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Steps we can all take to achieve sustainable communities in the Greater Golden Horseshoe

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METCALF
FOUNDATION

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We're on a mission.

Environmental Defence protects the environment and human health. We research. We educate. We go to court when we have to. All to ensure clean air, safe food and thriving ecosystems. Nationwide.

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Foreword

June 2007

The world has changed since we at Environmental Defence started researching and writing this book. Where 18 months ago global warming was a debate – now it's a fact. Where 'green' was relatively peripheral, now it's mainstream. We are seeing progress on some key issues at the municipal and provincial levels, and people are captivated by all things 'environmental'.

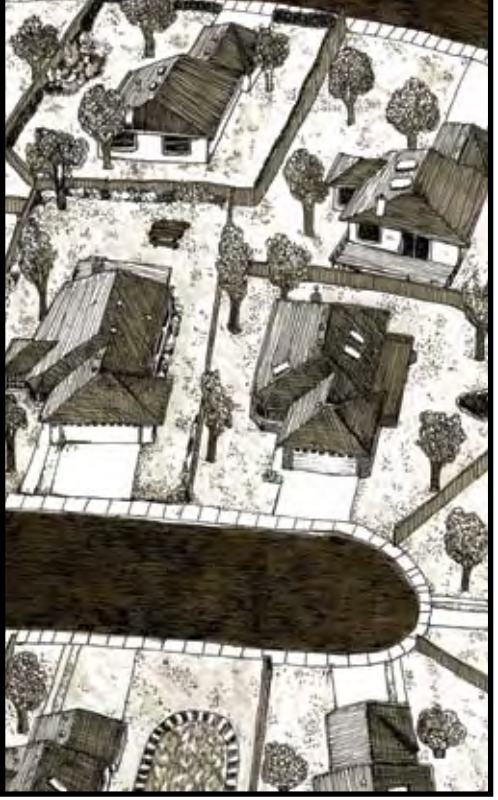
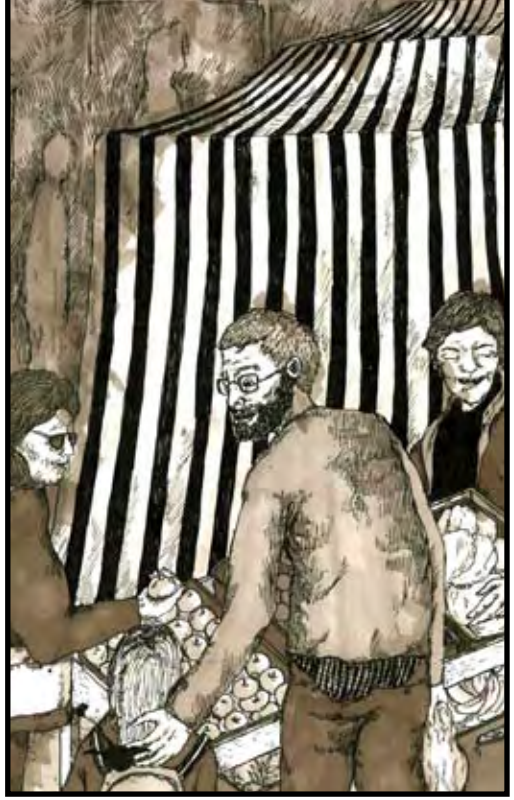
In For the Greener Good we focus our attention on changes we need to make in the Greater Golden Horseshoe Region of Ontario. Over the next decade we have the opportunity to steer this region onto a green path. Certainly if we believe the recent announcements from the Ontario government about investing in public transit, home retrofits and solar energy, and if the City of Toronto moves decisively to make its new climate change plan a reality, we will be well on the way.

New policies and plans are coming fast and furious from municipalities throughout the region. It is hard to keep up! However, we are far from the point at which we can assume that an environmentally sustainable agenda supports all municipal and provincial decision making. Changing how we live, work and play in our communities will challenge all of us for many years to come. The recommendations included in For the Greener Good aim to put forward a common basis from which green communities can grow and evolve.

Our hope is that more and more initiatives will come forward to assist in the greening of our communities, and that we will see increasing municipal and provincial commitments to sustainability. The upcoming Ontario election creates an opportunity to put the environment first on the agenda of every candidate – the recent provincial announcements on funding for public transit, for instance, must carry through to the mandate of the next government, no matter who is elected.

For the Greener Good covers a lot of ground, and despite its aim to be as comprehensive as possible, no doubt there are more recommendations that could be put forward! Please stay tuned and sign up for GreenNews, our monthly electronic newsletter, at www.environmentaldefence.ca!

Rick Smith, PhD
Executive Director

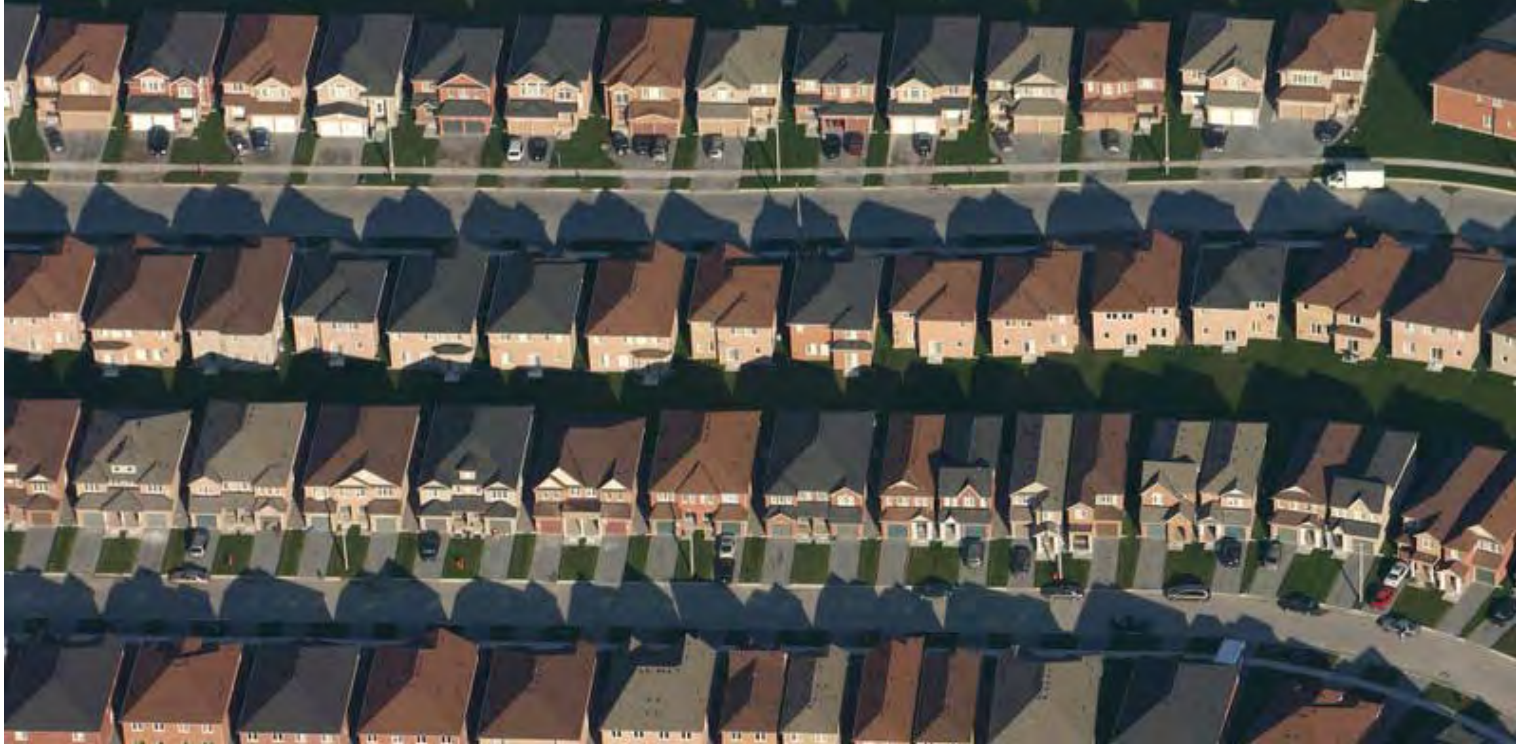





Introduction

"We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."

Aldo Leopold



Markham. See creative commons license.[1]

The Greater Toronto Area (GTA) and surrounding regions has changed. The growth of Canada's "economic engine" has seen forests and fields turn into sprawling subdivisions and highways. It's going downhill and fast. Only about 17 per cent of the GTA's natural spaces are left, much of it in rough shape. Over half of Canada's richest agricultural land is found in Ontario, but in the last 30 years the green has left the GTA and the sprawl has come in. And have you noticed the smog? The gridlock? Oh yes, and the issue on everyone's mind. Global warming.

It's a crisis—and it's everyone's problem. What happens in Vaughan matters in Barrie. Toronto's waterfront can't be separated from Hamilton's. And if someone drives from Oshawa to Orangeville, it affects everyone in between. We're in it together, and no matter where we live, we have a stake in making cities more ecological.

We're hopeful that the momentum for change is going in the right direction. The 2006 municipal elections resulted in a significant increase in green councillors on otherwise sprawl-friendly councils across the GTA. And we're organizing with these municipal leaders to shift attitudes about planning, to ensure that municipal budgets reflect a green vision and set Green Building Standards for new construction.

Around the world, from Europe to the US, cities are getting greener. We are recapturing our sense of obligation to be sustainable. And along the way, realizing that the way cities used to work was pretty good. We could walk in them, play in them, they brought jobs and culture – and there's no reason why the great cities of yesteryear can't guide our green cities of tomorrow.

Developers often don't like that. They like sprawl and low-density, and still have plenty of friends on municipal councils and elsewhere. But our cities aren't their property. And it's time we got together to build the ecological, vibrant, working and fun cities we all like.

Think of what's coming down the pike. By 2031, the GTA and Hamilton will be home to 2.8 million new

residents. That's like adding another Toronto. York Region is expected to double in population by 2021; Durham and Halton Regions are expected to double their populations by 2031. If we think we have problems now, what about the problems our kids will face then? We could do nothing and let them worry about it. Or we could turn things around and grow more sustainably.

A lot is at stake. Rampant urban sprawl does not just destroy green space. It harms our health and doctors are starting to document, with increasing alarm, how poor community planning and design hurt our health. Thanks to ballooning numbers of cars the long hours of delay drivers experience will triple within two decades.[1] This doesn't only mean longer commutes. It means more vehicle emissions, more air pollution and more greenhouse gas emissions. By 2026, nearly 10,000 people will die prematurely each year as a result of poor air quality.[2] Toss in rising obesity rates and the heart disease and diabetes that sedentary, car-dependent lifestyles bring and we have a problem. Let's try to fix it, by building places that let people get around in a healthy way.

The province has recognized the need for change. In June 2006 it released its Growth Plan for the Greater Golden Horseshoe. It is designed around "complete communities", and promotes more compact development with a mix of homes and amenities, protects green spaces and farms from sprawl, and purports to try to get us out of our cars.[3]

These changes are good, but they're not enough. If we want to really change how and where we build, we must first rethink how communities should look. What we need is a new development paradigm, based on building an "ecological city", where the planet's health and that of citizens are linked. We think that makes sense and are looking for help in getting there – because we're all linked more and more.

What leaves a tailpipe in Newmarket affects someone in Mississauga. If Pickering paves green space, it affects Markham. If Burlington pollutes the water, the Niagara region feels it, too. Climate change and water shortages are global issues to be sure, but the solutions to them are often local. And the challenge we face is how to take the Greater Golden Horseshoe's many different municipalities and get our act together facing a common problem. We say ecological cities are one good way.

An ecological city has high densities and mixed uses. It also invests heavily in "green" infrastructure – from eco-friendly technology in homes and buildings, to supporting public transit and other, cleaner ways to get around. It protects parks and green spaces, and forges ties between farmers and the urban markets they need.

We're not reinventing the wheel here. Many of the features of an ecological city were the norm before the advent of sprawling suburbs. Our culture flows from them, often from Europe's great cities. And many ecological elements can be found in older parts of Toronto. Emulating a big city, with its traffic, skyscrapers and smog may seem an odd rallying cry, but compared to the suburbs, old Toronto is an oasis of ecological sanity. About half of the households in the downtown core don't own cars and the compact

Spadina Avenue at Queen Street West, looking north (1924), City of Toronto Archives.

"The city expresses a people's culture; their likes and dislikes, their aspirations and fears. Culture is linked to tangible and intangible qualities. These include what is remembered, what is valued and their tangible manifestations in how a city is shaped."

Charles Landry
The Creative City: A Toolkit for Urban Innovators

building pattern, with shops, offices and even some manufacturing in close proximity to homes means people get around easier without cars. Ultimately, this compact form should be the goal in each city, no matter what size. The good news is that people just like you want to get there.

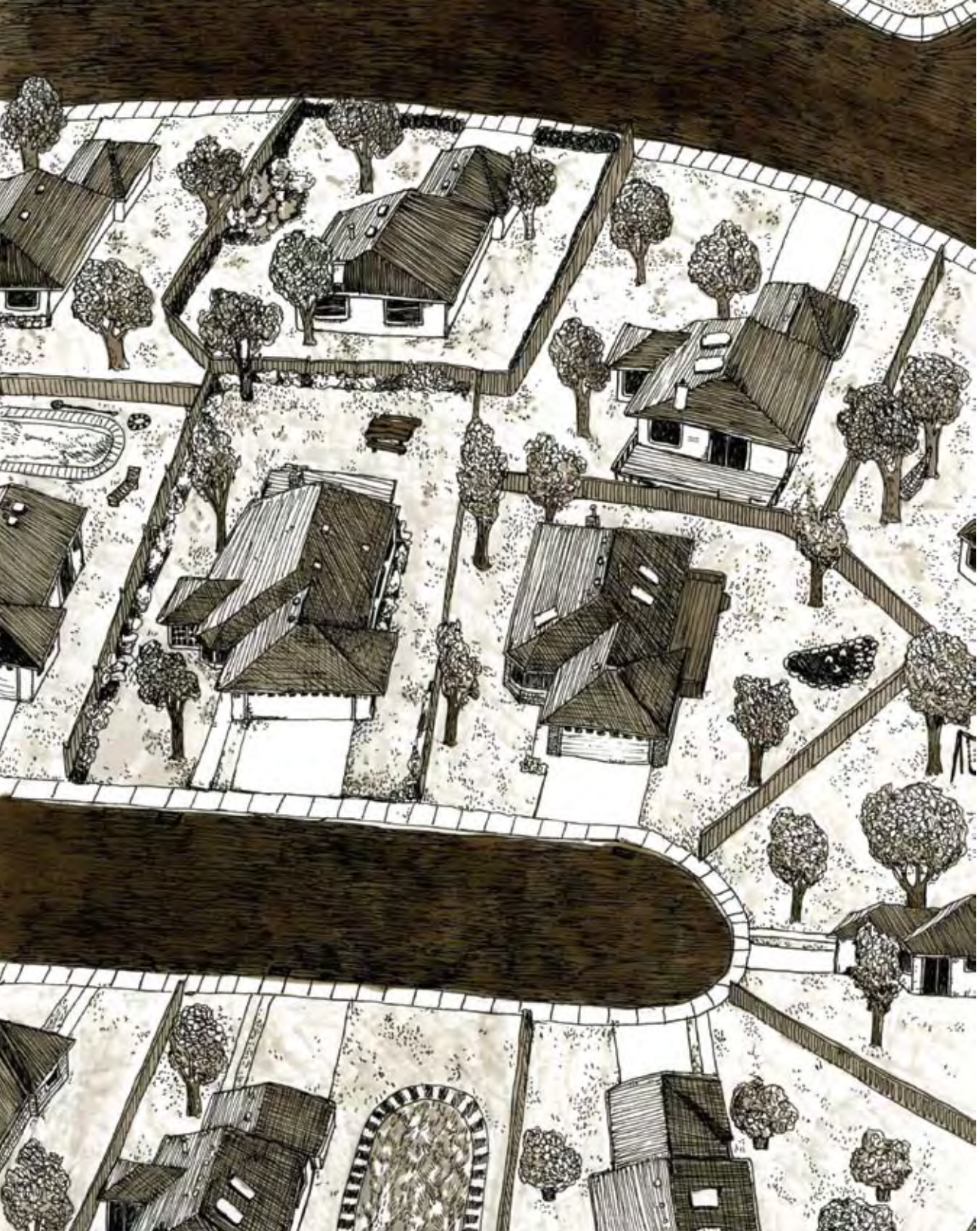
This report explores the practical steps that let us be more sustainable. It includes everything from the super-regional planning scale down to your drainpipe. We make no bones about it: It's a call to create cities where living matters. And what's hopeful is that you can find many examples already working in communities throughout southern Ontario.

However, while many cities are trying to go green, it's a hodge-podge across the region. Piecemeal attempts to introduce "green" ideas within a super-metropolitan area expecting rapid population growth over the next 20 years will do little to prevent a future plagued by unbreathable air, poor water quality and sparse fragmented green space. We don't think that makes much sense. And if you're a councillor, a developer, a planner, an activist – and most important, a citizen – we'd like to invite you to explore how we can do better.

If we want long-term sustainability, we're going to need to plan and design urban centres that live with nature, not compete with it. A city where living matters thrives on diversity and mixed use, with compact neighbourhoods that are vibrant, culturally-rich and connected to natural systems. A place where few people own cars because public transit, walking or cycling are so easy. Citizens of an ecological city aren't energy hogs, water wasters and garbage makers. They live and work in places powered by conservation, efficiency, reuse and recycling.

It's time to broaden the talk about development beyond building codes. Let's talk literature from London, or art from Paris, or romance in Rome. It didn't just happen. It came from the way those cities were built and how they worked. Urban form plays a key role in incubating creativity, reflecting cultural identity and creating the backdrop for life's riches. Throughout *For the Greener Good: Steps we can all take to achieve sustainable communities in the Greater Golden Horseshoe*, quotations from literature, social and political philosophy serve to connect the practical planning and design applications of cities to enduring images, textures and flavours of urban life.

Not because we want to turn the clock back to Nineteenth Century Europe. But to start building the cities and regions of Century Twenty-One. We're in this together no matter what, so let's expand the conversation on how we can make our big neighbourhood a lot more liveable.



Stop

sprawl in its tracks

"Man has been endowed with reason, with the power to create, so that he can add to what he's been given. But up to now he hasn't been a creator, only a destroyer. Forests keep disappearing, rivers dry up, wild life's become extinct, the climate's ruined and the land grows poorer and uglier every day."

Anton Chekhov
Uncle Vanya 1897

Donlands Farm (1911) This area later became Don Mills. *Toronto City Archives.*

One of the first key steps to ecological cities is stopping the relentless spread of urban sprawl. In the GTA, recent assessments show that there is ample land available within existing urban growth boundaries to accommodate growth over the next 30 years. We don't need to sprawl. But strong policies are needed to curb the expansion of low density suburbs on the urban fringes. Instead, growth must be directed inward, to already developed areas. This will protect the valuable farmland and critical green spaces we still have.

