htm](http://www.toronto.ca/water/protecting_quality/downspout.htm)

## Appendix E – Key Messages from Workshops

### LIVING GREEN MASTER PLAN

#### Staff Workshop #1

July 26, 2010 10:00 a.m. -11:30 a.m.  
Living Arts Centre  
Bank of Montreal Room, Second Floor  
4141 Living Arts Centre Drive

#### Summary

*On July 26, 50 people participated in the first of three staff workshops that will take place over the next year to help develop the City of Mississauga's Living Green Master Plan (LGMP). City staff from all departments attended: Corporate Services, Community Services, the City Manager's Office, Planning & Building, and Transportation & Works. The purpose of the session was to introduce the LGMP to City staff and to get feedback about their expectations for the plan and the challenges it needs to address.*

*John Lohuis (Director, Recreation and Parks, Community Services) welcomed the group and introduced Brenda Osborne (Manager, Environmental Management). Brenda then introduced Mary Bracken, (Project Lead, LGMP).*

*Nicole Swerhun, Facilitator, introduced the agenda and described the session as being part briefing with a presentation and part discussion. Jeff Evenson, Principal at the Canadian Urban Institute, delivered a presentation about what the LGMP is and what it will deliver as well as some of the existing challenges in Mississauga. Facilitated discussion followed and feedback was received during the plenary as well as through individual and group worksheets filled out by participants. Some additional feedback was also received after the workshop and has been incorporated during the writing of this report. The feedback has been condensed and integrated into a number of Key Messages.*

### Key Messages Heard at the Staff Workshop

#### Expectations for the LGMP:

1. The LGMP needs to be simple, realistic, practical, achievable, flexible and innovative.
2. It needs a significant education component that will inform City staff, Council and the residents of Mississauga about environmental actions and priorities.
3. The plan needs to include a means of regular measurement, monitoring and reporting to ensure things are on track and to celebrate successes.
4. The plan should integrate all of Mississauga's plans, policies and bylaws and co-ordinate with the Strategic Plan and Business Plan.
5. The plan should facilitate a co-ordinated approach between departments and external organizations.
6. The plan should emphasize the importance of partnerships and strategic relationships among other levels of government and universities.
7. Biodiversity, waste, transit and the preservation of existing natural areas need to be considered in the plan.
8. The plan should examine sustainability; not just the environment.

#### Challenges the LGMP needs to address:

The difficulty of achieving goals with limited resources.

The need for a cultural shift to take place at the City and in the community for the plan to succeed.

The plan's decision-support tool needs to address the balance between economic costs and environmental benefits.

The current organizational structure of Mississauga may present a challenge to the implementation of the plan.



## LIVING GREEN MASTER PLAN

### Stakeholder Workshop #1

July 26, 2010 1:00 p.m. -2:30 p.m.  
Living Arts Centre  
Bank of Montreal Room, Second Floor  
4141 Living Arts Centre Drive

### Summary

*On July 26, over 30 people attended the first of three stakeholder workshops that will take place over the next year to help develop the City of Mississauga's Living Green Master Plan (LGMP). The purpose of the session was to introduce the LGMP and to get feedback about expectations of the plan and the challenges it needs to address.*

*John Lohuis, (Director, Recreation and Parks, Community Services) welcomed the group and introduced Brenda Osborne (Manager, Environmental Management). Brenda then introduced Mary Bracken, (Project Lead, LGMP).*

*Nicole Swerhun, Facilitator, introduced the agenda and described the session as being part briefing with a presentation and part discussion. Jeff Evenson, Principal at the Canadian Urban Institute, delivered a presentation about what the LGMP is and what it will deliver as well as some of the existing challenges in Mississauga. Facilitated discussion followed and feedback was received during the plenary as well as through individual and group worksheets that were filled out by participants and submitted to the consulting team. The feedback has been condensed and integrated into a number of Key Messages.*

### Key Messages Heard at the Stakeholder Workshop

#### Expectations for the LGMP:

1. The LGMP needs to be innovative, bold and courageous; an environmental first.
2. An executable, action-based Implementation Plan is very important.
3. Co-ordinate the LGMP with existing policies, plans and initiatives from other jurisdictions, the Province and especially the Strategic Plan and budget.