Not protecting countryside has hurt the GTA. Only about 17 per cent of the area's original natural cover (which includes forests, wetlands, and coastal areas) remains, and much of it is in poor or fair condition. These losses have increasingly strained the GTA's water courses, many of which are severely degraded, and left little habitat for the region's 110 species at risk. What remains includes the remnants of several rare ecosystems and unique features, such as the beaches and sand dunes along Lake Ontario, tall grass prairie and oak savannah, and rare forests and wetland communities.[4]

Sprawl has also hurt farmland. Southern Ontario contains over half of Canada's most valuable (Class 1) farmland.[5] This land supplies 70 per cent of Canada's tender fruit sector.[6] GTA farmland in particular is incredibly valuable due to the quality of the soil, its high productivity and proximity to local markets.[7] However, these areas are also most appealing for development, and so the GTA's farmland is being lost under housing, roads and shopping malls. Between 1967 and 1999, the proportion of land in the GTA considered prime agricultural land (Classes 1-3) declined from 62 per cent to 44 per cent. If trends continue, only 33 per cent of the GTA will remain as prime farmland by 2010. Once these fertile farms are paved, they're gone forever.

The Ontario government has made considerable strides in protecting natural areas and farmland from unrestricted development, mainly through the Greenbelt that protects 1.8 million acres of land from sprawling development. At a broader regional scale, the province recently released a Growth Plan for the entire Greater

Golden Horseshoe, designed to direct growth away from greenfields and towards existing built-up areas. Both of these initiatives, as well as the greatest challenges to their implementation, are described in more detail below.

The Greenbelt

The Greenbelt is the province's most ambitious and comprehensive strategy to curb sprawl and protect significant natural features and farmland. The area now known as the "Greenbelt" refers to 720,000 hectares (1.8 million acres) of land. It includes the Oak Ridges Moraine and the Niagara Escarpment, two significant natural heritage areas that were already protected by existing legislation.

The Greenbelt protects habitat for species at risk, provides natural linkages for wildlife, and creates recreational opportunities for residents and visitors. It also gives added protection to farmlands within Greenbelt boundaries. The greatest protection is given to specialty crop areas (e.g. tender fruit lands), which generally cannot be converted to non-agricultural uses.

Vegetated sand dunes - Hanlan's Point, Toronto. *Environmental Defence.*

The Greenbelt is split into four planning areas. Three of them – the Oak Ridges Moraine Area, the Niagara Escarpment Plan Area, and the Parkway Belt West Plan Area – have existing land use plans associated with them, and in general those plans continue to apply. The remainder of the Greenbelt falls into the fourth category, the Protected Countryside Area. These lands are designated four ways: (1) the Agricultural System, (2) the Natural System, (3) Parkland, Open Space and Trails, and (4) Settlement Areas. These designations protect sensitive areas from development. Municipalities are required to adhere to them by ensuring their official plans are in line with the Greenbelt Plan.

Despite this monumental success, the Greenbelt still faces many challenges at the municipal level. Some municipalities are trying to skirt these protections and allow development in protected areas. The Ontario Greenbelt Alliance, which represents more than 80 groups, is urging the province to stand by the Greenbelt and take a strong stance against these municipal challenges. Otherwise, we risk losing this spectacular natural legacy.

Challenges for the Greenbelt

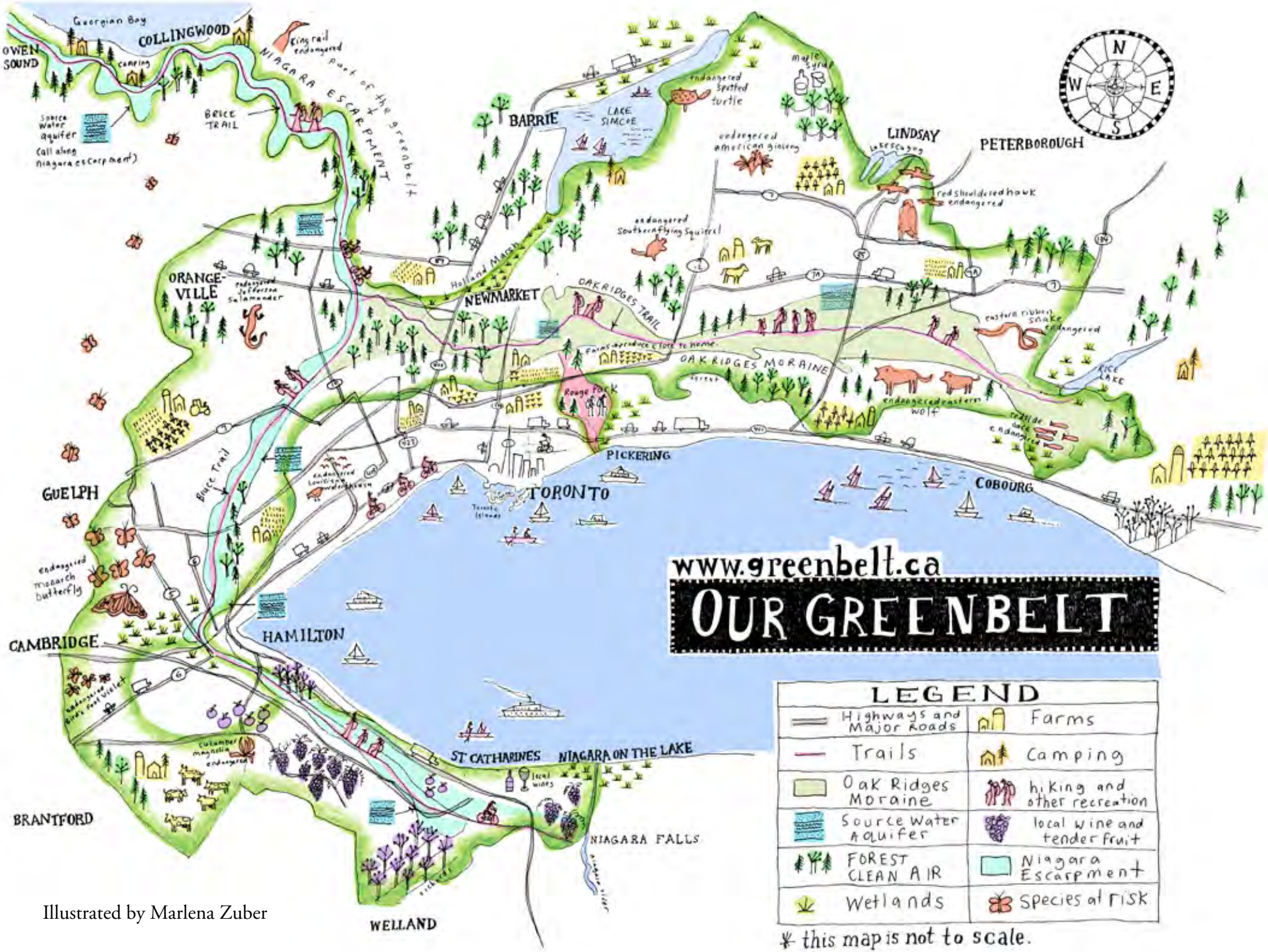
Simcoe County: Simcoe County is one of the fastest growing regions in Canada but was inexplicably left out of the Greenbelt. Lake Simcoe and the surrounding watershed are under threat from unplanned growth; its water quality has deteriorated due to high phosphorus levels. All three political parties passed a resolution in favour of provincial action to protect the Lake. The province has introduced the Intergovernmental Action Plan for Simcoe and the Assimilative Capacity study to address these concerns, but is also content to allow a local solution to develop, with "provincial assistance as needed". Huge new developments in Innisfil and Oro-Medonte are proceeding. The province failed to stop a proposal to pave one of only three natural shoreline areas left on Lake Simcoe at Moon Point, near Orillia. Campaign Lake Simcoe, comprising Environmental Defence, Ontario Nature and the Rescue Lake Simcoe Coalition, is asking all parties to support an immediate freeze on development outside of set-

take action

Lake Simcoe was left out of the Greenbelt and is under intense development pressure. To help protect this lake visit **environmentaldefence.ca**

get involved

The Ontario Greenbelt Alliance, representing over 80 local and regional organizations, is working to protect and promote the Greenbelt. Visit **greenbelt.ca.**



Illustrated by Marlena Zuber

Getting There

Municipal Governments

✓ Commit to fully implementing the principles, targets and boundaries of the *Greenbelt Plan* and/or *Growth Plan* (if applicable).

✓ Identify, link, protect and restore natural heritage systems.

✓ Conduct an inventory of local environmentally sensitive lands, and commit to their protection.

✓ Identify all drinking water sources and protect them from contamination or over-exploitation.

✓ Sponsor a public education program to inform citizens of their role in protecting water.

tlement areas around the Lake, and to develop a long-term plan for the revitalization of this remarkable body of water.

Seaton – Duffins Rouge Agricultural Preserve: The current provincial government inherited this land swap between developers in Richmond Hill and the Province of Ontario and is generally making the best of a bad situation. The swap can proceed, now that the province has defeated several lawsuits targeted at delaying the environmental assessment. Positively, the Central Pickering Development Plan (developed by the province in May 2006) may be Canada's most aggressive attempt to secure green space and Natural Heritage System ("NHS") planning, however the current NHS still does not adequately protect the Duffins Creek. Preservation of four and possibly five ancient aboriginal village sites is also a remarkable (though long overdue) accomplishment. Conversely, the NHS falls short of the 2/3 target established by Premier McGuinty before taking office. Policies designed to protect coldwater streams and core habitats for area sensitive species do not go far enough to address this requirement. Roads and pipes will criss cross the NHS. There is an element of piecemeal planning and disingenuousness by concluding a plan of this scale without determining once and for all the land uses and natural heritage system for the neighbouring 15,000 acres in the proposed federal airport lands to the north.[8]

Mount Nemo, Burlington: A proposal by Nelson Aggregates to mine the Niagara Escarpment for aggregate at Mount Nemo is meeting significant opposition from the local group Protecting Escarpment Rural Lands (PERL). PERL scored a victory in March 2007 when the Ontario Ministry of Natural Resources designated the Grindstone Creek Wetland Complex on Mount Nemo as provincially-significant. While not the only aggregate proposal in the Greenbelt, this controversy shines the spotlight on a loophole of the Greenbelt Act, which still permits mining, petroleum and aggregate extraction on prime Greenbelt lands.

Greenbelts in other jurisdictions

Region of Waterloo: Many areas left out of the Greenbelt have acted to better protect valuable green space. The Region of Waterloo, being one of those left out, have independently approved an Environmentally Sensitive Landscape (ESL) Plan that protects almost 10, 000 acres of the Waterloo Moraine and areas along the Grand River. This will create two new greenbelts to protect important groundwater aquifers, farmlands, natural features and more than 90 rare endangered and significant species.

Vancouver: With a population projection of 7 million people by 2021, Greater Vancouver is growing at a faster rate than many mega-cities in the developing world.[9] Despite this, the city has been relatively successful at expanding without large-scale sprawl. A research report comparing growth in Vancouver and Seattle concluded that, while the two cities experienced similar growth rates, Vancouver maintained a focus on "channelling growth inward into compact neighbourhoods, which consume less land and maintain more transportation options," while Seattle had "grown outward, at the expense of both farmland and transportation choices."[10]

"The rich sweet smell of the hayricks rose to his chamber window; the hundred perfumes of the little flower garden beneath scented the air around; the deep green meadows shone in the morning dew that glistened on every leaf as it trembled in the gentle air; and the birds sang as if every sparkling drop were a fountain of inspiration to them."

Charles Dickens
The Pickwick Papers

stay informed

Environmental Defence issued the second annual Greenbelt Report Card in February 2007. Review the report card and sign up for GreenbeltWatch e-news at greenbelt.ca.

Vancouver's compact development is largely the result of planning programs initiated by the Greater Vancouver Regional District (GVRD) to manage long-term growth. Their Liveable Region Strategic Plan (LRSP) designates a protected "green zone", which includes watersheds, parks and farmland, to act as an urban growth boundary. Additionally, the LRSP promotes compact growth in central areas: "complete communities" with a mix of working and living opportunities, and developing a diversity of transportation options.[11] The provincial Agricultural Land Reserve (ALR) also helped to curb sprawl by ensuring that prime agricultural land was protected.

These policies have had a significant impact on Vancouver's growth. Between 1996 and 2001, 73 per cent of the region's total population increase was accommodated within a central "Growth Concentration Area", not expanded urban boundaries.[12] If Vancouver's development patterns had mirrored Seattle, without growth boundaries, estimates say "all remaining developable land in greater Vancouver, along with four-fifths of the remaining agricultural land, would be covered with tracts of suburban housing."[13] Additionally, the Agricultural Land Reserve has cut the province's loss of agricultural land from 6,000 to around 300 hectares per year.[14] Agriculture is a thriving industry in British Columbia, contributing over $2.2 billion to the economy and providing over 50% of its food.

Places to grow

The Places to Grow Act became law in Ontario in June 2005. It allows the provincial government to designate "growth areas" and develop growth plans for them in consultation with municipalities and other stakeholders. So far, only one area has been designated – the Greater Golden Horseshoe. In June 2006, the province released the finalized Growth Plan for the Greater Golden Horseshoe.

The Growth Plan was designed to promote the development of "complete communities", with revitalized downtowns, a variety of housing types for all stages of life, and more options for working, shopping and playing

Getting There
Public

If you own a rural property…

✓ Find out whether your property falls within the Greenbelt. If it doesn't, call the Ministry of Municipal Affairs and Housing to see if your property can be added.

✓ Find out from your local natural heritage group about conservation easements to protect your land for the future.

✓ Research how your property fits into the watershed and implement best practises to ensure that your activities do not impair water quality or flow.

If you're buying a home…

✓ Look for homes that were built in already developed areas.

✓ Investigate the development policies of the municipality you're thinking of living in – look for signs that the municipality is committed to protecting the Greenbelt, limiting sprawling growth, and protecting water sources.

close to home. One of its principle goals is curbing urban sprawl to protect remaining farmland and natural areas.[15]

The plan relies mainly on intensification targets to curb sprawl. By 2015, all municipalities will be required to ensure that 40 per cent of each year's new residential units are constructed within already built-up areas. The plan also calls for growth to be directed towards designated "intensification areas", which may include urban centres, areas along major transportation arteries or transit stops, or brownfields. While municipalities are free to decide how to achieve this target, they must revise their Official Plans to comply with the Growth Plan within three years.

The plan's target will slow urban sprawl, but not stop it. Much growth will still be allowed on "designated greenfields", mainly rural lands that municipalities have already flagged for future development. Additionally, the province claims that even with the new targets in place, "bringing new lands into the urban envelope will be necessary."[16] As a result, expansion to existing growth boundaries will still be permitted. While the plan requires development in these greenfields to meet stricter density targets, we're still going to be expanding for some time to come.

But expansion is not necessary. A recent study by the Neptis Foundation found that "in most [GTA] municipalities, land already designated as urban in official plans (much of which is currently undeveloped) will be sufficient for urban development until 2021, and in some municipalities until 2031".[17] The provincial estimates are that, if we build for high densities, about 20,000 hectares of land will be needed to accommodate the next 30 years' growth.[18] In the Greater Golden Horseshoe, the amount of land available for development within existing urban growth boundaries is 142,000 hectares, more than five times what's needed! In the GTA and Hamilton alone, around 70,700 hectares are available.[19]

Protecting water sources

Making the connection between the water that pours from our taps and the lakes, rivers or underground aquifers where its journey starts is a stretch for many. People are equally unaware that our drinking water sources are often chronically under-protected, and subject to mounting burdens of pollution and overuse. Sprawl makes that burden heavier. The relentless spread of paved surfaces increases the amount of urban runoff reaching local water bodies, and far flung suburbs put mounting pressure on our water supplies and infrastructure.

As source waters become increasingly degraded, the cost of treating them for public use rises. And, sadly, we know drinking water treatment systems can fail. Without proper source protection, treatment systems are left vulnerable to contamination, and can be easily over-

stay informed

Find out about source water protection at **thewaterhole.ca**

"She went outside and set off in the direction of the embankment. She wanted to see the Vltava. She wanted to stand on its banks and look long and hard into its waters, because the sight of the flow was soothing and healing. The river flowed from century to century, and human affairs played themselves out on its banks. Played themselves out to be forgotten the next day, while the river flows on."

Milan Kundera
The Unbearable Lightness of Being

whelmed. Tragedies like Walkerton's, where seven people died from bacterial contamination of water, can no longer be considered preventable through treatment alone.

The new Ontario Clean Water Act, passed in October, 2006 is designed to protect existing and future sources of drinking water. An assessment of threats to drinking water will first be conducted by a multi-stakeholder Source Protection Committee in each watershed, followed by an action plan to be approved by the Ontario Ministry of the Environment. Municipalities will be obliged to implement the action plans and incorporate the protection of our drinking water sources into their Official Plans. While environmental groups are generally positive about the new law, it needs to be reflected in strong policies and action at the watershed level to do the job right.[20]

Many municipalities, fed up waiting for province-wide laws, have begun their own water protection work. In 2003, the Region of Waterloo won an American Water Works Association award for its efforts in source protection. The region's Water Resources Protection Strategy, first implemented in 1994, led to the establishment of Wellhead Protection Areas to restrict certain activities around them, as well as targeted education and awareness campaigns for rural residents and area businesses.[21]

Getting There

Provincial Government

✓Do not approve municipal land use decisions that are not in keeping with the *Greenbelt Plan* and/or *Growth Plan*

✓ Direct funding for infrastructure only to those municipalities who have committed to implementing the *Greenbelt Plan* and/or *Growth Plan*

✓ Expand the Greenbelt into areas like Simcoe, Northumberland and Wellington Counties and Waterloo Region.

✓ Complete the mapping of natural heritage and key agricultural lands in the Greater Golden Horseshoe.

✓ Ensure viable connections between natural areas within the Greenbelt and through an extensive system of greenways throughout southern Ontario.

✓ Develop and implement a comprehensive strategy for the management and conservation of the province's aggregate resources that would maximize use of substitute materials and reform the Aggregate Resources Act to provide better oversight of aggregate operations and better protection for natural areas, including the Greenbelt.

✓ Reform the Conservation Authorities Act to strengthen the mandate of the authorities and ensure that both the authorities and municipalities have the means to undertake and implement proper planning.

✓ Monitor the progress of municipalities and conservation authorities in implementing the Greenbelt Plan and smart growth policies intended to curb urban sprawl.

✓ Pass a Lake Simcoe Conservation Act to protect this threatened lake and to ensure sprawl does not simply leapfrog the Greenbelt.

✓ Recognize those municipalities who have demonstrated outstanding commitment to containing their growth and preserving the natural heritage in their surrounding countryside by establishing a yearly awards program.

✓ Ensure that vulnerable water sources are protected immediately while source protection plans are being created at the watershed level.

To market,
to market
to buy a ...

"He went to the lane where the vegetable vendors congregated. Their baskets and boxes, overflowing with greens and legumes and fruits and tubers, transformed the corner in a garden. French beans, sweet potatoes, coriander, green chilies, cabbages, cauliflowers bloomed under the street lights, hallowing the dusk with their colour and fragrance."

Rohinton Mistry
Family Matters

Locally grown food, Kensington market, Toronto. *Environmental Defence.*

Cities and rural areas need each other. Badly. A healthy city can't sustain itself without what a vibrant countryside grows, and rural areas need local urban markets. The majority of the produce purchased in an ecological city should be grown in the region around the city. However, in the GTA, instead of fostering this relationship, we squander a valuable resource by being increasingly dependent on imported food while converting farms and green space into sprawl. To improve, we need strong policies and programs that support local farmers and encourage environmentally sustainable farming practises.

Southern Ontario contains some of the richest and most unique agricultural land in Canada. Within the GTA, agriculture is a billion-dollar industry, creating almost 34,700 jobs. But it's all at risk from sprawl.

In 1967, 62 per cent of the GTA was considered prime farmland (Classes 1-3). By 1999, it was 44 per cent. And the demand for land will only increase, as the region's population climbs from 7.4 million in 2000 to 10.5 million by 2031.[22] If trends continue, estimates are that only 33 per cent of today's prime lands be left by 2010. And once it's gone, it's gone for good.

The provincial government does offer some key protection to agricultural land. The Provincial Policy Statement (PPS)[23] was recently updated and now affords stronger, long-term protection to prime agricultural areas. New residential lots cannot be created on prime lands unless connected to a farming operation. It stops urban expansion onto specialty crop areas. However, there are important exceptions. Municipalities can still expand onto prime agricultural land if they argue it's the only way to accommodate growth.

The new Greenbelt legislation also gives added protection to farmlands within Greenbelt boundaries. The greatest protection is given to specialty crop areas (e.g. tender fruit lands), which generally cannot be converted to non-

Getting There

Provincial Government

✓ Develop educational materials for farmers in the GTA thinking of switching to non-traditional products such as 'energy crops' (those involved in biodiesel or ethanol production, or wind energy projects) or specialty food crops to better serve the divetsity of dietary preferences throughout the GTA.

✓ Provide appropriate support to Greenbelt producers through mechanisms such as a new tax regime, or public-private partnerships.

✓ Develop a creative new provincially-funded public education campaign to promote the environmental and social benefits of eating locally.

✓ Reduce overpackaging of food products.

agricultural uses. Prime agricultural areas are also protected from re-designation by municipalities for non-agricultural use until the 10-year Greenbelt Plan review.

Most regional and municipal governments also recognize the importance of rural land and discourage development there. However, these policies are all subject to revision as urban pressures grow. Additionally, some provincial efforts to curb sprawl, including the Greenbelt, have generated considerable resistance at the local level, and some municipalities are trying to develop on agricultural land. As a result, there are currently many agricultural areas in the GTA that are under immediate threat.

Local eating, local growing

Troublingly, there are barriers between local growers and local buyers. Toronto, despite being located in some of Canada's most fertile farmland, imports between 50 and 60 per cent of all its produce from Florida, Mexico and California. Discrepancies also exist in specialty sectors – over 85 per cent of all organic food consumed in Canada is imported, while ironically most organic produce grown locally is exported.[24] What causes us to forgo local products in favour of those shipped thousands of kilometres?

Our dependence is partly due to imported food, paradoxically, often being cheaper than local food. But the environmental costs of a well-travelled meal are high. On average, North American food is consumed nearly 3,000 kilometres away from production. That takes an enormous amount of energy to fuel the trucks and airplanes, all bringing air pollution, including greenhouse gases. It is a vicious cycle. If local farmers can't sell their products at an adequate price, they're more likely to give in to developers' demand for land, bringing more sprawl and less capacity to source food locally.

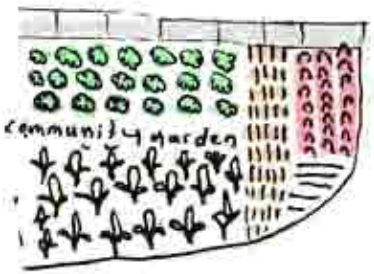
Large cities all over the world are actively supporting local agriculture. For instance, Singapore is self-reliant in meat production, and receives 25 per cent of its vegetables from 7,000 hectares of surrounding farmland. We could do the same – the Toronto Food Policy Council believes that, given proper support, the City could supply 25 per cent of its vegetable needs from within city boundaries by the year 2025.[25]

This support takes two main forms: public education on how and why we should eat locally-grown food, and ensuring local farmers have access to local markets. Government agencies, such as Foodland Ontario, help educate the public. This group runs ad campaigns asking consumers to buy Ontario produce, places Foodland Ontario symbols in grocery stores so customers know which products are local, and holds agricultural fairs to promote local produce to commercial markets and the public.

Another innovative public education tool was developed when a couple in Vancouver decided to procure all of their food from within a 100 mile radius of their apartment. Their experience has become world-renowned, and resulted in a web site full of tips on local eating (www.100milediet.org) and a book, *The 100 - Mile Diet*. Since the campaign

take action

Map your 100 mile diet and get recipe ideas at **100milediet.org**



stay informed

For more information on ecological farming go to the Ecological Farmers Association of Ontario: **efao.ca**

began, dozens of other grassroots groups (and even the National Post) have launched their own "100-Mile Diet" projects. Here in Ontario, the not-for-profit organization Local Flavour Plus (www.localflavourplus.ca) is committed to "certifying farmers and processors who produce food in environmentally and socially responsible ways and linking them with local purchasers."

In the GTA, efforts to help farmers sell their products locally are led by the Toronto Food Policy Council. Founded in 1991, its goal is "a food system that fosters equitable food access, nutrition, community development and environmental health". Its membership includes an innovative mix of city councillors and consumer, business, farm, labour, multicultural, anti-hunger advocacy, faith, and community development groups.

As one of the few urban-rural policy development bodies in Canada, the Council sees food production as an environmental reinvestment, and works with businesses and community groups to promote long-term food security by preserving viable local farmland. While their work is primarily educational, they also advised a number of key planning initiatives, including Toronto's most recent Official Plan. The Council also works to link farmers with both commercial wholesale markets and small neighbourhood markets. [26]

Central Ontario has 44 Farmers' Markets.[27] They range from smaller, seasonal markets to larger, year-round venues such as the St. Lawrence market in downtown Toronto. Municipalities are finding that building or restoring these central farmers' markets, in addition to supporting local agriculture, also helps revitalize communities. The City of London, Ontario, recently rebuilt their Covent Garden Outdoor Farmers' Market as part of their downtown revitalization strategy. Established in 1845, the market is a hive of activity that connects urbanites with the farmers who produce their food. It promotes fresh local produce, community events, local arts and culture, and even produces its own recipe book. Thanks to reconstruction, the market saw a 37 per cent increase in customers between 2003 and 2004.[28]

Courtesy of www.100milediet.org

Getting There

Municipal Governments

✓ Establish a Food Policy Council, similar to Toronto's, to research local food issues and inform planning processes.

✓ Begin actively and creatively promoting local farmers' markets to residents, not just to tourists, highlighting the environmental benefits of eating locally.

✓ Develop an inventory of local farmers' markets and their 'catchments'. Look for opportunities to revitalize and expand existing markets, particularly in central areas, or establish new markets in areas not currently serviced by one.

Courtesy of Farmers' Markets Ontario Library: This farmer, Milan Bizjak from Beamsville sells at Cambridge, Guelph, Distillery District and East York Farmers' Markets.

Another innovative way to support local agriculture is delivering local produce directly to city homes. Much home delivery has sprung up across the GTA, sometimes run by farmers themselves. Through a Community Shared Agriculture program, consumers buy advance 'subscription shares' for produce from local farmers, providing capital for seeds and supplies at the beginning of the growing season. A 20-week share of the season's produce is delivered weekly to homes and community depots in Hamilton, Burlington, Dundas, Oakville, and Toronto.[29]

Another example is Foodshare, which operates innovative grassroots projects to promote healthy eating, teach food preparation and cultivation, develop community capacity and create non-market-based forms of food distribution. Foodshare runs a "Good Food Box" program, which buys fresh fruit and vegetables directly from farmers and from the Ontario Food Terminal and delivers it to community drop-off points to be picked up by program members.

New approaches to farming

The GTA is a diverse region, speaking more than 100 different languages. This presents Ontario farmers with a glorious chance to diversify crops to cater to a wide variety of urban tastes. Currently, many farmers in Ontario have focused on homogeneous crops, such as potatoes and corn. But close to an urban market that has "over a hundred different ethnocultural groups seeking everything from bok choy to an Iranian barbecue condiment made from sumach",[30] the time is right for governments to provide training and incentives to farmers for switching to new types of specialty crops.

Demand for organic food is another hot growth market. But while the number of organic farms is up, they're still a slice of Ontario agriculture.[31] Adopting organic agriculture can require significant investment on the part of the farmer. This cost can be offset by the addition of alternative products that add value to the crops, such as making jams

"A Farmers' Market is a delightful counterpoint to modern life, a little patch of green in an asphalt city, an oasis of sight and touch and smell in a climate-controlled vacuum-sealed world. Having been eclipsed by the glamour of the supermarket some 50 years ago, farmers' markets are flourishing again… Direct contact is the lure of the farmers' market – direct contact with the growers, with the produce and, if one is lucky, with one's appetite."

Molly O'Neill
"Market Value", New York Times Magazine

stay informed

For the latest consumers information on eating organic, check out the Organic Advocates Consumers guide to Eating Organics at **organicadvocates.org**

or juice from fruit crops. Additionally, the Ontario government, as well as groups like the Ecological Farmers Association, offer support and education for eco-agriculture.

Farmers may also want to consider alternative 'energy crops', such as switchgrass for stove heating pellets, soybeans for biodiesel, or wind farms. Because the base of a wind turbine occupies a small area, land can still be used for planting or grazing. In fact, landowners and farmers can receive as much as $30,000 per 100 hectares by leasing land for wind turbines.[32]

Getting There

Public

When you're buying food...

✓ Eat locally grown, not imported, produce.

✓ Purchase produce when it's in season – it'll be easier to find, cheaper, and more likely to come from local growers.

✓ Use reuseable bins or bags for groceries.

✓ Look for the 'Foodland Ontario' sign in your local supermarket.

✓ Get to know food producers, wineries and farmers markets in your region.

✓ Shop at your local farmers' market, which you can find at farmersmarketontario.com. Or go organic at veg.ca/directory/ and planetfriendly.net/organic.html.

✓ Find a local farmer in the community

✓ Find a shared agriculture program at: greenventure.ca

Keeping

the neighbourhood in mind

"The city is a fact in nature, like a cave, a run of mackerel or an ant-heap. But it is also a conscious work of art, and it holds within its communal framework many simpler and more personal forms of art. Mind takes form in the city; and in turn, urban forms condition mind."

Lewis Mumford

Infill development *Environmental Defence.*

Drawing a "no growth past this point" line around urban areas is one way towards an ecological city. But directing growth inward means little unless we do it right. We must ensure that intensification does not compromise the environmental and quality of life values that make an ecological city, well, ecological.

It's time for new development standards that prioritize higher densities, mixed uses, and redevelopment. The bottom line is that we must build more compactly, ensure that people can work, shop and play close to home, and start revitalizing underused areas to make the most of what land we already have. It could be something great. The Ontario Greenbelt Alliance says if we raise densities and focus on redeveloping already built up areas, we could accommodate growth on lands within existing urban boundaries for the next 45 to 60 years.[33]

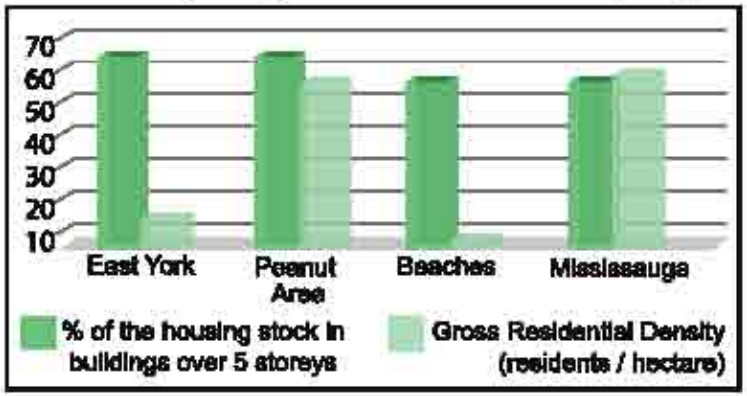
Understanding density and mixed uses

Understanding density is one of the greatest challenges in building ecological cities. While building for 'higher densities' may seem intuitively simple, several different kinds of density can be measured, and understanding which type of density should go up is key.

Residential density describes the number of residents in a given area. In Toronto, average residential density is more than 3,500 people per square km, while areas like Durham, Halton and Peel are around 1,700. In many suburban areas densities are lower still. In Halton Region, for example, new subdivisions generally contain an average of 22 dwelling units per hectare, while many older areas (such as Oakville) were developed at densities between six and 17 units per hectare.[34] To achieve ecological cities, residential density must be increased, with an average of at least 50 units per hectare in suburbs.

However, high density does not necessarily mean high-rises. Compact form without resorting to high-rises can be achieved if the focus is on gross residential density rather than net residential density. High-rises may achieve high net density by stacking a large number of dwelling units vertically on a building lot, but when those high-rises are situated within a landscape of massive parking lots, wide streets and highways, they produce low gross density. As a result, high-rise nodes sometimes contribute little to an increase in general density. While high-rises may be ap-

Table 1: Comparing Densities and Building Heights



Office of the Greater Toronto Area, 'Urban Density Study', Technical Report, Lehman Associates, IBI Group, Hill & Knowlton, Decima Research 1996.

Above: High density does not mean high-rises. High densities can be achieved through smaller lot sizes, attached houses and townhouses, and low-rise apartment buildings. *Environmental Defence.*

propriate solutions sometimes, deciding whether they're right needs to take into account how they use land around them.

Toronto has much high-density without high-rises. In older parts of the city, it comes through smaller lots, more attached houses and town houses, and low-rise apartment buildings. For example, East York has a gross residential density of 63 residents per hectare, yet less than 12 per cent of its dwelling units are in buildings higher than five storeys. In contrast, the Peanut area at Don Mills and Sheppard is dominated by buildings above five storeys (which contain 55 per cent of its units), but the gross residential density is the same as East York.[35] A similar contrast exists between the high-rises of Mississauga Valley and the area known as the Beach on Toronto's east side – the same gross densities are achieved, but the landscapes are radically different.

Employment density calculates jobs, just like residential density counts homes. However, it is often expressed as the amount of commercial land (including building lots, parking areas, etc.) used per worker. On the urban fringes of the GTA, one job takes up seven times more land on average than in the core. This discrepancy is due to suburban areas developing through sprawling, low-rise buildings, warehouses and box stores, with wide spaces between buildings and huge tracts for parking and roads. It's made worse by lower suburban property taxes and more available land. In contrast, high employment density means multi-storey, compact buildings that have little between them, sit on smaller lots and face the street, with little if any space devoted to ground-level parking.

In the context of an ecological city, the most useful indicator of successful, high-density, mixed-use areas is gross combined density (GCD). GCD is the number of jobs and residents in a given area. Areas with high GCD help residents, who enjoy quick access to services; and businesses, which rely on local customers. Furthermore, having residential and commercial areas in close proximity promotes

"The grey warm evening of August had descended upon the city and a mild warm air, a memory of summer, circulated in the streets. The streets, shuttered for the repose of Sunday, swarmed with a gaily coloured crowd. Like illuminated pearls the lamps shone from the summit of their tall poles upon the living texture below which, changing shape and hue unceasingly, sent up into the warm grey evening air an unchanging unceasing murmur."

James Joyce
Dubliners

"Though proclaimed as offering the best of both rural and urban life, the automobile suburb had the effect of fragmenting an individual's world. As one observer wrote: "A man works in one place, sleeps in another, shops somewhere else, finds pleasure or companionship where he can, and cares about none of these places."

Ray Oldenburg
The Great Good Place

Typical car focused, residential suburb. *Environmental Defence.*

walking and cycling, which improves air quality and reduces the need for parking.

Throughout the suburbs, new developments may boast high net residential densities, but without nearby jobs and efficient land use, these developments only perpetuate sprawl. Achieving better densities means better understanding it, so numbers that look good on paper also feel good on the ground.

Because of these distinctions, the provincial Growth Plan for the Greater Golden Horseshoe has set density targets in terms of GCD, not simply residential or employment density. The plan sets GCD targets of 400 residents and jobs per hectare for urban growth centres in Toronto, and 150 to 200 for suburban centres. New developments in designated greenfields must meet a GCD target of 50 people and jobs per hectare.

A new vision for development

How cities build is determined by development standards – municipal tools that guide the design of neighbourhoods and cities. They typically mean things like lot sizes and frontages, scale and height of buildings, building types, street widths, location of utility lines, and open spaces and parks. Though development standards refer to seemingly technical considerations, these design elements of our neighbourhoods determine the vitality of the places where we work, live and play.

The conventional car-dominated, repetitive and sprawled-out urban development pattern is the result of poor development standards. Tracts of identical single-family houses become monotonous for pedestrians and cyclists who also face significant barriers in sparse, disconnected sidewalks amidst loopy streets and wide, busy arterial roads.

Alternative development standards essentially start with a different vision - neighbourhoods that integrate natural features, a diversity of buildings, and lively commercial areas through a network of walkable, well-connected streets. When everything's close-by, people leave their homes and cars and enter streets to interact with their neighbours and be physically active. Every element is designed with well-being in mind – environmental, physical, and psychological.

The alternative approach to development, as well as making communities more liveable, also brings significant financial benefits, in savings for infrastructure and services. The more land a neighbourhood takes up, the more it costs to provide infrastructure (sewer and water pipes, power lines, roads, etc.) and services (emergency services, garbage and snow removal, transit, etc.). If it is low density, the cost per household of maintaining the pricey infrastructure is higher.

The Canada Mortgage and Housing Corporation recently quantified the potential cost savings that could be realized in the GTA from building to alternative standards.[36] Its study found that alternative standards lower costs of infrastructure by 16 per cent, or $5,300 (1995 dollars) per unit. Infrastructure replacement, and operating and maintenance costs are cheaper by almost 9 per cent, or nearly $11,000 per unit over 75 years.

Another study conducted by the Greater Toronto Task Force (GTTF) in 1995 concluded that more compact urbanization in the GTA would save (in 1995 dollars) approximately $700 million to $1 billion per year in infrastructure and external costs.[37] External or 'hidden' costs of sprawl include illnesses from air pollution, time lost in congestion, traffic accidents and policing, noise and the economic damage of climate change.

Barriers to alternative development

Making an ecological city requires tools, to let sustainable neighbourhoods add up to a sustainable city and region. Everything from zoning bylaws to how citizens can participate in decisions can either create obstacles to opportunities for implementing sustainable development alternatives.