4. Include outcome-based targets, timelines and realistic audit mechanisms in the LGMP.
5. Key components the LGMP should address climate change, transit, waste, public health, walking and cycling connections, green jobs and emergency preparedness.
6. Several concerns were raised about the LGMP not being a sustainability plan.

#### Challenges the LGMP needs to address:

1. Creating an effective business case for the environment.
2. Leadership and collaboration from various levels of government and external agencies are integral to the success of the plan.
3. Current policies that conflict with environmental priorities will need to be aligned.
4. A general lack of knowledge and understanding related to the environment is a challenge.
5. Equity, access and inclusion are challenges that need to be addressed by the plan by engaging multicultural and youth groups.

## LIVING GREEN MASTER PLAN

### Stakeholder Workshop #2

October 22, 2010 9:30 a.m. -11:00 a.m.  
Living Arts Centre  
Bank of Montreal Room, Second Floor  
4141 Living Arts Centre Drive

### Summary

*On October 22, about 45 people attended the second of three stakeholder workshops that will help develop the City of Mississauga's Living Green Master Plan (LGMP). A list of organizations represented at the workshop is attached. The purpose of the session was to present the LGMP work and process to date and to get feedback on the approach the consultant team is considering. After the presentation from Jeff Evenson, Principal at the Canadian Urban Institute, participants selected a discussion table based on their area of interest (i.e., land, transportation, water, air, energy, waste, climate change). Group discussions took place, followed by a full-room facilitated discussion based on the following questions: (1) The team is considering focusing the LGMP on those areas where Mississauga has the most opportunity to influence change. What are the strengths and challenges of this approach? (2) Given your knowledge, what is the most effective thing that Mississauga can do to achieve its environmental goals in each of the seven areas? Feedback was captured on a laptop and projected to the room. The feedback has been condensed and integrated into a number of key messages. Detailed feedback follows the key messages. Participating organizations and the workshop agenda are in Attachments A and B.*

### Key Messages Heard at the Stakeholder Workshop

**1. Overall, things need to be much more integrated.** There were mixed feelings about pillars. Some felt that pillars perpetuate the silo approach; others said they're necessary, but need some kind of integration mechanism (e.g., could have one extra pillar to link them all). Many felt that linking the areas of the environment was more important than separating them. For instance, transportation was described as being about land use, air quality and energy. Some described an ecological approach as preferable to pillars (the example

mentioned was The Natural Step). There was also some concern that it will take a long time to implement seven separate categories.

- 2. There was little support for High/Medium/Low ranking of influence.** Some said it may be misleading to aggregate the environmental situation into high, medium, low areas of influence, because this implies that there isn't an opportunity for change. Others commented that the ranking seems more like the perceived ability to influence. Several participants also described the rankings as being very subjective and found difficulty, for example, with the rankings failing to specify whether the influence is high for the private sector or public sector. Some felt that there can and likely should be high priorities for action regardless of the pillar the strategy is in, while others thought prioritizing should be done across these pillars by selecting priorities for the environment overall and not in specific areas. Another example of a challenge raised with this approach is Waste. Some emphasized that rather than saying Mississauga is "not responsible" for waste, the Plan needs to recognize that Mississauga is a big part of the Peel waste stream and, therefore, has a high degree of influence over waste (rather than low).
- 3. There was some apprehension about the ranking of goals and the categorization of strategies** and concern that this approach implies there is no opportunity to change. Some felt that a predetermined categorization of strategies would mean that there was little room for innovation in those areas. Some felt that it was important that the Plan build in some flexibility to respond as opportunities arise in any pillar or any category, citing a concern about over-committing to certain categories and totally missing opportunities in other areas in the process.
- 4. Need to clarify the role of community.** Some mentioned that the role of community isn't yet evident and they want to know how they are relevant to the Plan and how they can be involved and connected to the Plan.
- 5. Want to see bold and innovative ideas.** Some expressed concern that what they've heard so far is a summary of what's been done already. Participants encouraged looking at successful implementation practices from other places and making them work in Mississauga. They emphasized the need to take things to the next level by being bold, innovative and courageous.

**6. Climate Change shouldn't be a pillar, but could possibly be a lens.**

Some thought Climate Change should be a lens through which the Plan is viewed or could be an umbrella under which other pillars would sit, but others said they're not comfortable with that. They suggested using terminology like "environmental excellence" rather than Climate Change as an overarching idea, to avoid any negative perceptions.

**7. Need to emphasize the role for education.** Some highlighted the importance of education and outreach for this Plan, specifically in relation to Climate Change and Water Conservation. Some felt that people are not aware of what Climate Change is and that in order for everyone to take responsibility for it, they need to first understand it. Some also emphasized the importance of partnerships and collaboration. For instance, partner organizations and schools can help get children involved in outdoor stewardship experiences and guide both adults and kids in local watershed stewardship. Education was also discussed in the context of children educating their parents about the environment.

## LIVING GREEN MASTER PLAN

### Staff Workshop #2

October 22, 2010 1:00 p.m. - 2:30 p.m.  
Living Arts Centre  
Bank of Montreal Room, Second Floor  
4141 Living Arts Centre Drive

### Summary

*On October 22, about 50 people attended the second of three workshops that will help develop the City of Mississauga's Living Green Master Plan (LGMP). A list of City departments represented at the workshop is attached. The purpose of the session was to present the LGMP process to date and to get feedback on the approach the consultant team is considering. After the presentation from Jeff Evenson, Principal at the Canadian Urban Institute, participants participated in a discussion table based on their area of interest (i.e., land, transportation, water, air, energy, waste, climate change). Group discussions took place, followed by a full-room facilitated discussion based on the following questions: (1) The team is considering focusing the LGMP on those areas where Mississauga has the most opportunity to influence change. What are the strengths and challenges of this approach? (2) Given your knowledge, what is the most effective thing that Mississauga can do to achieve its environmental goals in each of the seven areas? The feedback has been condensed and integrated into a number of key messages. Detailed feedback follows the key messages. Participating departments and the workshop agenda are in Attachments A and B.*

### Key Messages Heard at the Staff Workshop

1. **There was concern that the "big picture" intent and context of existing work, especially in planning, may have been overlooked by focusing on specific goals.** Some were worried that the focus on goals was too narrow and didn't account for the overall intent of some of the documents. They indicated that the bigger picture context and rationale is important to capture and reflect in the LGMP.
2. **Participants were not sure about the ranking of "pillars," according to High/Medium/Low influence.** Some felt that the matrix should be

expanded to provide a breakdown of what aspects specifically had high, medium and low influence. For example, Mississauga's impact on air quality from the Ohio Valley may be low, but in other areas its influence could be high (for example, there was a high influence on the Province's decision not to build the Oakville energy plant.) There was also concern that if an area is ranked "low," this could dilute its relevance.

3. **May need to add another "screen" to the High/Medium/Low influence thinking so that it takes into account opportunities where the City may not have jurisdiction.** For example, while the City may have high control over land use in terms of its regulatory powers, most of the City is already built out, so it could be argued that the opportunity to influence land use is actually low.
4. **Using categories to separate the areas of the environment may not be the best approach.** Although there was some agreement with the notion of influence and impact, some participants felt that the approach lacked a consideration for the higher-order understanding of decision-makers, saying: "We won't get this done unless we can make the business and political case, and those types of cases need cross fertilization." They described the need for a coherent and innovative strategy that draws on demonstrations and best practices from other cities. Some also emphasized the need to decide where to place emphasis and what tools to use such as policy, education, cultural change, funding, etc.
5. **Some participants indicated that Mississauga may still want to acknowledge the notion of symbolism.** They said that regardless of a high, medium or low level of influence, the City should make conscious decisions to undertake certain actions because they resonate with the community and promote awareness of the environment.
6. **Many participants don't think Climate Change or Waste should be separate pillars.** Some disagreed with waste being a separate pillar because it is the responsibility of the Region. However, there was acknowledgement by some that Mississauga needs to work more closely with the Region to deal with waste because it is such a big waste generator. They suggested that waste and Climate Change be addressed in some way, but not as separate pillars.