A study by the Neptis Foundation found that, contrary to popular notions, in some instances the development industry has expressed a "willingness and desire to both implement smart development projects and to innovate, but expressed a frustration with the many current obstacles that prevent them from doing so".[38] The obstacles the study highlighted included:

Local Planning: Effective local planning within a region is key, but often municipal plans, zoning bylaws and engineering standards are the biggest obstacles. In the GTA, getting approval for something can take years, and municipal authorities don't always allow high-density, mixed use areas, or alternative forms and infrastructure designs. In a comprehensive review of outdated policies, municipalities should ensure that local planning is flexible and allows for the redevelopment and intensification of neighbourhoods as they evolve over time.

take action

When an unsuitable development threatens your community, start organizing! Consult your neighbours, contact your municipal councillor and attend public meetings. Find resources to get you started at **GreenOntario.org**

Table 2: Savings from Compact Development in the GTA

Expenditure	Savings (in 1995 dollars)
Capital infrastructure (roads, sewers, etc.)	$1 to 16 billion over 25 years
Operation and maintenance of infrastructure	$2.5 to 4 billion over 25 years
Total expenditures, including known external costs (air pollution, emissions, health care, traffice policing and accidents, time lost in traffice congestion, land costs, etc.)	$700 million to 1 billion per year, or ***$17.5 to 25 billion over 25 years***

Greater Toronto Task Force Study (1995)

"The television studio is located way up in the 'burbs of Toronto. She is the last one out, as usual. She says good night to the security guard and exits into the street-light sharpness of the April night, the hard gloss of manicured grounds, "street," makes it to the other side and sets out across the parking lot of an immense mall which, like a mountain, seems to get no closer with her approach, as though she were moonwalking in place, until suddenly it's on top of her and she can no longer see the entrance."

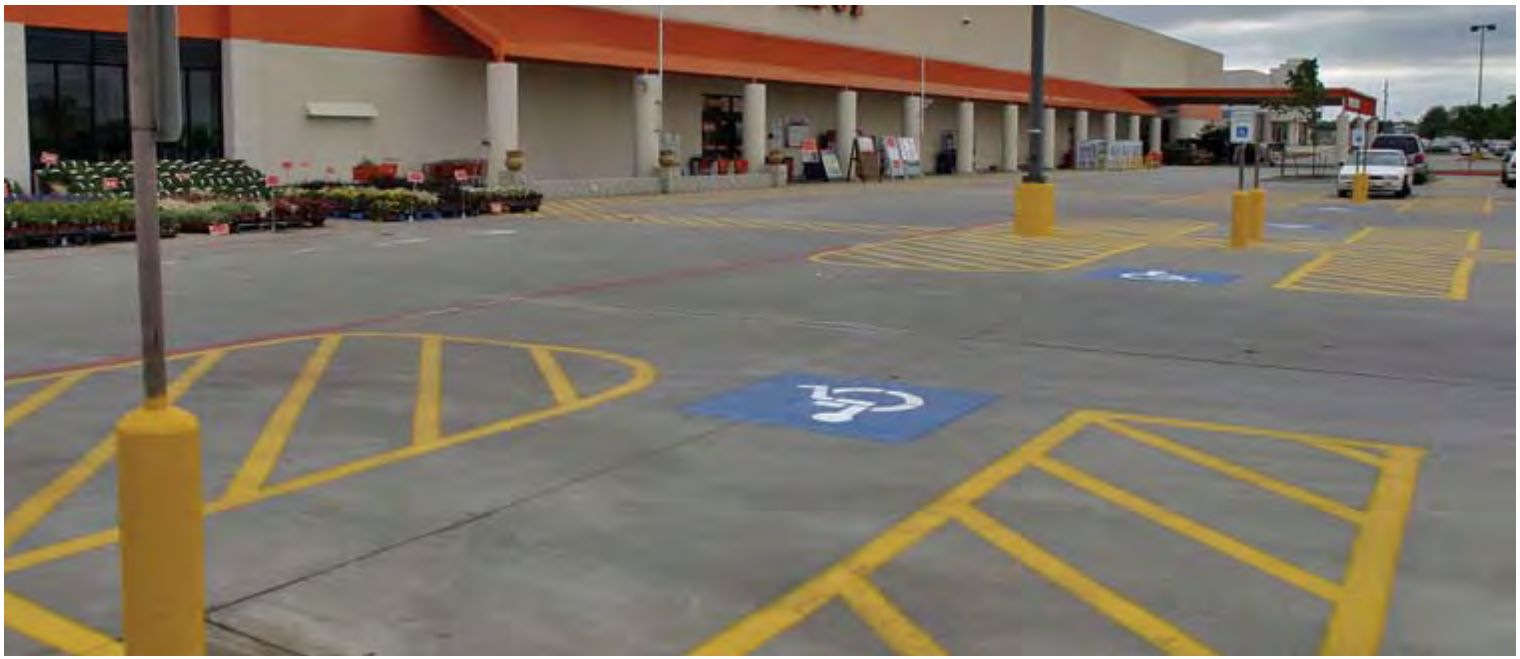
Anne-Marie McDonald
The Way the Crow Flies

Transit: Public transit is central to building better and more compactly. For developers to take the risk of building at high-densities, investment in public transit must coincide with development, rather than exist as a promise to be fulfilled in the future.[39]

Parking: The Neptis Foundation repeatedly highlights parking—specifically "land-consumptive surface parking",[40] as the most significant impediment to alternative development standards. Surface parking is extremely wasteful land use, and results in a significant increase in pavement. This stops rainwater replenishing the vital groundwater, or aquifer, it covers. Massive parking lots also make walking less appealing by increasing the distance by foot to reach the door of a store; in many cases just crossing the parking lot from the sidewalk to the front door can take a few minutes. More progressive parking strategies include:

- ✓ providing structured parking facilities in strategic growth locations through municipal parking authorities;
- ✓ allowing on-street parking;
- ✓ encouraging shared parking, particularly in mixed use areas; and[41]
- ✓ reducing parking requirements for new develpments.

Municipal Financial Tools: Municipal financial tools are currently being applied, inadvertently, to encourage sprawl by making low-density developments cheaper to build than high-density. For example, development charges, which cover the costs of building the infrastructure to support new developments (i.e. roads), are currently applied in a 'one-price-fits-all' manner.[42] To support alternative development standards, these charges should depend on how dense a development is and where it's put, which would



Suburban parking lot. See Creative Commons. [ii]

require municipalities to have a "'true cost' based development charge."[45] Similarly, some user fees could be pegged to the cost of providing the service, which also depends on the density and location of development.[44]

Municipalities can also use property taxes to support alternative development. Unfortunately, today's property tax structures tend to support low-density developments in ways such as charging apartment buildings higher tax rates than single-family homes, and by levying higher subsequent tax rates on investments that increase the value of a property (i.e. by converting a parking lot into a building).[45] To eliminate the property tax incentive for low-density development, recent research suggests they should be shifted from buildings and onto the land, so that "building sprawl would become more expensive than building infill."[46] This "land or site-based" property tax could be implemented gradually through a "split and shift" process where "the rate for buildings would be reduced and the rate for land increased to make up the difference."[47]

Finally, municipalities can use their financial powers to support alternative development by putting major public facilities in strategic growth locations, to let these government buildings to be catalysts for stimulating further development in the area.[48]

Public Opposition: Obstacles to alternative development standards sometimes come from people putting their foot down against newer ideas. Often, residents fear that the intensification of their neighbourhoods will hurt the quality of life.[49] For instance, residents may be concerned about increased traffic, loss of privacy, changing resident demographics, aesthetic degradation and impacts on their property values. Fearful residents may present a strong opposition to the good intentions of local municipal authorities and developers.

Public support for alternative development standards can be fostered, though. First, the region must develop an educational campaign that lets people know the true cost of low-density developments, and the benefits of high-density. Second, municipalities must develop a public consultation process to give residents some control over how their neighbourhood develops. Public consultation will also help to ensure that the neighbourhood design reflects the preferences of the people who live there now.

Getting There

Public

If you're buying a home...

✓ Look for homes that were built as part of an intensification or redevelopment project.

✓ Look for neighbourhoods with a high degree of mixed use – where residential, commercial and recreational areas are all within close distance.

In your home or neighbourhood...

✓ Consider adding a secondary suite to your home as a way to increase density in your area and generate extra income for your household.

✓ Take stock of any open or underused lands in your area (such as parking lots, strip malls, or abandoned buildings) and support proposals to intensify or redevelop those lands.

✓ Learn about the environmental and social benefits of new developments in your neighbourhood. Take part in a public design charette (workshop) .

Rebuilding within the city

The standards of an ecological city should not be applied only to new developments. Throughout existing urbanized areas in the GTA, there is a stockpile of underused lands that could be rebuilt better. Around Toronto, there are about 23,000 hectares of land that could be used for redevelopment.[50] At optimal densities, these lands alone could

accommodate all the growth expected in the GTA over the next 30 years.[51] Redevelopment on already-urbanized land reduces the need for new infrastructure, and can bring new life to unused areas of the city.

Redevelopment is still not common in the GTA, particularly in suburban parts. In 2001, residential development statistics for the four regions surrounding Toronto showed that only 3 per cent of new residential units were slated to be built on already urbanized land.[52] In the Region of Peel, one of the most sprawling municipalities, there were next to no applications or plans for residential development on already-urbanized land.[53]

Not all underused areas are appropriate for intensive redevelopment. According to the Neptis Foundation, redevelopment should be directed primarily to areas where there is a social need for greater varieties of housing and employment, where there is a supportive urban form (i.e. mixed use is already there), with existing infrastructure and schools.[54] Focusing redevelopment on these sites ensures the success of projects, while also providing significant social benefits and lowering the costs associated with land and services. Based on these criteria, the Neptis Foundation suggests that significant redevelopment opportunities exist in Niagara Falls, St. Catharines, Hamilton, Kitchener-Waterloo, Oshawa and Toronto.

Infill development. *Environmental Defence.*

The most common candidate lands for redevelopment are called greyfields and brownfields. These areas, if properly rebuilt, create ample opportunities for residential and commercial developments. They are often seen as vacant lots, abandoned industrial lands or empty warehouses, but also include low-density retail strips, and even surface parking lots.[55]

Long arterial roads of strip malls and parking lots, aptly called greyfields, are the poster child for underused lands. But with innovative planning, they can be rebuilt into true main streets, with a mixture of commerce and housing. Lively main streets have compact buildings that are a few storeys tall and face the street. Such main streets can be made attractive to residents and profitable for landowners, and they are also better designed to invite use of cycling and public transit. Intensification of these commercial strips and light industrial areas in the GTA suburbs could reduce the amount of land needed for urbanization in the next 30 years by 18 per cent.[56]

Brownfields are abandoned or underused properties that are or may be environmentally contaminated by past industrial or commercial activities – dry cleaners, gas stations, rail yards, and industrial properties. Around 10 to 15 per cent of vacant industrial sites in Toronto and Hamilton are considered brownfields.[57]

Since brownfields are often found in urban areas with access to infrastructure and services, there are economic, social and environmental wins in converting them to residential and commercial uses. However, brownfield redevelopment is more complex than greyfield due to the potential health and safety concerns that accompany contamination. For redevelopment to occur, the extent and type of site contami-

Getting There

Provincial Government

✓ Do not approve Official Plan Amendments for greenfield developments, or infrastructure projects designed to service new greenfield developments, until municipal density and redevelopment targets are met.

nation must be determined, and if it is necessary, cleanup activities must be completed. A variety of technologies are available for remediation. These include recent innovations like phytoremediation, which uses plants to clean soil of metals, solvents, pesticides and other contaminants and lowers the costs of remediation, thereby making it cheaper to decontaminate sites.[58]

In Ontario, the Ministry of Municipal Affairs and Housing has recognized the role brownfields will play in revitalizing our communities and containing sprawl. It has developed the Brownfields Showcase program "to assist municipalities to identify a range of potential finance, liability, and approval tools available to support planning and redevelopment activities and to highlight the benefits [of brownfields]".[59] Financial tools that can be used to encourage redeveloping brownfields include loans and grants, tax increment equivalent financing and waiving municipal fees. Liability tool options include environmental liability agreements and insurance, and technology databases. To ensure site investigation and cleanup processes move forward quickly, planning and environmental processes can be streamlined, mainly in approving applications.[60]

Redevelopment can also occur within existing homes through the creation of secondary suites, which are essentially self-contained apartments.[61] Secondary suites are an effective way to increase densities and supply the demand for affordable rental housing. They also provide a revenue source for homeowners, and can reduce the carrying costs of a mortgage by up to 25 per cent.[62] In cities like Toronto and Vancouver, these units make up about a fifth of the rental stock.[63]

To help develop secondary suites, zoning and building codes must be updated to legalize these units and provide appropriate safety standards. Secondary suites can be permitted by updating bylaws to allow them in either all single-family homes or in designated zones or specific sites.[64] Municipalities can also support residential redevelopment by setting up programs and funds for acquiring or rezoning 'for sale' homes that can be rebuilt or renovated into multi-dwelling buildings and/or minor commercial units.

Redevelopment in practice

Many examples of redevelopment projects and policies in urban and suburban areas across Canada illustrate the viability and attractiveness of intensifying our already urbanized areas. The examples presented below provide lessons that can be applied in the suburbs of the GTA as municipalities undertake a transformation process that will rejuvenate communities and protect the countryside.

Infill development. *Environmental Defence.*

get involved

You can participate in the urban design and planning process in your community by attending public design "charettes" or workshops. Contact your councillor to find out what is planned for your neighbourhood! Check out Environment Hamilton's People-Powered Planning project at **environmenthamilton.org**

The revitalization of a main street in Ottawa came through the Parkside Mews redevelopment project, which involved the site conversion of a commercial florist, rundown greenhouses and four underused residential buildings with 17 dwelling units. The completion of this residential infill project yielded 31 freehold townhouses, six condo apartments, and eight commercial units designed for specialty shopkeepers. The City of Ottawa supported this project through the exemption of development charges and building permit fees, and relaxed zoning requirements.[65]

Spencer Creek Village, Dundas: In downtown Dundas, Ontario a highly contaminated site of a former foundry is being cleaned up and redeveloped into a mixed use residential and commercial area. The 12-acre site lies just behind the main street, and will become an adult lifestyle community with 398 residential units, 100 retirement units, medical services, a clubhouse and community centre facilities. Approvals for the project involved an Official Plan amendment, rezoning, and a subdivision proposal. It's win-win: housing units that use existing infrastructure, new public walkways, elimination of contaminated soils, higher property tax revenues, and a boost to the local economy.[66]

Waterfront Revitalization, Toronto: One of the primary redevelopment challenges for the City of Toronto is the reclamation of is waterfront from its industrial past. The Toronto Revitalization Corporation, a joint initiative of the federal, provincial and municipal governments was established to make the waterfront more attractive and accessible to residents. The Corporation has indicated a commitment that the project will reduce urban sprawl, develop sustainable communities, build more affordable homes and create more parks and public spaces.[67]

Getting There

Municipal Governments

✓ Establish density targets primarily according to gross combined density (GCD), and ensure the targets are, at a minimum, consistent with those in the provincial *Growth Plan.*

✓ Do not approve more greenfield development proposals until density and redevelopment targets are met in already developed areas.

✓ Apply development charges and user fees according to the true cost of a development, based on its density and location, and not in a 'one-price-fits-all' manner.

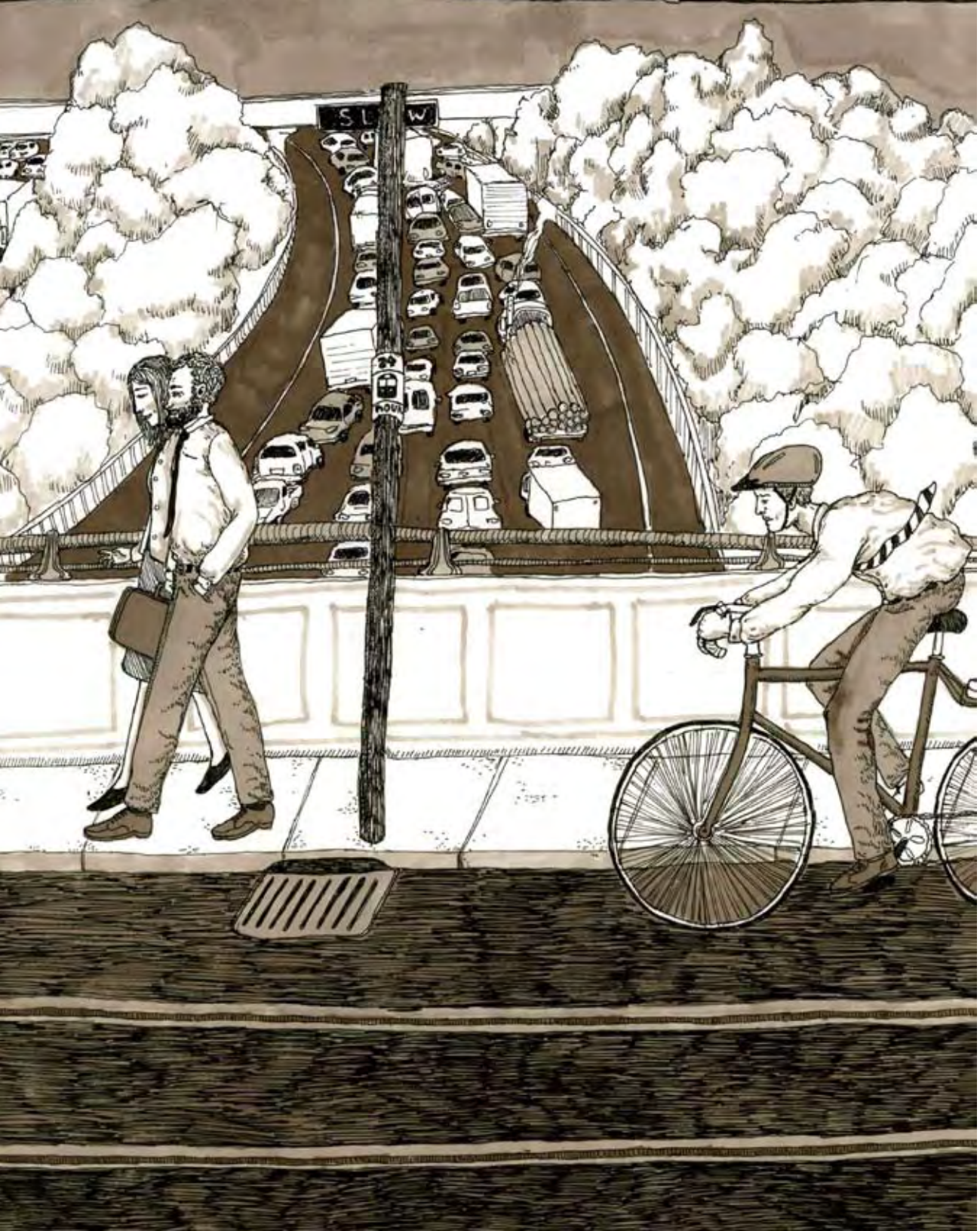
✓ Implement a land or site-based property tax system that supports high density development.

✓ Develop inventories of greyfields and brownfields, along with policies and financial incentives to support their redevelopment.

✓ Ensure bylaws and building permits allow the development of secondary units in existing residences, and establish an education and financial support program for homeowners interested in renovating their homes to include secondary units.

✓ Develop a public education program to highlight the need for and benefits of intensification and redevelopment.

✓ Make developers initiate public design charettes so new neighbourhoods represent the vision and needs of the larger community.



Please...

step away from the car

"Countless levels of conveyance spanned the river to join the downtowns of Brooklyn and Manhattan. I knew that we were traveling beneath a wooden walkway, though I could not see it from the train, and that beneath us ran cable cars and streetcars, and below or beside them horse-drawn vehicles and motor cars…"

Wayne Johnston
The Navigator of New York

The sustainability of a city depends not only on its built form, but also on the transportation options its citizens have. If they all travel by car, the price we'll all pay is huge. Within Toronto, transportation is the leading source of total air pollutants,[68] which contribute to about 1,700 premature deaths and 6,000 hospital admissions a year.[69] Ontario experienced a record 53 smog advisory days in 2005,[70] including its earliest ever, in February. There is also the menace created by burning fossil fuels and adding carbon dioxide to the atmosphere, contributing to global warming.

Car dependency also brings a huge price tag. Congestion costs the GTA $2 billion annually in lost productivity.[71] The cost of commuting is so high that lower housing prices in outlying areas are actually offset by greater travel cost[72] - meaning moving to suburbia for a cheaper home might be more expensive thanks to travel and maintaining two or more cars. Our transportation habits are also hurting our health. Staying confined to cars prevents exercise, as well as interaction with family, neighbours and the outdoors. The Heart and Stroke Foundation has concluded that "our car-dependant habits are killing us". Its 2005 report card stated "car dependent Canadians get far less physical activity and are at increased risk of being overweight and obese."[73]

Furthermore, transportation availability has become a social equity issue. By picking one form of transportation over another, we create discrepancies in who can get to work or school and access other essential services. As a result, decisions made about planning, operation, maintenance and investments in infrastructure can all affect transportation equity.[74]

Environmental Defence.

So what drives us to drive? And what stops balanced transportation that incorporates walking, cycling, public transit, and carpooling/sharing? As we've seen, in part it's because current planning frameworks don't produce high densities, mixed land uses, and street designs needed for better ways to go. But it's more complicated than that.

A mobile city

Getting out of our cars involves more than mustering up some willpower. The reality for much of the GTA is that alternative options aren't around. For generations, cities and towns have been built with a focus on low-density, single-use areas. These areas cannot provide the number of riders that transit services need to be economical, keeping service levels poor – or non-existent. Loopy, cul-de-sac street designs combined with high-volume arterial roads make walking and cycling harder. And everything's spread out, forcing residents to rely on cars for everyday needs, filling existing roadways. Governments are then pressured to fix traffic – roads are widened, or new highways built. As the road system expands, new subdivisions move in, and off we go again.

Planning for mixed land uses, higher commercial and residential densities, and friendlier streetscapes is essential to providing a range of options beyond the car. Mixed land uses mean more amenities are available near residential areas. Shorter travel distances make walking or biking more convenient, while well-designed streets with services available en route make trips safer and more interesting. High densities improve the cost effectiveness of transit by increasing potential riders. Increased ridership can stabilize the frequency of transit service, making it more attractive

"I love walking in London," said Mrs. Dalloway "Really it's so much better than walking in the country."

Virginia Woolf
Mrs Dalloway

"Walking" by Kristin Li.

Bike lane. See Creative Commons. [3]

to off-peak users. Concentrated "activity nodes" – areas incorporating employment, retail, recreational, institutional and residential uses – also make bus or rail more convenient as one trip can serve many purposes. [75]

The effect of density and mixed amenities on car use is dramatic. As a city with high-density levels and more mixed use areas, Toronto has much lower levels of car ownership than York Region, and as a result far fewer trips are taken by car.[76]

Walking

When discussing transportation, it's often easy to forget about the simplest, cleanest and oldest form of travel. Walking is the equal transport – universally affordable and a great bit of exercise to boot. In addition, walking has a negligible environmental impact, and contributes to social interaction and local economic vitality.[77]

The Heart and Stroke Foundation recommends that Canadians be "physically active at least 30 minutes each day" and finds that "individuals living in moderate-to-high-density neighbourhoods that have community and commercial services within walking distance of where they live, are 2.4 times more likely to meet this 30-minute daily minimum."[78] It recognizes the integral link between community design, physical activity and health, and notes that community planning "has become a health policy issue that's critical to protecting human health."[79]

So what does a pedestrian-friendly street or community look like? For starters, smaller blocks and narrower road widths make walking easier by bringing the community back to the human scale. A grid street layout that is direct and simple to understand, as opposed to a maze of loops and cul-de-sacs, shortens travel distances to amenities and ensures they are accessible by foot. Buffers between sidewalks and street traffic make walking safer and more comfortable and can be created using trees, benches, on-street parking lanes, or bike stands.[80] Tree-lined streets with benches also help walkers with rest areas and shade during summer. Obstacles like poorly placed garbage cans, unplowed snow, and especially sandwich boards should be

removed where possible, as they obstruct pedestrians and are hazardous for visually-impaired individuals.

Good street designs make walking safer. The visibility of crosswalks can be improved through zebra-striped paint lines on the street or by varying the paving surface of the road—for instance, laying down a brick pedestrian crossing on an asphalt road has been shown to automatically cause drivers to slow down.

Walking can be further encouraged by setting up permanent pedestrian-only areas. These are a great way to promote street-level commerce, including shopping, dining and entertainment. Over 100 cities world-wide have designated car-free zones, including Copenhagen, Venice, Freiburg, and Prague.[81] In Canada, car-free zones can be found in Montreal (on Prince Arthur St.), Ottawa (Sparks Street Mall Area), Calgary (Stephen Avenue Mall) and Vancouver (Granville St.).[82]

Bikes locked outside 401 Richmond, *Environmental Defence*

Cycling

In Canadian cities, only 1 per cent of all trips are taken by bicycle, compared to 10 per cent on foot, 14 per cent on transit and 74 per cent by car.[83] Clearly, cycling has a long way to go.

The Toronto Bike Plan: Shifting Gears is a comprehensive study of the state of cycling in Toronto and what it will take to increase its popularity. The plan was developed based on extensive surveys of both cyclists and non-cyclists. The primary goals are to double the number of bicycle trips made and reduce the number of bicycle collisions and injuries.[84]

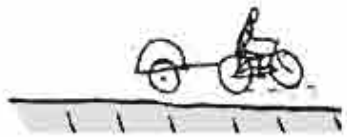
When surveyors asked what could improve cycling in Toronto, the most common request was the creation of more on-street bike lanes.[85] The difference a bike lane can make for cyclists is dramatic – 53 per cent of Toronto cyclists feel comfortable riding on major roads with bike lanes, while only 18 per cent will ride the same roads without bike lanes.[86] As a result, the Toronto Cycling Committee recommended putting bike lanes, 1.5 to two metres wide, on several minor and some major arterial roads.[87] It identified several ways of reallocating space for bikes, including street widening and re-striping.

Cycling's accessibility can be further improved by linking all bike routes together into a comprehensive bikeway network, which could include on-street bike lanes, off-road bike trails and paths, and signed routes. Off-road trails can go through parks, along boulevards of major arterial roads, and run within hydro and rail corridors. Most cyclists also feel comfortable on residential streets, and a bikeway network can incorporate side streets using signed routes.[88]

Cyclists also need somewhere to lock up their bikes once they've gone somewhere. Short-term parking (i.e. bike stands) should be near the entrances of all civic buildings, work sites and recreation facilities. Providing long-term parking (lock-up sites that are more secure and sheltered) is essential for encouraging commuter biking to work or

get involved

Join or start a Critical Mass ride to promote raise awareness about cycling in your community. Our streets don't belong only to cars! Find out more at **critical-mass.org**



"Mornings are like that on the subway trains — everyone having left their sovereign houses and apartments and rooms to enter the crossroads of the city…"

Dionne Brand
What We All Long For

school. These facilities should be provided at transit stations, universities, major commercial areas, and even within existing parking garages.

Public transit

Public transit is a far more efficient means of travel, for energy use, cost to the traveller, or use of space than cars. One bus can carry as many people as 50 cars. A single Go Train carries as many people as 1,400 cars. If those cars were parked bumper to bumper, the line would be seven kilometres long.[89] Less energy use means fewer tailpipe emissions, and fewer cars on the road means less congestion.

Table 3 : Operating Subsidies of Nine North American Municipal Transit Systems

City	Operating Subsidy ($Millions)	Riders (Millions)	Operating Subsidy per Rider
TTC (2004 Probable)	219	417	$0.53
Montreal	269	353	$0.74
Ottawa	111	87	$1.28
Vancouver	289	129	$2.24
Atlanta	312	69	$4.53
Chicago	697	254	$2.75
Los Angeles	968	204	$4.75
New York	2,463	1,825	$1.35
Philadelphia	639	204	$3.13

Nov. 17, 2004 TTC 2005 Operating Budget Submission

Public transit is also an essential public service. People who are too young, too old or cannot afford to drive rely on it as a number one way to go. For people with disabilities, it's a lifeline. As a result, the under-funding of transit is a form of discrimination against low-income individuals, the elderly, the disabled and youth. Funnelling excessive funds towards car-related infrastructure prioritizes the mobility of middle to higher income individuals, while lower-income groups bear a disproportionate burden of the costs associated with lack of transit.[90] It also commits middle-income earners to spending a higher percentage of their net income on car-related costs.

Transit is the underdog of transportation funding, and often absent from the planning and development process. The GTA needs a dramatic reversal in the sequencing of planning: transit should be planned before development. Leaving transportation as an afterthought often leads to trying to serve low-density regions with high-density transit. A "transit first" model would favour a transit-supportive urban structure – high-density, mixed use "activity nodes"; medium density, mixed use activities along the full length of arterial and collector roads; and lower density uses, most likely residential, in between.[91]

Following the example of many cities around the world, GTA municipalities have begun to propose light rail transit as a means of meeting this goal. In 2007 the City of Toronto announced a bold new vision; a Light Rail Plan which will connect the city and give historically underserviced areas access to much better public transit. The cost for over 120 km of new service is roughly $6 billion, money which still has to be found.

Transit accessibility

Making a transit system accessible is necessary for it to become an integral part of transportation. There are several aspects to accessible transit - physical, economic, and overall usability of the system.

York Region's new VIVA transit system provides real-time reporting of the next arrival. *Environmental Defence.*

Physical barriers: Removing physical barriers to transit systems are arguably some of the easiest improvements to make. Lowered streetcars and buses allow easier access for the elderly, people with disabilities, and those with baby carriages, while also speeding up boarding and leaving the vehicle.[92] Underground and elevated stations should be accessible by elevator. Walking distance must also be considered when locating transit stops – generally, transit users are unlikely to walk more than 400 metres. Planning for high densities around transit nodes can alleviate this distance and bring transit closer to the doorsteps of residents.

Transit cost: Cost also plays a huge role in accessibility. Between 1990 and 2001, funding for the TTC was significantly reduced, fares doubled, bus and streetcar services were reduced by 10 and 20 per cent respectively, and as a result ridership dropped by 10 per cent.[93]

Planning for high densities and mixed uses along transit routes can help offset operating costs by improving route effectiveness (the number of people carried per km), and also to the cost-efficiency of the system (cost per km). Average densities of around 4,000 persons per square kilometre (40 persons per hectare) are needed to sustain cost efficient transit service.[94] Residential densities of 30 units per hectare (uph) can generally provide enough riders to support economical transit service. These numbers are based on average density over an extensive area with higher densities in central areas and around transit nodes.[95]

Bringing transit back to the street level can also help cut costs. Originally, the motivation for moving transit underground was to provide more room for cars on streets,[96] but it may not be as economical as once thought. Building transit underground is costlier than street level – constructing underground transit costs 5 to 10 times more than a streetcar line.[97]

Furthermore, contrary to popular belief, underground travel is rarely faster than above; the distance between the street and the platform, as well as the distance between subway stops actually lengthens the time some trips take to complete.[98]

Government neglect of transit funding results in higher fares, which discourages transit use. Government subsidies to keep fares low are a sound public investment because

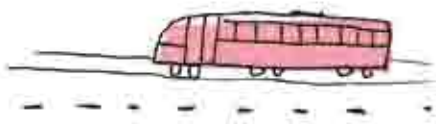
Getting There

Provincial Government

✓ Ensure that the TTC's operating subsidy per rider is comparable to those of other major North American cities – at a minimum it should reach $1 per rider.

✓ Ensure that public transit across the province receives at least 50 per cent of total transportation expenditures.

✓ Overturn all approvals for the extension of highways 404 and 407, as well as any approval for the creation of any new highways.



take action

Join or start a Transit User Group (TUG) and help improve public transit in your community. Check out the TUG in Hamilton at **environmenthamilton.org/TUG** and in Toronto at **torontoenvironment.org/transit/rocketriders**

transit use means mobility for the full spectrum of citizens and fewer emissions of unhealthy pollutants. Despite this, transit isn't often a priority come budget time. As a result, Toronto's transit system receives the lowest operating subsidy per rider out of nine major North American cities, and its fares rose faster than inflation in the 1990s.

In places where transit is seen as an essential public good and that priority is reflected in its level of funding, governments have seen extraordinary returns on transit investments.[99] If transit is to make headway in southern Ontario, governments must recognize these benefits and make transit a priority. Providing fixed capital funding for 50 to 75 per cent of costs is necessary to keep current stock in a state of good repair and replenish older vehicles. Such funding would go a long way towards ensuring good quality transit service, keeping costs low and ridership high. In 2007 over half of Toronto's capital budget is paying to keep transit well maintained and to replace aging vehicles. Both the federal and provincial governments must provide stable ongoing funding for basic transit needs and expansion projects.

Transit usability

Countless innovations in transit design and technology now exist that can help ensure a system is convenient, easy and comfortable for riders. These include:

- ✓ dedicated lanes for street-level transit vehicles;[100]
- ✓ traffic controls that ensure green lights for transit vehicles at intersections;
- ✓ real-time reporting of when the next streetcar, train or bus will be arriving at a stop; [101]
- ✓ night service with 'Request a Stop' to improve safety of riders after dark; [102]
- ✓ affordable (or free) parking lots at outlying transit stations to promote "Park and Ride;"
- ✓ free transit service to major events;
- ✓ flexible ticket options, such as day-long or weekly passes and regional passes that allow the user to access multiple transit systems; and transit-recreation packages that include the cost of admission to particular destinations (e.g. city swimming pools);
- ✓ bike racks on transit vehicles; and,
- ✓ transferable monthly passes that let people within the same household use the same pass.

Creative car use strategies

Increasing the attractiveness and accessibility of walking, cycling and transit is only half the battle. If real progress is to be made, car use must be actively discouraged, so that it becomes a traveller's last resort. This ensures that whenever cars must be used, they are used in the most economical way possible. Many European nations have adopted this approach by reducing parking availability, charging high parking fees in core areas, reducing car lanes, lowering speed limits, restricting the types of cars allowed downtown and charging road tolls at highway entry points. The results of these programs, when combined with transit investment, create cities that are "very easy to get around in…where

Autoshare lot. *Environmental Defence.*

automobile use is discouraged but overall mobility is extremely high".[103]

In a recent report, the Neptis Foundation highlighted ways to help regulate car travel in the GTA: road pricing and parking fees. Road pricing (or tolls) can influence a driver's choice of route, mode and/or departure time by varying the price according to the time of day or the amount of traffic on the road.[104] High parking fees have already been shown to increase transit use in Toronto, since a two-way transit trip is often significantly cheaper than a day-long parking fee. The reduction of free parking throughout the suburbs at business parks, box stores, and strip malls could also help bring more options to more people.[105]

When cars must be used, they should be used in the most economical way possible. Carpooling and sharing are the easiest way. When five cars become one, gridlock is eased, emissions cut, and carpoolers save money and avoid stress. A number of innovative carpooling programs have sprung up across the GTA, such as the Smart Commute Association of Black Creek. These programs assist employers in setting up carpool programs for their employees through ride-matching web site services such as Carpool.ca. Employees who participate are guaranteed an emergency ride home if need be, and get hints on how to organize insurance and cost-sharing when setting up carpools.[106] Municipalities can do their part by starting their own carpool programs for employees and putting high occupancy vehicle (HOV) lanes on major routes.

Car sharing is an innovative approach to personal transportation; it provides instant, self-serve access to a network of cars throughout a city, 24 hours-a-day, through a convenient pay-per-trip system. Car sharing is ideal for those who don't need a car every day. Individuals and companies can sign up with a car sharing organization, and any time they need access to a vehicle they make a reservation, and pick up a car from one of several locations across the city. Cars are rented by the hour, and the member receives a bill at the end of the month. Because members do not pay for gas, insurance or maintenance they save as much as $4,700

Getting There

Public

When choosing where you live...

✓ Look for areas where as many amenities (shopping, dining, schools, parks, etc.) as possible are within walking or cycling distance.

✓ Look for areas with easy access to a well-connected bikeway network.

✓ Look for areas with easy access to a well-serviced public transit route.

In your home or neighbourhood...

✓ Walk or bike as often as possible to work or school, and for minor trips.

✓ For major shopping trips, use delivery services whenever possible to avoid taking your car to the store.

✓ Join/start a carpool (carpool.ca), or join a car sharing program such as Autoshare (autoshare.ca).

✓ Let your municipal government know what you need to improve your access to alternative transportation. Consider participating on municipal committees established to improve walking, cycling or transit conditions.

✓ Keep the sidewalk around your home barrier-free, year-round.

take action!

Find different ways to get to work through Smart Commute, which services communities throughout the GTA! Reduce your car use, check out **smartcommute.ca**

"I am driving, and in the rear view mirror I notice a car behind me. The small left light is blinking and the whole car emits waves of impatience. The driver is watching for the moment the way a hawk watches for a sparrow."

Milan Kundera
Slowness

Traffic gridlock on hwy 401. See Creative Commons License. [iii]

a year over the cost of owning a car![107]

In 16 cities across Canada, over 10,000 people belong to car sharing organizations.[108] In Ontario, car sharing companies are up and running in Toronto, Ottawa, Kitchener-Waterloo, and three more are being planned for Guelph, Kingston and London.[109] In Toronto, AutoShare was started in 1998 and now serves over 2,000 people through 45 vehicle lots across the city. Its goal is to have a shared vehicle within a five minute walk of anywhere in the city.[110] American-based Zipcars also recently expanded to Toronto, and operates around 30 lots in the downtown core.