7. **Many saw it as important that the City of Mississauga take a leadership role first** (especially with energy and water use). They reinforced the need for the City to be effective, saying that as a corporation, Mississauga doesn't currently provide enough good examples in many of these areas. Examples cited include setting a standard of water conservation in municipal buildings and having organic recycling in municipal buildings. They also emphasized the importance of promoting the idea that if the whole city started doing more of these green things (solar panels, green roofs, etc) it would really help the City overall in reducing energy consumption.
8. **Education on what Mississauga is responsible for is key.** Some described the big challenge as informing people about their responsibilities and the responsibilities of the corporation. For instance, Mississauga has more impact and control over stormwater than on conservation. They also emphasized the need for outreach and education, especially around air quality.

## LIVING GREEN MASTER PLAN

### Stakeholder Workshop #3

January 31, 2011, 3:00 p.m.-5:00 p.m.  
Living Arts Centre  
Bank of Montreal Room, Second Floor  
4141 Living Arts Centre Drive

### Summary

*On January 31, 2011, over 50 participants attended a Living Green Master Plan stakeholder workshop that presented an overview of the draft plan including draft recommendations. This was the third workshop held for stakeholders and key constituents from environmental organizations in Mississauga. Participants included conservation authorities, utilities, educational institutions, youth organizations and ratepayers' associations. The session began with a presentation by Jeff Evenson, Principal, Canadian Urban Institute, and was followed by discussion. The discussion questions were as follows: (1) Are there any factual errors, gaps, expectations not met or red flags that stand out to you? (2) What are the positive things about this draft plan that should be emphasized? (3) What opportunities for partnerships do you see in the draft plan? (4) Any other comments? The feedback has been condensed and integrated into a number of key messages.*

### KEY MESSAGES HEARD AT THE STAKEHOLDER WORKSHOP

- 1. Participants indicated that overall the draft plan addressed areas well, and they identified some gaps they saw.** Some of these include addressing surface parking lots, green infrastructure, growing the urban forest, involving the airport in the plan, water-treatment technologies, incentives for energy retrofits and targets for institutional waste.
- 2. Participants saw lots of positive, bold ideas in the draft plan and encouraged them to be highlighted.** Examples of bold ideas mentioned were green procurement, a nuisance weeds bylaw, creation of a ravine protection bylaw, adding Credit River Valley to the greenbelt, funds to support community-based environmental initiatives, having transit closer to where people work, learn and live,

the linkage between urban form and transportation, establishing a non-profit organization for air quality, a GHG inventory and establishing baseline data to measure environmental performance.

- 3. Many good opportunities for partnerships were identified,** including Pearson eco-business zone, Mississauga Transit, University of Toronto Mississauga, Smart Commute, conservation authorities, Toronto Atmospheric Fund, non-profits, community groups, businesses and the Region of Peel.
- 4. Several participants emphasized the importance of the plan including timelines as well as specific targets.**
- 5. Integration with Mississauga's Strategic Plan is apparent, but needs to be more explicit.** The plan also needs to link with other existing plans and policy documents.
- 6. The plan needs to be more explicit about education, including reference to specific institutions and school boards.**
- 7. There was some concern that the plan still reads as "non-ecological."** Several participants felt that in order to be innovative, the plan has to be recognized as a process with ongoing stakeholder input and feedback over time.