Car sharing programs are impressive both in convenience and efficiency – reservations can be made on the day of use, and each car can serve up to eight households.[111] AutoShare has also started innovative partnerships with condo developers. Condo residents can enjoy exclusive access to on-site vehicles, discounted or free memberships, as well as free trials.[112]

Stores can also do their part to reduce the number of cars on the road. Offering a complimentary or low-cost home delivery service is an easy way to ensure that customers don't need cars to get their purchases home. It also promotes car use efficiency because one delivery vehicle can service several households on one trip. Many businesses have also combined online shopping with home delivery, even for essentials like grocery shopping (such as Grocery Gateway, www.grocerygateway.com). Some companies have even gone the extra mile to make car-free shopping easier – in Toronto, Ikea offers a free bus service to shuttle customers to and from the nearest major transit stop.

The future of transportation

What will happen if Greater Toronto continues to develop as it has in recent decades? This question was addressed by the Neptis Foundation in its recent Toronto-Related Region Futures Study. It looked at current growth and funding patterns and projected how transportation might change in the GTA between 2000 and 2031, given a

Table 4 : A Comparison of Car Ownership and Use in Toronto and York, 2001

Location	% of households with no cars	% of households with 2 or more cars	% peak trips taken by car	% all day trips taken by car
Core Toronto Wards	50	6	35	39
City of Toronto	25	28	60	68
York Region	4	69	79	87

Transportation Tomorrow Survey, 2001.

"business as usual" development scenario. Here is a sample of what the study found:[113]

- ✓ On a typical weekday, the accumulated delay experienced by all drivers would jump to 1.2 million hours (from 300,000 hours in 2000). That will cost society $12 million per day in time lost, or about $3.8 billion per year (up from about $1 billion in 2000).
- ✓ In an average, two-driver household in the north central GTA, a total of 38.5 hours each week will be spent commuting (from 30.8 hours in 2000).
- ✓ The average cost of operating two vehicles will rise to $195 per month (up from $144 in 2000) an increase of over $600 per year (in constant dollars).
- ✓ As traffic volumes increase, the costs associated with traffic accidents will increase to $6.3 billion per year (from $3.8 billion in 2000).
- ✓ Emissions of greenhouse gases will increase by approximately 42 per cent, even with cleaner, more efficient cars.

But is "business as usual" truly where we're headed?

One sign of improvement is the province's 2005 Growth Plan for the Greater Golden Horseshoe, which recognized transit as "the first priority for investment".[114] The plan maps out proposed transit routes that would link outer areas like Niagara and St. Catharines, Kitchener-Waterloo, Brantford, Barrie and Peterborough with the GTA by 2031. More recently, Ontario's 2006 budget introduced the "Move Ontario" program, a $1.2 billion transportation investment, with $838 million going to GTA transit projects.[115] This was followed by the creation of the Greater Toronto Transportation Authority (GTTA) in 2006. The mandate of the GTTA is to develop a region-wide approach to transportation planning, including the coordination of transit service.[116]

On-the-ground transit improvement projects are also beginning to appear. Construction recently began under the GO Transit Rail Improvement Program (GO TRIP), a billion-dollar investment in expanding the GO Transit rail network funded by federal, provincial and municipal governments.[117] That project is part of a 10-year improvement plan for GO Transit, which includes extending service to Bradford and Barrie, and upgrading services for Peterborough, Niagara, Kitchener-Waterloo-Cambridge and Guelph.[118]

New roads still rule

Unfortunately, while transit has taken some steps forward, road planning and spending counts for more. The Growth Plan for the Greater Golden Horseshoe outlines the northward extension of highways 404 and 407, which will encourage leapfrog development north of the Oak Ridges Moraine, mainly in Simcoe County. It also calls for the creation of three new 'economic corridors' (primarily highways), including the eastward extension of Highway 407 to Highways 34/115 in the Niagara Peninsula, and a GTA East-West Corridor. These 'economic corridors' all have significant regional implications for future development and for the protection of key natural heritage areas, such as the Niagara Escarpment and Oak Ridges Moraine.

More highways aren't exactly in sync with ecological cities and a sustainable GTA. They prioritize car travel, open up greenfields to development, and generally facilitate a sprawling development pattern that cannot support public transit. According to the Neptis Foundation, "the transportation system…can influence land development and location choices by providing different levels of accessibility at each point in the urban region,"[119] and in Ontario, when highways are built, new development springs out of farms and forests.

By recklessly forging ahead with these projects and giving the green light to yet more sprawl, Ontario risks cancelling out improvements to transit. Rather, we should maximize the use of existing transportation corridors and improve regional transit before building new highways. Then, if the highways are still necessary, they'd have to go through public examination and consultation.

Getting There

Municipal Governments

✓ Establish an advisory committee to develop, implement, and monitor a plan to improve conditions for pedestrian traffic.

✓ Establish permanent pedestrian-only zones in key high-traffic areas (examples in Toronto include Kensington Market and Yorkville) and include temporary street closures in major events.

✓ Establish an advisory committee to design an integrated bikeway network that includes bike lanes, dedicated trails and signed residential routes, along with appropriate support facilities like locking stations.

✓ Require that applications for new residential developments include a Transit Plan outlining how transit-friendly densities and designs will be achieved.

✓ Concentrate intensification and mixed uses around transit nodes.

✓ Improve transit accessibility, including removing physical barriers, lowering cost and enhancing the usability of the system.

✓ Purchase 'green' transit vehicles that use alternative fuels and technologies, and are made of recycled/recyclable materials.

✓ Eliminate free parking in core downtown areas.

✓ Investigate road pricing, as a means to influence commuter traffic at peak travel times, on major routes into core areas.

✓ Phase hybrid vehicles into the municipal fleet.

Create

living spaces

"Bond Street fascinated her; Bond Street early in the morning in the season; its flags flying, its shops, no splash, no glitter, one roll of tweed in the shop where her father had bought his suits for fifty years; a few pearls; salmon on an ice block."

Virginia Woolf
Mrs. Dalloway

Environmental Defence.

An ecological city goes beyond the need for good planning rules and building practices. It encompasses liveability – the things around us that affect our physical, emotional and social health. Neighbourhood design, green space and opportunities for interaction all determine a city's liveability. They're why it's time for an ecological model. The bottom line is that while ecological cities are strongly protective of the environment, they are also places where people enjoy living. Strong ties to community give people the desire to protect it and help it sustain itself in the long term.

Dynamic streets and neighbourhoods

Studies have found that spread out, isolated areas lack strong social ties, community interaction and recreational opportunities than denser, more traditionally urban neighbourhoods have.[120] A healthy social support network is particularly important for more vulnerable populations like children, the elderly, and persons with disabilities. In addition, health problems such as obesity, depression and hypertension are increased by the lack of exercise that result from communities without ample walking, biking and recreational opportunities, and where people spend a large amount of their leisure time commuting by car to work, the grocery store, or school.

Compact, mixed-use neighbourhoods, where a variety of amenities are within walking distance of residential areas, dramatically improve opportunities for exercise and social interaction. Residential streets become extensions of the front yard, bringing walking, playing, meeting with neighbours, and other social activities. Commercial streets with wide sidewalks create a zone between stores and the street, where a variety of activities can take place. Wide sidewalks allow for pedestrian thoroughfare, bicycle parking, outdoor cafes and restaurants (which bring life to the street even at night) and the outdoor display of store goods.

Traditional town streets were designed for walking and often followed a grid pattern with relatively narrow roads

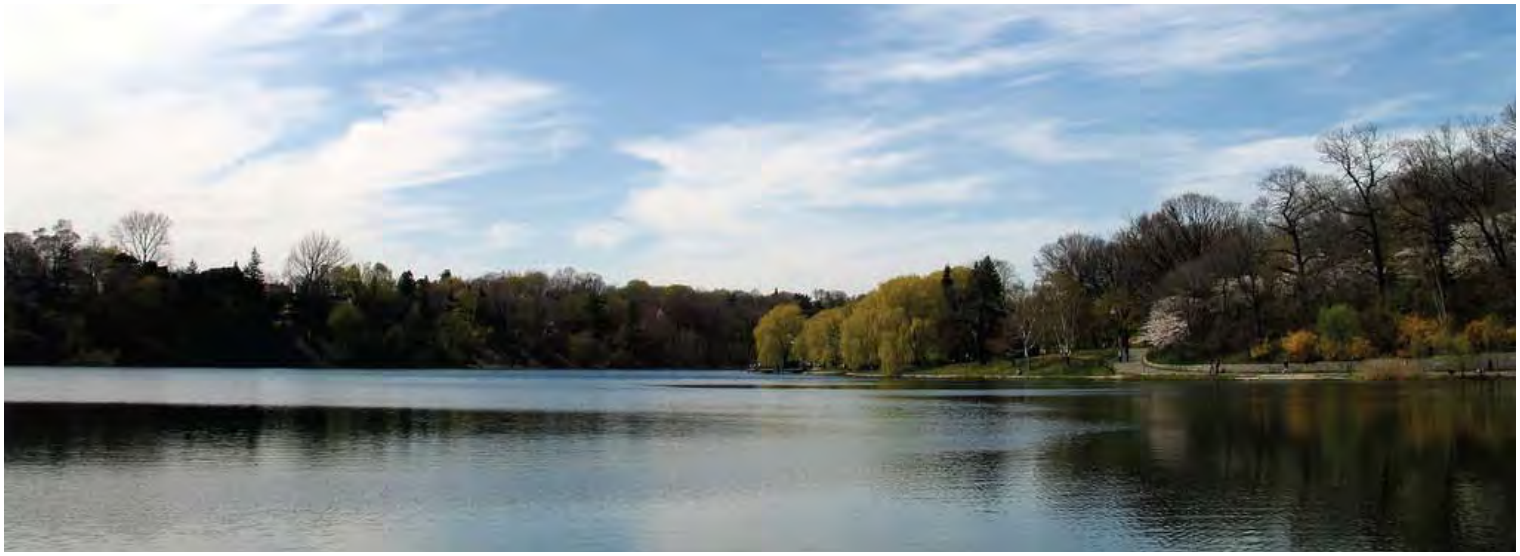
and sidewalks, and houses close to the sidewalk. Early suburban development was the same – new growth at the urban fringes relied on streetcar and pedestrian access, so streets tended to look mainly like a grid. Areas around the streetcar stops tended to concentrate commercial and social uses. According to one report, this suburban layout "reflected strong transportation logic: efficient long-distance commuting and convenient short-distance pedestrian access."[121]

Things changed with the rise of the car, and new street patterns dominated the suburbs. The car became the primary focus of planning and design, rather than the pedestrian. Road widths increased, front yards became larger as houses were set further back to allow for driveways, and the sidewalk often disappeared completely.[122] Super-blocks, collector streets and cul-de-sacs replaced the grid.

The loop and cul-de-sac patterns now typical of suburban residential areas, while good for cars, are not for people because "their discontinuity inhibits pedestrian access to facilities and amenities, while their curvilinear aspects lengthen and confuse walking trips".[123] Furthermore, the collector and arterial roads surrounding loops and cul-de-sacs hurt the appeal of walking because of the length of blocks, extra-wide road widths and high traffic volumes.

Shifting to an ecological model means going back to the grid-based street pattern. This would prioritize the needs of people over cars by providing safe, continuous sidewalks, and encouraging the flow of people. Putting garages behind buildings with lane access can significantly improve safety by reducing how often cars must cross the sidewalk path.[124] Ensuring that sidewalks connect to each other and to destinations creates real paths for foot travel. Shorter blocks with connecting streets produce attractive, manageable walking distances. Where there are no larger blocks, mid-block laneways, paths and catwalks improve the neighbourhood's accessibility and surrounding amenities.[125]

The same is true for commercial streets. Vibrant commercial areas depend on accessibility by walking, cycling and public transit. To avoid creating barriers to pedestrians, arterial rights-of-way should be kept as narrow as possi-



Toronto's High Park seen from Grenadier Pond, See Creative Commons License. [iv]

"This is my morning routine at my local coffee shop. These are not my friends, not in the usual sense of the word at least. Pauly and I rarely, if ever, carry on lengthy conversations. We connect on small matters, our weight, the weather, nothing more, but nothing less either… it is at this place, my coffee shop, that habitually my sense of identity – of who I am – and my sense of community – of the people who are a part of my daily life – are reaffirmed. I am who I am, in part, because these people connect with me daily at a particular place; and they are who they are for the very same reasons."

Anthony M. Orum
All the World's A Coffee Shop: Reflections on Place, Community and Identity

"It's a city of ravines. Remnants of wilderness have been left behind. Through these great sunken gardens you can traverse the city beneath the streets, look up to see the floating neighbourhoods, houses built in the treetops."

Anne Michaels
Fugitive Pieces

ble and come with frequent pedestrian crosswalks. Arterial commercial roads should be lined with wide sidewalks that are buffered from street traffic by trees, benches, on-street parking and bike lock ups. These roads should allow frequent public transit service, and should be equipped with designated on-street bike lanes as well.

Parks and public spaces

No question, public green spaces help a community. Parks and gardens can become 'outdoor rooms' for community interaction, which help reduce energy loads for houses. Green spaces also provide a range of economical environmental functions, like regulating a city's temperature to avoid a heat island effect, or preventing excess runoff from damaging local water systems.

But these urban habitats are also critical for the critters of a community. Cities are not often seen as where wildlife thrive, but do have supportive habitats, including rivers, streams, ravines and canals, cemeteries, golf courses, railway and utility corridors, campuses, gardens, roof tops, city parks, and more.[126] These habitats are becoming increasingly critical, since 110 of the animal species found in the GTA are known to be at risk, primarily as a result of habitat loss and degradation.[127]

An ecological city maximizes the availability and quality of green space for both human and non-human residents. It goes beyond simply protecting pockets of green. It encompasses the goal of restoring already degraded areas, as well as connecting green spaces at all levels – in yards, gardens, public parks and dedicated wildlife habitats. This connectivity of urban habitats, in addition to their size and quality, will determine if wildlife can survive and flourish in the city.[128]

Urban parks

Many urban parks are conventional - fields of cut grass with trees, and designed for the important human need for recreation and relaxation, but they often lack basics of good habitat, such as food sources, shelter and breeding opportunities. However, there is no reason why the needs of both humans and wildlife can't be accommodated in the same space. Many cities have begun setting aside wildlife reserves within urban parks to reintegrate human and

Getting There

Public

If you're buying a home…

✓ Look for areas with good street designs – narrow, gridiron pattern, streets and sidewalks that connect to one another. Avoid loopy, cul-de-sac based areas.

✓ Look for houses close to the front of their lots and garages at the rear.

✓Nearby commercial streets should be lined with wide sidewalks, equipped with frequent crosswalks, and contain lively, street-level activity.

In your home or neighbourhood…

✓ Join/start a community gardening project.

✓ Take stock of all the open, public spaces in your neighbourhood (e.g. derelict lots, schoolyards, parks, utility corridors), and discuss ideas with your neighbours about what these spaces could be used for (gardens, wildlife habitat, etc.).

✓ Don't use pesticides in your own yard and garden, and ask your municipal council not to use pesticides in public parks.

✓ Naturalize your yard using native plant species and plant trees to shade your house.

✓ Organize a local clean-up of parks and public space.

✓ Don't put surfaces in your yard that stop rainwater being absorbed into the ground.

Natural garden. Environmental Defence.

natural environments. Wildlife reserves are biologically diverse, and balance various needs through trails and open spaces for human use, fences to protect sensitive areas; and chances to see wildlife and nature education.

Famous examples of urban wildlife reserves can be found right across the globe, from Vancouver's Stanley Park to London's Regent Park. Other examples include urban parks in The Hague, which support 300 species of birds, 95 of which breed within the city.[129] In Toronto, a 5-kilometre long built peninsula known as the Leslie Street Spit is an urban wildlife reserve that is home to almost 400 plant species – many rare –, nearly 300 bird species (including terns, owls, ducks and shorebirds), many kinds of herpetiles (including snakes, turtles and frogs), and a range of mammals, such as beavers, otters, red foxes and coyotes.[130] In the west end of Toronto, High Park offers 398.5 acres of recreational opportunities and habitat areas for wildlife. The High Park Citizens' Advisory Council has made significant progress restoring wildlife habitats through native plantings, and gives nature interaction opportunities for urbanites through the Volunteer Stewardship Program, the Nature Centre, walking tours and other programs.[131]

Creating linkages between fragmented urban habitats, and rural areas is essential to protecting threatened species across the GTA. Wildlife linkages "facilitate the movement of certain species within and between preferred habitats," enabling genetic exchange and the establishment of groups of sub-species that can interact over space and time.[132] These are called metapopulations, and they "enjoy greater survival prospects from higher levels of physical and functional connectivity in fragmented landscapes."[133]

Corridors and linkages that connect urban habitat such as parks and gardens are diverse, ranging from streams and rivers bordered by vegetation, to railway and utility corridors and greenways.[134] Greenways, in particular, provide an innovative to link isolated habitats. They are "networks of land containing linear elements that are planned, designed and managed for multiple purposes, including ecological, recreational, cultural, aesthetic, or other purposes compatible with the concept of sustainable land use."[135] Greenways can be used as bike paths and hiking trails, and beyond their recreational and aesthetic pluses, they can be designed for significant ecological benefits for wildlife and plants.

stay informed

Restore degraded habitats and create or join a group that is bringing nature back into your community.
The Task Force to Bring Back the Don, a citizens' group sponsored by the City of Toronto, is rehabilitating the Don River watershed.[136]
Visit **toronto.ca/don.**

take action

Communities across Ontario are banning the use of cosmetic pesticides. Check out **pesticidefree.ca** to start a campaign in your municipality!

"I used to visit and revisit it a dozen times a day, and stand in deep contemplation over my vegetable progeny with a love that nobody could share or conceive of who had never taken part in the process of creation."

Nathaniel Hawthorne
Mosses from an Old Manse

Living pesticide-free

Pesticide-free green spaces are critical to sustainable communities. Anything designed only to kill insects and plants won't help long-term human and environmental health. Some pesticides currently in use were developed for war, including the most commonly used herbicide in Canada, 2,4-D. It was an ingredient for Agent Orange, which defoliated jungles in Vietnam. The Canadian Association of Physicians for the Environment and many other organizations reported that 2,4-D is dangerous to humans.[136] The Ontario College of Family Physicians released a report in 2004, finding a consistent link between pesticides and illnesses such as cancer, reproductive disorders and neurological diseases, with children being the most vulnerable group.[137] These findings were underlined by a 2006 study in the Paediatrics and Child Health journal, which linked the agent to cancer, neurological impairment and reproductive problems.

Many municipalities in Ontario are acting to reduce pesticide use. Markham has initiated a "Pesticide Free Parks Pilot" project, which includes five parks in Thornhill and the Markham Civic Centre, and also established a Markham Pesticide Reduction Steering Committee. Markham has also established a Green Neighbourhoods Program, to help residents establish ecologically sound lawns and gardens. The City of Toronto passed a phased by-law that restricts the use of lawn pesticides, which came into effect in 2004. It focuses on education and fines for lawn care companies, commercial properties and other pesticide users (other than homeowners), with enforcement for homeowners beginning in September 2007. Oakville has also joined the growing list of municipalities with a pesticide by-law.

Creating a healthy, varied landscape is also an important, pesticide-free method for reducing the number of mosquitoes carrying West Nile Virus. Ontario reported the first human cases of West Nile virus in 2002. Since then, provincial strategy for mosquito reduction has applied larvicides to standing water, and adulticides on vegetation where adult mosquitoes rest. Ironically, using these chemicals may actually increase the occurrence of West Nile Virus, as rain washes them into rivers and lakes at levels that harm dragonflies, amphibians and fish – all natural predators of the mosquito.[138]

Community food gardens

While prime agricultural land shouldn't be paved over, cities can offer many unique ways to grow food. In fact, urban agriculture "might be thought of as a continuum from backyard gardens to community gardens to commercial production at small, medium and large scales."[139] Community food gardens, in particular, help optimize open spaces (including derelict sites, parkland, and even school grounds), fostering interactions between neighbours and promoting public involvement in the natural environment.

In 2000, the city estimated that around 100 community gardens [140] were active in Toronto, producing more than $1 million worth of produce each year.[141] Foodshare administers several programs to promote community gardening, including the Toronto Community Garden Network, which supports and links community gardeners, and the Community Gardening Program, which helps community groups and individuals start and operate community gardens. The group also sponsors 'Seedy Saturday', an annual seed exchange that brings together local gardening and environmental groups, and the general public.

The Sunshine Garden, initiated by Foodshare and located on the grounds of Centre for Addiction and Mental Health in downtown Toronto, is a good example of how urban market gardens bring food and social benefits. This common green space "breaks down traditional barriers between the institution and the community by bringing the community agencies, neighbours, program participants and staff together as collaborators in the garden."[142]

An ecological city should support groups of residents

looking to start community gardens, and maximize the availability of open land to let them. The goal should be to have community gardens within easy walking or biking distance of every resident who wants to use one.

The natural look

Naturalizing private yards and gardens involves replacing conventional lawns with native species of grasses, flowers and trees. When properly matched to the local climate and specific site conditions, these plants often need less work and water than most lawns. Additionally, naturalized areas often have diversity beyond grass, and form a functioning habitat for insects, birds and other species. This helps protect the garden from pests and diseases, thereby reducing or eliminating the need for chemical pesticides. A naturalized garden recreates the natural ecosystem on a miniature scale.

The principles of the naturalized landscape can also be used to reduce housing energy requirements through passive cooling and heating, by providing shade and wind protection. At the individual building level, native deciduous trees located away from the north side of a building provide shade during the summer, which reduces temperature shifts within the building, and can cut cooling costs by up to 30 per cent.[143] Once these trees lose their leaves in the winter months, more light and heat can get in. Planting trees and vegetation according to the prevailing air patterns also helps buffer winter winds.

Environmental Defence.

Table 5: Levels of Urban Forest Management in Canada

Population	% with a Municipal Tree Inventory	% with a Strategic Plan for Urban Forest
5,000 - 10,000	30%	14%
10,000 - 50,000	36%	21%
50,000 - 100,000	91%	53%
100,000 +	72%	47%

Local Enhancement and Appreciation of Forests (LEAF). Retrieved online March 14, 2005 from http://www.leaftoronto.org/main2.asp?ID=20

Much can be done by municipalities to encourage naturalizing private property. All new residential or commercial development applications, where applicable, should incorporate a diversity of native plant species into landscaping plans. Whenever possible, naturalized landscapes should be encouraged over large expanses of lawn, which take a lot of water and sometimes invite pesticide use. Public education programs on naturalized green spaces, such as Toronto and Region Conservation's Healthy Yards program, give tips on how to design, plant and maintain a naturalized garden. Support should also be provided to non-profit organizations like Evergreen, which has a comprehensive set of tools for creating naturalized landscapes through their Home Grounds program.[144]

Urban forest

The urban forest includes trees on streets, in yards, parks and other natural areas. It has the potential to support a diverse wildlife population. The health of the urban forest can vary considerably and is affected by how old the trees are, the diversity of tree species, and the impact of human-

take action

Community gardens not only benefit the environment, they promote healthy neighbourhoods. Find a community garden in your area or start one up. See what is happening in Toronto at : **toronto.ca/parks/programs/community.htm**

"The earth laughs in flowers"

Ralph Waldo Emerson

induced stresses such as "excessive paving, compacted soil, air pollution, salt, above and below ground utilities and lack of space."[145]

As well as providing wildlife habitat, healthy urban forests improve air quality, absorb greenhouse gases, stabilize temperatures, intercept rainfall, control storm water and improve water quality, buffer noise, increase property values, and enhance psychological well-being.[146] In short, they're a good thing!

Across Canada, 80 to 90 per cent of the urban forest is on private residential land.[147] This suggests that efforts to enhance the urban forest need to address opportunities on private residential lands, as well as public ones.

In Canada, the urban forest is the responsibility of municipalities, but research shows that municipal urban forest management programs are inadequate and ineffective.[148]

Programs for homeowners are particularly lacking. For example, the City of Toronto's Urban Forestry Service plants and maintains trees on city-owned land, but the City has no programs that support tree planting and maintenance on private property. The City did, however, move forward in 2004 by passing a bylaw to protect trees on private property from being cut down unnecessarily, and provides fact sheets about selecting and planting native trees and plants in yards and gardens.

Getting There

Municipal Governments

✓ Require all new residential developments to be built with rights-of-way no wider than 15m, paved roadways no wider than 6m and sidewalks no less than 1.5m wide.

✓ Require all new developments to be built according to a grid.

✓ Review bylaws to ensure they support sidewalk commercial activity where appropriate – restaurant patios, green grocers, etc.

✓ Devote a minimum of 35 per cent of all parkland in the community to wildlife reserves.

✓ Connect municipal parks through greenway networks and/or riparian habitat, wherever possible.

✓ Designate a percentage of parkland through the Official Plan as productive landscapes, to include community gardens, orchards and other ways to grow.

✓ Work with community garden advocates to set targets to increase the number of gardens, and establish ways to ensure access within each neighbourhood.

✓ Develop a plan to restore habitat for the GTA's endangered and threatened species.

✓ Pass a bylaw prohibiting the use of cosmetic pesticides.

✓ Develop an inventory of all public lands suitable for community gardening, including information about soil quality, and distribute it to local neighbourhood associations along with information on how to start a community garden.

✓ Require all new residential and commercial developments to incorporate native plant species in their landscaping plans.

✓ Review bylaws to ensure they support the naturalization of private yards, and develop public educational materials on naturalization.

✓ Pass a bylaw prohibiting the removal of trees for aesthetic reasons, even on private property.

✓ Increase the urban tree canopy to provide shade, and absorb pollutants and greenhouse gases.

✓ Pass a bylaw restricting new frontyard parking pads and offer free services to restore existing parking pads to permeable surfaces.

Build it

so we can

go green

I shall make electricity so cheap that only the rich can afford to burn candles.

Thomas Edison

Melancthon Grey Wind Project, Shelburne Ontario. *Environmental Defence.*

Building an ecological community means changing what we think we need in a home or workplace. Many changes can be made to the way we design buildings to ensure they are kinder to the land around them.

A big change we can make is in size. Houses have grown significantly over the past few decades. Fifty years ago, the average house was 1,100 square feet, with an average of 4.2 people. Today, the average house has increased to 2,150 square feet, but the number of people has shrunk to 2.3. But how much space do we really need? Building in a compact urban form increases how much land is available for public spaces, such as parks, community gardens and recreation, which make neighbourhoods desirable.

In addition to building more compactly, we can also make buildings more sustainable. There are many ideas regarding what constitutes a 'green' building. In a report for the Canadian Urban Institute, a sustainable building strategy is defined as "an integrated approach to design, construction, and operation of the building or home to minimize negative environmental and human health effects…They [green buildings] also improve occupant productivity and health, and can assist with other community issues, including land restoration, historical preservation, access to transportation, and community infrastructure systems."[149]

While this concept acknowledges larger social issues, it also shows the enormous potential and need to reduce en-

vironmental impacts at the building level. Other ideas go further, and propose working towards buildings that have fully symbiotic relationships with the natural landscape. Architects William McDonough and Michael Braungart speak of creating 'buildings like trees' and 'cities like forests', where buildings produce more energy than they use, waste is considered a resource and recycled back into the system, and "inhabiting a place becomes mindful, delightful participation in landscape."[150] While this goal may be far off, we can help it get here sooner, by changing how buildings use water and energy, generate waste and by greening the standards we use to build them.

Water use and abuse

Fresh water is a plentiful resource in Canada, but our supply is not infinite. As it flows within, through and around a community, we not only waste it, we contaminate it and then we cry foul when we can't swim at the beach. It's time for a little consciousness-raising about protecting our most precious resource and, more importantly, it's time to conserve and protect our water quality whether it is flowing through a natural system or taps, pipes and tunnels.

And for those municipalities with beaches, aiming for zero beach closures is the only acceptable goal!

Canadians are among the world's great water wasters – guzzling second only to the United States. On average, we used around 335 litres of water per day in 2001, more than double most Europeans.

Undervaluing this critical resource is reflected in (and perhaps partly caused by) relatively cheap water. Water rates in Canada are among the lowest in the developed world – most households pay no more for water than they do for cable television.

To promote conservation and pay to replace ageing infrastructure, water providers are moving towards full-cost pricing – removing the massive subsides for water consumption and recovering the full cost (including source protection) of providing safe drinking water, rather than the large subsidies used now. But the shift has been slowed by public opposition. The introduction of volume-based billing (charging households based on how much water they use) and the installation of household water meters have also found considerable resistance. In 2001, only 61 per cent of people with municipal systems were metered, despite unmetered consumers (charged a flat rate) using 74per cent more water than people who pay for every drop.[151]

But prices are not the only way to promote conservation. With the vast majority of Canadians (90 per cent) served by municipal water systems, municipalities are uniquely

A camouflaged graywater system. Creative Commons License. [v]

"As the mockers move forward with their picks and shovels, the gunnite crew sprays a mixture of concrete and sand onto the walls, which would otherwise crumble after a few hours of exposure to the air. And if they are digging incorrectly – just one degree up, burrowing too close to the weight of Lake Ontario during the mad scheme by Commissioner Harris to collect lake water 3,300 yards out in the lake? They have all imagined the water heaving in, shouldering them aside in a fast death."

Michael Ondaatje
In the Skin of a Lion

We never know the worth of water till the well is dry.

Thomas Fuller
Gnomologia (1732)

stay informed

Find out more about green roofs at:
toronto.ca/greenroofs

Green roof at 401 Richmond. *Courtesy Urban Space Property Group.*

positioned to lead conservation efforts through innovative regulations, incentives and education. Many initiatives have emerged, but too often stay cloaked in bureaucratic obscurity.

Most municipal water efficiency programs promote more efficient fixtures. No wonder. Toilets alone consume one quarter of the municipal water supply in Canada. Indoor water efficiency can be greatly increased by incorporating low-flow toilets and showerheads, aerated taps, high-efficiency washing machines and dishwashers, and instantaneous water heating. Many municipalities now require some or all of these before they will approve new developments.

Another common program offers cash incentives for fixture replacement. For example, as part of its Water Efficiency Plan, the City of Toronto offers up to $75 to homeowners to replace a standard residential toilet with an efficient one, and $60 towards the purchase of high-efficiency washing machine. Similar programs are in place for multi-unit, commercial, industrial and institutional buildings.[152] However, considering high-end efficient models often cost hundreds and that the additional cost of installation is the owner's responsibility, it's just not enough.

Less common is cutting the use of drinking water for things other than drinking. It's costly to produce, and using it where it isn't needed (e.g. to flush toilets or water lawns) is a waste. Technologies that use non-potable water (or greywater) are becoming common and can bring significant savings. The simplest example is a rain barrel – a cistern that collects and stores rainwater from a home's eavestroughs for use in watering lawns and gardens later.

Greywater harvest and recycling is common around the world, particularly in Europe and Australia. Home units can distribute collected rainwater for many uses, from watering lawns to washing clothes, even flushing toilets. Savings can really add up when you consider that lawn watering can account for as much as half of municipal drinking water consumption during summer. However,

the Canadian Mortgage and Housing Corporation showed greywater collection is rare and almost never encouraged.[153] Modifying building codes to allow or require rain collection cisterns could increase water efficiency dramatically. An added benefit is diverting lots of runoff, a major source of urban pollution, away from area surface waters.

Permeability

After a rainstorm, many people remark on how much 'cleaner' a city feels. But few stop to ask where the grime, garbage, oil and animal waste goes. Unfortunately, the rain doesn't just wash it away.

Hard surfaces – roofs, roads, sidewalks, driveways and parking lots – mess up the natural flow of water. Rainwater, which normally seeps into the earth to replenish groundwater supplies, instead becomes surface run-off and flows into storm sewers. Along the way it picks up all sorts of nasty stuff which then ends up in a stream or lake, usually untreated.

One of the most critical steps towards an ecological city is restoring the connection between the rain and the ground beneath us. Increasing a city's permeability lets rainwater be absorbed by the earth, not storm sewers and nearby watercourses. It also lets a city become more productive as more water is available to feed vegetation in yards, gardens and parks.

Green roofs are one way to turn an unused paved surface into a productive, water-absorbing landscape. A green roof typically consists of vegetation rooted in something light. They are ideally suited to larger buildings with flat roofs, such as apartment or offices, industrial, public and commercial complexes. Many are designed strictly to absorb rainwater, but some support wildlife habitat, food-producing gardens or even wetlands. They retain between 70 and 90 per cent of precipitation in the spring and summer, and between 25 and 40 per cent in winter.[154]

Rain Barrel. *Environmental Defence.*

In addition to catching rain, green roofs improve air quality. Rooftop vegetation filters air through the uptake of nitrous oxides, volatile organic compounds, and particulate matter. And because the vegetation provides insulation, the building stays cooler in summer and warmer in winter. It's a virtuous cycle, using less energy for heating and cooling, bringing savings on energy bills.[155] The temperature regulation is felt at the community level. Environment Canada has reported that green roof coverage of only 6-35 per cent in Toronto could reduce the urban temperature by 1-2°C

take action

Reconnect your downspouts to a rain barrel and collect rainwater to use on your lawn and garden. Check out **riversides.org** or **toronto.ca/environment_days** for rain barrels and other tips on protecting water.

Vines can reduce cooling requirements. *Environmental Defence*.

in the summer, bringing significant health, economic and environmental benefits.[156]

Green roof technology has been used extensively outside of North America. In Germany, over 10 per cent of flat roofs are vegetated – helped along by more than one-third of municipalities offering financial incentives for green roof infrastructure. Also, many German cities charge for stormwater removal, for even more incentive. In Canada, there have been several programs to promote acceptance and use of roof gardens. Green roof technology is eligible for energy-efficiency funding offered by Natural Resources Canada, which administers several programs that target new buildings and retrofits of existing buildings, including schools, hotels and other large structures.[157]

In Toronto, rooftops, which make up a third of the city's area, present a substantial opportunity for green roof gardens. Early in 2006, the City approved a Green Roofs Strateg to promote "the use of city rooftops to grow gardens and other vegetation".[158] The strategy includes a commitment to build green roofs wherever practical on new and existing municipal buildings. Additionally, a new pilot program offers financial incentives to private property owners of $10 per square metre, to a maximum of $20,000, for green roof projects. The City's Official Plan also encourages innovative green spaces such as roof gardens, but doesn't have specific targets. The City of Waterloo has a green roof feasibility and implementation plan. Organizations like Green Roofs for Healthy Cities actively promote green roofs through research, incentives and public education.

This technology also allows us to explore rooftop agriculture. In urban areas, rooftops may represent considerable untapped potential for food production, with literally thousands of acres of 'land' available. Greywater and rainwater collection systems can easily be adapted for rooftop hydroponics and irrigation of rooftop gardens. A roof garden at Toronto's Royal York Hotel grows all of the herbs for its restaurant.

Vertical gardens present another way of turning solid, non-absorbent surfaces into living, breathing natural systems. A vertical garden begins with a cladding system that allows a variety of plants, such as vines and even certain types of trees, to shelter a building's façade. In addition to increasing rainwater's return to the biological system, vertical gardens also reduce indoor heating and cooling requirements by providing shade during summer and wind protection during winter. Because of the evaporative cooling effects of plants, vertical gardens play a key role in reducing the urban heat island effect. The Canada Mortgage and Housing Corporation (CMHC) says, "these technologies can play a role in altering the climate of a city as a whole…a healthy urban climate could be achieved by greening only 5 per cent of all roofs and walls within a city."[159]

Another good way of helping rainwater reach the ground is by disconnecting downspouts, letting water go into vegetated areas or rain barrels, not the sewer. The City of Toronto has a downspout disconnection program, which offers a disconnection service free of charge. Residents can purchase a rainbarrel at a Community Environment Day or the RiverSides Stewardship Alliance offers rain barrels to city residents at low cost. A recent bylaw in the City of St. Catharines no longer permits roof downspouts to be connected to sanitary/combined sewers, and offers a grant program to subsidize foundation drain disconnection in areas prone to basement flooding. The by-law has a 95 per cent compliance rate.

There are many options available at the neighbourhood/community level as well. Stormwater can be channelled into naturalized retention ponds, which gradually allow water to seep back into the ground over days, and provide natural habitat and recreational opportunities. Using vegetated ditches rather than standard road curbs also helps absorb water and reduce the need for municipal treatment. "Flow forms" can be used to channel water through a series of basins, aerating and removing particles from water, and adding attractive sculptural elements to a housing development.

Even hard, stable surfaces can be built with permeable materials that let some water through. There are many permeable surface products currently on the market. Interlocking bricks or pavers with spaces between them, sometimes referred to as 'grasscrete', allows water to filter through and even permits vegetation to grow in the spaces. Some permeable paving systems have a reservoir underneath that treats water as it filters down, removing surface contaminants and other pollutants.

The City of Toronto recently adopted the Water Pollution Solution, a 25-year plan to reduce the harm of wet weather.[160] Its goals include eliminating sewage discharges, increasing the number of disconnected downspouts, and restoring stream banks and aquatic habitat. The plan also includes the Community Program for Stormwater Management, funds some community groups for stormwater management activities, including naturalization projects and public outreach.

Sewage

Canadians generate more than 8 billion litres of sewage per day. Over a third of it – more than 3 billion litres – is discharged with little or no treatment. Several major cities, including Montreal, discharge raw sewage with no treatment whatsoever.[161] With it goes a toxic cocktail of harmful bacteria, volatile organics and heavy metals.

Many cities are dealing with problems associated with aging infrastructure. Combined sewer systems, in which stormwater and sewage share the same pipe, are vulnerable to overflows during heavy rains. The system can't handle the volume of water and so a mix of raw sewage and stormwater gets released untreated into rivers or lakes. Then we end up with contaminated waterways and closed beaches.

The most advanced form of sewage treatment in general use is tertiary treatment (usually consisting of activated carbon with chemical oxidation) along with UV disinfection (as an alternative to chlorine disinfection). However,

take action

Schools involved in the Ontario EcoSchools program are implementing effective energy conservation strategies. Simply turning out the lights in 1,000 classrooms for three hours per week and using natural light can save a school board $32,000 per year.