## LIVING GREEN MASTER PLAN

### Living Green in Mississauga Public Event

Thursday, April 7, 2011  
Living Arts Centre, RBC Theatre

### Summary

*On April 7, 2011, The City of Mississauga held a full-day event called Living Green in Mississauga to introduce the Living Green Master Plan (LGMP), Mississauga's first environmental master plan. Almost 200 people representing schools, community organizations, City staff, businesses and residents' associations participated in the four events held that day. The first component was a session called "Imagining Mississauga's Environmental Future" where youth and older adults came together to discuss their respective visions. During lunch, two presentations were given to senior City officials and representatives from the local community. Peter Victor, professor of Environmental Studies at York University, discussed managing without growth and Ellen Dunham-Jones, professor of architecture and urban design at Georgia Institute of Technology, discussed retrofitting suburbia. Following the luncheon, Professor Dunham-Jones conducted a master class where ideas for the revitalization of Mississauga were discussed. The final component of the day was a public workshop where Mississauga's residents came together to discuss the draft plan. Throughout the day, an environmental exhibition was held with booths featuring information from various environmental organizations and City departments. An art display called "Biodiversity through art" by students from West Credit Secondary School was located around the lobby of the Living Arts Centre.*

### "Imagining Mississauga's Environmental Future" (9:30 a.m. -11:00 a.m.)

The first session of the day was targeted at youth and older adults. It began with a welcome and opening remarks from Councillor Carlson, followed by Councillor Fonseca speaking briefly about the importance of getting feedback from youth and older adults on the environment. Nicole Swerhun, the facilitator working with the Canadian Urban Institute, then introduced the session on transit. Jeff Evenson, Principal, Canadian Urban

Institute, gave a short presentation outlining the draft LGMP and the important role transit will play in it. There were table discussions followed by a full-room discussion focused on three questions: (1) How do you get around now? (2) How do you wish you could get around? and (3) What will it take to get people to change how they get around Mississauga? The session concluded with Pat Runzer from MiWay giving a brief presentation about Mississauga Transit with a bus on site to demonstrate new features and accessibility options. Key messages heard at the session are described below.

### Key Messages Heard at "Imagining Mississauga's Environmental Future"

**Participants indicated that the most common way of getting around Mississauga was by bus.** They also indicated that their chosen mode of transportation depends on where they are going. Many students said they take transit, walk or bike to school, but for other activities they drive or are driven by their parents. When they go to Toronto or outside of Mississauga, they usually take Mississauga Transit or GO Transit. Many said that they use active modes of transportation like cycling, walking and skateboarding only occasionally.

**Participants expressed a desire for more transportation options and infrastructure to make this possible,** including more bike lanes, carpool opportunities and hybrid buses. They indicated that traffic light priority for transit, protected cycling lanes and more sidewalks would make transit, cycling and walking better alternative modes of transportation.

**Many participants emphasized the need for better connections.** Specifically, they would like to see better connections between GO, Mississauga Transit and the TTC to make transferring easier and cycling lanes that connect to transit routes rather than just recreational trails.

**Most people thought the best way to get people to change their behaviour was to improve public transit.** Participants emphasized the need to make it cheaper, more frequent, more accessible, more comfortable and an overall more enjoyable experience.

**Many participants felt that behaviour change would also be possible by improving cycling and infrastructure connections and providing incentives for taking transit or using hybrid vehicles.** For instance, having priority parking for green vehicles at malls and transit loyalty

programs for frequent users. Some felt behaviour change could also be accomplished through education and awareness campaigns around how to use transit and the negative environmental impact of driving.

### **Master Class (2:00 p.m. - 4:30 p.m.)**

The master class, run by professor Dunham-Jones, involved examples of redeveloping, re-greening and re-inhabitating suburbs around North America. The session was designed to involve senior staff at the City and key community organizations in a discussion about how and where these examples could be applied in Mississauga. Over 30 participants attended, representing City staff, community organizations and businesses. Paul Mitcham, Commissioner of Community Services, welcomed the group and gave opening remarks about the Mississauga Living Green Master Plan. Ellen then presented informally as participants asked questions and generated discussion. Participants were asked to discuss the ideas of redeveloping, re-greening and re-inhabitating in relation to Mississauga in an open-ended way.

### **Key Messages Heard at the Master Class**

**Participants were enthusiastic about the opportunities for retrofitting various shopping centres in Mississauga.** There was some concern that due to the success of these malls there was not much incentive to redevelop these sites. However, many were hopeful that these centres, which cover large areas of land, could provide good opportunities for creating new fine-grain road networks. Several specific examples were discussed with these possibilities in mind, including Square One, Erin Mills Town Centre and Heartland Town Centre.

**Walkability in Mississauga's neighbourhoods was a concern, and participants discussed several examples of areas that were walkable and those that needed improvement.** Communities like Erin Mills, Meadowvale, Streetsville and Cooksville were considered walkable, while areas like Churchill Meadows and Port Credit were considered less walkable. *Walkscore.com* is an example of a tool mentioned that many participants were interested in. Participants also discussed what made some neighbourhoods more desirable places than others, and encouraged a look at best practices in walkability and livability to improve some less walkable neighbourhoods. Characteristics like narrower street widths, better connectivity and openness rather than an exclusive enclave feeling were considered important to encourage walkability.

**Transit was felt to be one of the most important challenges facing Mississauga.** There was a lot of discussion around continued investment in higher-order transit being critically important as well as simultaneously working to decrease the number of vehicles on the road. Creating links between transit systems and routes was also considered imperative. For instance, a Hurontario transit line needs connecting links on Lakeshore and Dundas. There was also some discussion around a consolidation of Mississauga, Brampton and Caledon transit to create a Peel Transit system. Examples of Cooksville and Clarkson GO parking lots as community hubs were raised. It was also suggested that buses might need to run empty for a while, until sufficient density is developed along transit corridors.

**There was a clear sense that the City would benefit from community organizations, including residents associations and BIAs, having a more prominent role in neighbourhoods.** They were seen as effective community builders and as such need the facilitation and support of the City to strengthen resources in the community.

### **Public Workshop (6:30 p.m. - 8:30 p.m.)**

The final component of the day was a public workshop where Mississauga's residents came together to discuss the draft plan. About 50 participants attended, representing schools, residents' associations, community organizations and businesses. The meeting began with opening remarks from Councillor Carlson and a presentation on the draft plan from Jeff Evenson, Principal, Canadian Urban Institute. Participants were asked to discuss three questions: (1) What three things would you suggest the City do to change the way people and goods move through the City? (2) What three things would you suggest the City do to change the way buildings are built and where they are put? (3) The blue circle in the framework for action suggests four programs to encourage residents to take action. Do you think these would move the City in the right direction? Why? Why Not? The key messages from the workshop are described below.

## Key Messages Heard at the Public Workshop

**Participants indicated that promoting alternative modes of transportation would change the way people and goods move within and throughout the city.** They felt that people were less likely to travel by car if opportunities to travel by transit, bicycle and foot were improved and better connected. Specific suggestions included:

1. **Public Transportation** - creating affordable transit fares, reducing wait times and increasing transit development were all considered factors that would increase transit use.
2. **Cycling** – constructing more bike routes through the city were thought to not only increase the safety of cyclists, but also improve the connectivity of the city.
3. **Pedestrian Zones** – discussion about developing more public and open spaces that connect various parts of the city and allow pedestrians to move freely was considered important.

**Participants suggested that an emphasis on mixed-use, environmental sustainability and connectivity would improve the way buildings are built and where they are placed throughout Mississauga.** Mixing various housing types such as apartment buildings, single-family homes and mid-rise developments were seen to encourage walkability. Employing new technologies and environmentally sustainable practices like green roofs, solar panels and LEED certification into buildings were also considered important. Connecting buildings with transportation routes and locating new buildings on existing transportation corridors were considered critical for creating an environment where residents can live, work and play.

**Participants indicated that the four recommended programs to encourage residents to take action (Education & Awareness, Awards & Contest, Community Energy Plan and Mississauga Environment Fund) were positive and effective.** Education & Awareness was considered the most impactful, especially when targeted at youth. Contests were also highlighted as especially effective tools to get people involved. Participants indicated that these programs should be simple and easy to understand and pointed out that incentives were important to encourage participation in such programs.

**Participants felt that public awareness will be a key component in promoting and encouraging residents to participate in events and/or programs.** They suggested that media campaigns such as television or radio commercials would be beneficial in providing information to residents, saying that public awareness not only allows residents to become involved in projects, but also empowers them.

## LIVING GREEN MASTER PLAN

### Staff Workshop #3

June 16, 2011, 9:00 a.m. -11:00 a.m.  
Mississauga Valley Community Centre  
Program Room #1 (lower level)  
1275 Mississauga Valley Blvd.

### Summary

*On June 16, 2011, over 30 participants attended a Living Green Master Plan workshop to provide feedback on the revised actions in the Living Green Master Plan (LGMP). The workshop was for municipal staff from all departments. The meeting began with opening remarks from Mary Bracken, Project Lead, followed by an introduction from facilitator Nicole Swerhun and a presentation on the updates to the plan and its actions from Jeff Evenson, Principal, Canadian Urban Institute. Following the discussion, a brief overview of the Decision Support Process which will be included in the plan was provided by Jeff and a worksheet was given to participants to take home for review. Participants were asked to discuss two main questions at the meeting: (1) Have your concerns been met by the revised actions? Do you have any suggestions or changes? (2) Are there any factual errors, gaps or red flags? This report presents the key messages from the workshop.*

### Key Messages Heard at the Staff Workshop

- 1. Generally, participants liked the approach and framework of the revised draft plan.** Many commented on the friendliness and improved clarity of the revised document. Some felt that the previous report was too technical and they appreciated the simplicity of the reworded actions. Many supported the more integrated framing of the environment and the removal of the previous silo approach that had different approaches for elements such as air, water, energy, etc. Many also liked that the framework sets out three roles for the City. They felt this made the plan easier to understand and implement.
- 2. Participants had a few general suggestions that related to all actions. These include: providing more context for the actions in the report; using consistent and concise language; and making actions stronger.** Several participants felt that the actions needed more clarification and more specific direction to staff in some cases, and they wanted to see a rationale and explanation accompanying each action that provided a Mississauga context. They also felt that the “Compel” section should be larger because many are still not willing to make changes that benefit the environment without being legislated to do so.
- 3. There were many specific comments related to the actions, in particular, for Action 20**  
(the City of Mississauga should establish an interdepartmental environment team to champion the environmental lens, support collaborative working relationships and advise on measures to effectively address the three roles the LGMP suggests for the City in meeting its environmental objectives). Many staff had recommendations and questions about it. Suggestions included expanding the list of members, having specific reporting responsibilities and ensuring the group had decision-making responsibility. Several people also had questions about how this team would affect the existing departmental structure.
- 4. There was also a sense that there needed to be more explicit accountability incorporated into the plan.** Some felt that creating a list of priority actions that were linked to goals and objectives would provide staff with clear direction to meet targets and have consequences if they weren’t followed through.

## LIVING GREEN MASTER PLAN

### Stakeholder Workshop #4

June 16, 2011, 1:00 p.m. -3:00 p.m.  
Mississauga Valley Community Centre  
Program Room #1 (lower level)  
1275 Mississauga Valley Blvd

### Summary

*On June 16, 2011, over 30 stakeholder participants attended a Living Green Master Plan workshop to provide feedback and comments on the revised actions in the Living Green Master Plan (LGMP). The workshop was held for external stakeholders representing orders of government, conservation authorities, utilities, educational institutions, youth organizations and ratepayer associations. The meeting began with opening remarks from Brenda Osborne, Manager of Environment, followed by an introduction from facilitator Nicole Swerhun and a presentation on the updates to the plan and its actions from Jeff Evenson, Principal, Canadian Urban Institute. Participants were asked to discuss two main questions at the workshop: (1) Have your concerns been met by the revised actions? Do you have any suggestions or changes? (2) Are there any factual errors, gaps or red flags? This report presents the key messages from the workshop.*

### Key Messages Heard at the Stakeholder Workshop

- Generally, participants liked the framework that organized actions under the three roles the municipality can take (i.e. set an example, encourage others and compel others) and indicated many concerns that were raised in the previous draft have been addressed.** They felt that the framework was much easier to understand than trying to segment actions based on elements of the environment such as air, water, waste, energy, etc. Some raised the idea of having more actions under “Compel Others” until a cultural shift happens, to ensure that people make changes that will benefit the environment.
- Some participants had concerns that the plan was not bold or innovative enough.** They wanted to see new ideas and felt that much of what was included in the plan was already underway in Mississauga and other places. They felt that the plan should be more ambitious than targeting the “low-hanging fruit.”
- Many comments at the workshop related to the language in the actions. Some said they preferred the language presented in the previous draft because it was more specific and technical, while others preferred the updated simpler language.** Many wanted to make sure the language used was consistent across all actions and wanted it to convey a sense of “urgency and emergency” to make the plan stronger. Some felt that using wording throughout the report that was concise and has an element of urgency would provide a sense of direction not only to municipal staff, but to the general public and the province.
- Accountability was a common theme raised by many participants.** They wanted to see a mechanism for implementation and assignment with clear timelines and responsibilities laid out. Some also suggested that the ideas and recommendations from the plan should align with specific targets and goals from other Master Plans that have been created or are in the process of being created.
- Some participants were unclear about the community role in this plan.** They liked the plan, but weren’t sure how it connected to the public. They recommended more public engagement to facilitate the co-creation of ideas with the community.

## Appendix F – Organizations Engaged in the LGMP Process

Bullfrog Power  
City of Brampton  
Community Advisory Group  
Community Foundation of Mississauga  
Conservation Halton  
Credit Valley Conservation  
Dufferin-Peel Catholic District School Board  
EcoSource  
EllisDon  
Enbridge Gas Distribution  
Enersource  
Evergreen  
Fielding  
Fram Building Group  
Greater Toronto Airports Authority  
Healthy City Stewardship Centre  
ICLEI-Local Governments for Sustainability  
Mayor's Youth Advisory Committee (MYAC)  
MIRANET  
Mississauga Board of Trade  
Mississauga Cycling Advisory Committee  
Mississauga Life Magazine  
Nedco Energy Services  
Newcomer Centre of Peel  
Ontario Power Authority  
Oxford Properties  
Pallett Valo LLP  
Peel District School Board

Peel Environmental Youth Alliance (PEYA)  
Region of Peel  
Sheridan College  
Siemens  
Sierra Club  
Sims Recycling Solutions  
Smart Commute Mississauga  
Students of Cawthra Park Secondary School  
Students of Glenforest Secondary School  
Students of John Cabot Catholic Secondary School  
Students of St. Francis Xavier Secondary School  
Students of Trelawny Public School  
Sustainable Urban Development Association  
Thermonic Electric  
Toronto and Region Conservation Authority  
Town of Caledon  
Town of Oakville  
Tutored by Nature  
University of Toronto Mississauga (UTM)  
waste2wonder



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## Appendix H - List of Key Terms and Acronyms

Acronym	Definition
CEP	Community Energy Plan
City	Corporation of the City of Mississauga
city	Geographic area of Mississauga
CVC	Credit Valley Conservation
DSP	Decision Support Process
EAC	Environmental Advisory Committee
EMS	Environmental Management Section, City of Mississauga
ENT	Environmental Network Team
EXLT	Extended Leadership Team (City Directors & Commissioners)
GC	General Committee of Council
GDS	Green Development Strategy
GGH	Greater Golden Horseshoe
GHG	Greenhouse Gas
LED	Light-emitting Diode
LEED	Leadership in Energy and Environmental Design
LID	Low-impact Development
LGMP	Living Green Master Plan
LT	Leadership Team (City Manager & Commissioners)
MEO	Mississauga Environment Office
MOE	Ministry of the Environment
NGO	Non-governmental Organization
NHSS	Natural Heritage System Strategy
OP	Mississauga Official Plan
SNAP	Sustainable Neighbourhood Retrofit Action Plan
ST	Steering Team
TDM	Transportation Demand Management
TRCA	Toronto and Region Conservation Authority
WT	Working Team





This publication is available in alternate formats upon request.

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