There are more than 20 school boards using the EcoSchools program to conserve energy, minimize waste, green school grounds and develop ecological literacy. Check out Ontario EcoSchools at www.yorku.ca/ecoschl/index.asp to find out how your school can get involved!

given the high cost, a number of effective approaches have been developed that capitalize on the resources that sewage provides. For instance, by treating wastewater and sewage using solar aquatic greenhouses or constructed wetlands, the waste's nutrients become food and sustain a natural system.

Solar aquatic greenhouses are a type of indoor constructed wetland that process sewage through a series of tanks filled with specially selected plant and animal species (including algae, zoo plankton, phytoplankton, snails, and fish) that feed on the organic compounds in the water. These systems have been successfully used as sole treatment for individual properties such as the Ontario Science Centre and The Body Shop head office in Toronto. The community of Bear River, Nova Scotia, also treats all of its wastewater through a solar aquatic greenhouse. The project was relatively inexpensive, and has since won international acclaim and even became a tourist attraction, helping the local economy.[162]

Alternative wastewater systems are effective on large scales, too. Constructed wetlands are a cheap and effective means of treating wastewater that can be used in conjunction with conventional treatment or sometimes as the sole method of treatment. In Ontario, the Town of Brighton built a wetland to treat municipal wastewater lagoon effluent. The wetland measures 6.2 hectares and serves around 5,000 people, and at the time was the largest project of its kind in Ontario. The system has significantly reduced the contaminants entering Presqu'ile Bay, a renowned migratory bird habitat, and has proven to be more cost efficient in terms of capital, operations, and maintenance than other conventional treatment options.[163]

Energy alternatives

In 2005, the Ontario Power Authority released recommendations on Ontario's long-term energy needs. It predicted that by 2014, our demand for power will exceed supply and mandated new power sources to fill this "supply

Solar array at the Horse Palace, CNE. See Creative Commons License.[8]

gap".[164] In 2006, the province responded with an energy plan that many environmental groups say is based on entirely the wrong solution. The plan directs massive investment in nuclear power, breaks previous commitments to close coal-fired plants, and all but ignores energy conservation.[165]

Ontario's current energy supply comes from many sources: coal-fired power plants (19 per cent), hydro (22 per cent) and nuclear generation (51 per cent). Coal burning is a huge smog creator, and also brings greenhouse gases, acid rain, and contamination to Great Lakes fisheries. Lake Erie's Nanticoke generating station alone is one of Canada's top air polluters, and emissions have increased 150 per cent from 1995 to 2000.[166] A recent study by the Ministry of Energy showed coal is Ontario's single most expensive form of power – financial, environmental and health costs exceed $4.4 billion annually. The study found that every year, up to 668 premature deaths, 928 hospital admissions, and 1,100 emergency room visits are directly attributable to air pollution from coal plants.[167] These findings led the provincial government to commit to phasing out all of its coal-fired power plants and replacing them with cleaner energy sources.[168] A promise broken.

While coal burning hurts our air quality and health, the high costs associated with nuclear power are much more long term. Ontario currently has three nuclear power stations, supplying over half of its energy. The Pickering power plant, which supplies the GTA with much of its power, has a history of accidents that have resulted in billions of dollars in damage.[169] Furthermore, the refurbishment of Ontario's plants over the past several years has suffered from huge delays and enormous cost overruns. At Pickering, the botched retrofit of Unit 4 ended up costing more than $1.25 billion, almost three times the original projected cost. Later efforts to retrofit Unit 1 were criticized for being over budget and several months behind schedule.[170] And despite efforts by the nuclear industry to tout itself as a "clean" energy source, there is a huge cost associated with nuclear waste, for which no safe storage has yet been found. It remains radioactive for a long time, too. The half-life of Plutonium-239, particularly lethal, is 24,000 years.[171]

Once significant investment is made in nuclear energy, it becomes extremely difficult to pursue other energy options. A sustainable energy plan has to explore every possible gain from conservation and other alternative sources of energy and not become further dependent on this outdated, pricey and risky technology.

Energy efficiency

While conservation is not often seen as a source of energy, it should be. Using less lets us spend less on dirty technologies like coal and nuclear. As a result, it is important that we take advantage of new construction standards, such as R-2000, which lets us maximize the efficiency of new homes. R-2000 is a voluntary, performance based energy efficiency standard developed more than 20 years ago as a partnership between the federal government and residential builders. It uses the same rating system as the EnerGuide for New Houses [172] and addresses a range of features including the building envelope, mechanical systems, water conservation features (such as low flow plumbing fixtures), recycled content of specific materials, and recommendations for energy efficient appliances. While an R-2000 home can cost between two and seven per cent more than an efficient home, its energy bills are up to 50 per cent cheaper, and the home's resale value is usually higher.

Municipalities also have an important role in energy conservation. One good step was recently taken by East Gwillimbury, Ontario, which in 2006 became the first town in Canada to require energy efficiency standards for new housing. All residential developments of 10 or more units will now have to meet the ENERGY STAR rating, which includes high efficiency heating and hot water systems. On average, these homes consume 30 to 40 per cent less energy than those built according to minimum Ontario Building Code requirements.

"London was beginning to illuminate herself against the night. Electric lights sizzled and jagged in the main thoroughfares, gas-lamps in the side streets glimmered a canary gold or green."

E. M. Forster
Howards End

get involved

Create a neighbourhood buying club to purchase solar panels in bulk! Visit **ourpower.ca** to learn about projects underway.

"Greg participated in the ritual of consumption because having things, being able to buy things, constitutes ninety percent of the framework of every North American's subconscious. And frameworks are made from things as diverse and varied as a can of Dutch cheese, seven pairs of different-colored tennis socks made in Hong Kong, a subscription to The New York Times Book Review, a box of Swiss condoms, seven spiral notebooks with tiny graph paper with "six subjects and three pockets" from a Boston manufacturer, a collection of little tin trucks…"

Paco Ignacio Taibo II
Four Hands

In addition to ensuring new homes are built to the highest efficiency standards, programs to promote high efficiency options for existing buildings are a key component of reducing power demand. One example is Green$aver, the first company in Toronto to administer EnerGuide for Houses. The company conducts detailed audits and provides recommendations for retrofits that provide higher energy efficiency. Unfortunately, after the 2006 federal election, funding to the Green$saver program and a number of other energy conservation programs was cancelled though new programs are being announced.

Many municipalities also offer incentives for the purchase of energy efficient products, such as those with the ENERGY STAR label. Kitchener Utilities offers a $100 - $300 credit on residential power accounts for converting to ENERGY STAR furnaces or boilers. For businesses, institutions and multi-unit buildings, the City of Toronto offers rebates on the purchase of energy efficient washing machines, which use about 60 per cent less energy and 40 per cent less water than a conventional unit.[173]

Toronto residents and businesses can now sign up for Toronto Hydro's Peaksaver program, which permits the utility to reduce power for 15 minutes to air conditioners and water heaters when energy demand starts to soar.[174] When it comes down to it, every kilowatt counts!

Green power

The provincial government has a target of obtaining 5 per cent of all energy from renewable sources (including small hydro, solar, wind, and geothermal) by 2007, and 10 per cent by 2010. To get there, the province has begun investing in renewable energy production. The Ministry of Natural Resources recently opened 18 new sites on Crown land to small-scale hydro development.[175] Ontario has stepped up its investment in windpower and with 12 wind farms now either operating or in process, it leads the country with the capacity to generate around 1300 MW.[176] Municipalities can further encourage this shift by incorporating land use designations for wind energy projects into their official plans.[177] Homeowners and businesses can also support cleaner energy by purchasing power from 'green' sources, an option offered by many utilities. For instance, Oakville Hydro's 'Green Light Pact' program allows consumers to specify that a certain amount of electricity will come from renewable energy sources. Green Tags Ontario is another initiative that allows consumers to invest in renewable energy sources. Each Green Tag purchased supports the development of one megawatt-hour of wind-generated electricity.[178] Ontario Power Generation's 'Evergreen' program offers commercial and industrial users, as well as public-sector groups, the option of buying a portion of their annual electricity from green power sources.

Commercial ventures into green power have also begun. Bullfrog Power is an electricity retailer that invests exclusively in clean, renewable power sources. Customers virtually anywhere in the province can purchase power from Bullfrog, which in turn ensures that the same amount of renewable power is supplied to Ontario's grid.[179] The Town of Caledon recently became the first municipality in Ontario to purchase power for municipal offices and facilities entirely from Bullfrog.[180]

There are also a number of technologies that property owners can use to get renewable power. For instance, solar power systems are well-suited for water heating, one of the biggest consumers of domestic energy, and provide between 50 and 60 per cent of annual domestic water heating needs. While the initial cost of a solar heater is considerably more than a conventional one, the payback period is about seven to 10 years, compared to 40 years for nuclear energy.[181]

The provincial government currently rebates the sales tax paid for a new solar energy system installed in homes and multi-unit residential buildings.[182] Communities are also taking action to promote the use of solar power for water heating. Under Perth Ontario's Solar Heater Program, Ontario's Solar Heater program, EcoPerth has completed

Getting There

Municipal Governments

✓ Implement a full-cost pricing scheme for municipal water utilities – set water prices that ensure the recovery of the full cost of providing safe drinking water, including the cost of source protection.

✓ Ensure every household served by a municipal water system is metered, and implement a volume-based pricing system – households should be charged according to how much water they use, not a flat rate.

✓ Develop and actively promote a rebate program for retrofitting residential and commercial properties with energy and water efficient fixtures and appliances.

✓ Educate residents about the importance of protecting water sources from contaminants.

✓ Incorporate constructed wetlands, solar aquatic greenhouses or other naturalized forms of treatment into municipal wastewater treatment systems.

✓ Require all new municipal buildings to have green roofs, and retrofit existing buildings wherever possible.

✓ Offer incentives to residents and the commercial sector to retrofit for green roofs and vertical gardens

✓ Require new residential and commercial developments to source a minimum of 30 per cent of their power from renewable sources (e.g. solar panels, wind turbines, geothermal systems).

✓ Purchase power for all municipal facilities from renewable sources or green power suppliers.

✓ Start a Peaksaver program to reduce energy demand at critical times.

✓ Implement a curbside green bin program to collect organic waste.

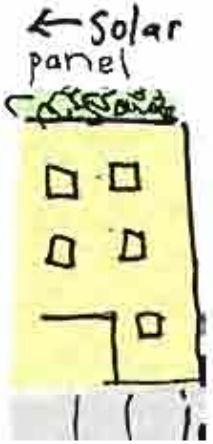
✓ Make waste sorting mandatory for apartments and condos.

✓ Support the development of markets for recycled materials and expand the contents permitted in the Blue Box

✓ Require new residential developments to meet a sustainable building certification standard such as LEED.

✓ Recognize environmental progress through awards such as the City of Toronto's Environmental Awards of Excellence and Green Toronto Awards, which recognize businesses, organizations and individuals who have contributed to the greening of Toronto.

✓ Require 30 per cent of all new residential units to qualify as affordable according to the Provincial Policy Statement.



a 'solar map' of the town and found that 74 per cent of its homes and buildings can be retrofitted, reducing water-heating bills by half. The group also provides information on obtaining solar water heaters, municipal rebates and leasing options.[183] Some businesses are taking advantage of solar heating in Toronto. The Beach Solar Laundromat, for example, uses solar thermal panels to heat water for the laundromat and apartment above. The retrofit cut natural gas consumption by 30 per cent, while revenues were up by 160 per cent over 18 months.

Geothermal energy is another underdeveloped renewable source of heat and power. Because temperatures below the earth's surface are warmer in winter and cooler in summer than air temperatures, liquid (such as water or antifreeze) pumped through underground pipes can either be heated or cooled, and then transferred to indoor air. Geothermal energy is one of the most cost-effective renewable options for heating and cooling buildings. It's considerably more efficient than conventional or air source heat pumps, and can be used for space heating, air conditioning and hot water.

Around 8,500 houses and 500 institutional and commercial buildings use geothermal power in Ontario.[184] Cost savings can be considerable: annual heating costs for geothermal homes are $400, compared to $1,000 for electric furnaces or baseboards, $1,250 for gas furnaces or $1,600 for conventional oil furnaces.[185] The Pine Meadows subdivision in Wellington County, north of Kitchener, has 200 homes that are heated and cooled through geothermal systems.[186] A similar technology, the Deep Lake Water Cooling project, uses cool water from Lake Ontario to provide air conditioning to high-rises. The Metro Toronto Convention Centre and the Air Canada Centre both use it.[187]

Many of these electricity options would be easier for private property owners to adopt if municipalities and the province worked together to promote net metering, a technology designed for small power producers, or for individual homes and businesses that decide to adopt small alternative power systems. Net meters allow any surplus energy to be "banked" against power taken from the electrical power grid. In effect, they encourage the use of small power systems (e.g. solar panels, wind turbines) by allowing their owners to receive full retail value for any surplus electricity they generate. Toronto Hydro currently offers "net metering" to its customers. Over the past five years, 38 American states have passed similar net metering laws. In addition the province has developed the Standard Offer Contract (SOC) that purchases power from small generators of renewable energy, up to 10 megawatts, such as rooftop solar photovoltaic panels, wind generation, and water projects, to name a few.[188]

Reduce, reuse, recycle

According to Statistics Canada, Ontarians produce around one tonne each of garbage every year, including residential, commercial, industrial, and construction waste.[189] As options for where it can go become limited, we need to find new ways to reduce waste.

The Provincial Government aims to divert 60 per cent of Blue Box recyclables from landfill by the end of 2008. The City of Toronto agrees with this goal but has set its sights on 100 per cent diversion by 2012.[190] Whichever you choose, some challenges lie ahead.

With Guelph's "Wet/Dry" program exceeding all expectations by achieving a 98 per cent public participation rate, participants have diverted 58 per cent of Guelph's waste from landfills.[191]

Following Guelph's success, curbside organics programs, also known as the Green Bin or Green Cart program, have been established widely throughout the Greater Golden Horseshoe. Since Toronto started its Green Bin program in 2002, Hamilton has introduced it. As well, the Regions of Durham, Halton and Niagara are at various stages of rolling it out and Peel Region's start up is slated for April 2007. In York Region, Richmond Hill, Markham and Vaughan

Recycling empty beer bottles. See Creative Commons License. [vii]

are participating and the town of Adjala-Tosorontio is at the pilot stage in Simcoe County.

Despite this progress, some key gaps still exist. In Toronto, for instance, occupants of high rise condo and apartment buildings on average recycle only 12 per cent of their garbage. This is largely due to the ease of dropping garbage in garbage chutes, which make it difficult to ensure waste is sorted properly. Toronto plans to fix this through a by-law that will prohibit the construction and use of garbage chutes and test different approaches to achieving organic recycling in high rise buildings.[192]

Many municipalities in Ontario have opted for a regulation to address residential waste through full or partial 'user pay' policies. Before residents can dispose of their garbage they have to buy a tag or sticker to put on the bag. Stickers and tags cost an average of $2.[193] These programs provide incentives for residents to reduce the amount of waste they produce.

Increasing the diversion rate will also require an increase in the items that can be collected for recycling, such as textiles, and the development of better markets for recycled materials. The first principle of waste management, however, is reduction and the provincial government should be looking at new tools to limit the overpackaging of products and the creation of non-reuseable or recyclable products.

take action

Energy conservation starts at home. Conduct an energy audit and find out where you can save money and the environment by reducing your energy use. For tips on energy conservation and details about residential rebates and incentives visit: **oee.ca** or **ontarioconserves.gov.on.ca.**

At the commercial level, the cradle-to-cradle philosophy is becoming increasingly prominent. It envisions companies that are responsible for the products they create from raw materials to final disposal and/or reclamation for new raw materials. The reuse of waste can save companies millions in production cost.[194]

The Beer Store is a leader in using waste as a resource. In 1927, it pioneered a bottle return policy that has diverted 70 billion beer bottles form landfill. The Beer Store has a 98 per cent product recovery rate and bottles can be used up to 20 times. The recovery system also aims to reclaim all beer packaging, cans, cases – even beer caps.[195] It works because of its high customer participation rate, helped along by the refund paid for each bottle returned. As of February 2007, all wine and spirits containers carry a deposit and can be returned for a refund to the Beer Store as well.

Aveda is also a company that has made waste reduction a primary issue. It has made it company policy to use recycled material in 100 per cent of its packaging. In recent years, Aveda has gone beyond ensuring that its own practises are green, and has used its clout to ensure that the practises of businesses with which it deals are also sustainable. The company will conduct seminars on environmentally friendly packaging for other companies. Aveda has established a review process to ensure the origin of its supplier's materials have as little environmental effect as possible. Aveda does not do business with suppliers unwilling to find ways to use more recycled materials. They also became a leader in not advertising in magazines that refuse to use recycled paper.[196]

Burning waste

Proposals to incinerate waste to generate energy are again being promoted as the solution to the Greater Golden Horseshoe's garbage crisis. There is a proposal for an energy from waste facility to service York and Durham regions combined and an expansion to the current facility in Peel. But, these facilities have no place in or near an ecological city. In short, even the 'improved' technology has not eradicated the problem of toxic emissions to air, land and water. While airborne emissions have been significantly reduced, toxins end up in the fly ash, bottom ash and scrubber water. The bottom ash must be landfilled. Emissions include dioxins and furans, mercury, lead, cadmium, sulphur dioxide, nitrogen oxides and carbon monoxide. And with respect to global warming, incinerators produce higher greenhouse gas emissions than coal-fired generating plants![197] Moreover, in order to operate at peak efficiency, incinerators require continuous feeding, which is directly at odds with efforts to reduce the production of waste in the first place or divert it into recycling programs.

Green building standards

Provincial and national building codes often impede the use of innovative sustainable building technologies. Updating the current building code and providing information on how sustainable approaches and technology can meet building code requirements will make the design process easier, and help reduce the overall cost of building sustainably. Since building and site level details take place at the municipal level, municipalities are particularly well suited to advise the provincial government on how to integrate green building practices and technologies into the building code.[198] In 2006, the Province of Ontario consulted with municipal governments to improve energy efficiency standards for buildings and reduce the barriers to green technology in the Ontario building code. It's a good start, but we have to go much further to have a real impact. We have to apply green standards to all aspects of building construction as much as possible.

The footprint of a building and the surrounding landscaping, for example, are elements of the building code that need to be updated to address stormwater management, water efficiency, and soil erosion issues. New building technologies and methods already in use are helping to deal with some of these concerns, but they are not consistently enforced. Municipalities that have experience man-

aging local water supplies would be best suited to advise higher-level governments on building code improvements that would meet the needs of the local community. Municipal bylawsthat restrict front yard parking in established neighbourhoods and bylaws that help maintain front yards with a minimum amount of 'soft' landscaping are two examples of ways the City of Toronto is trying to manage stormwater through the protection of permeable surfaces. Provincial and national building codes can strengthen municipal efforts by incorporating elements of stormwater management and restricting new impermeable surfaces.

New technologies and processes for reclaiming, recycling and reconstituting building materials, which are already in use in many jurisdictions for economic as well as environmental reasons, have, unfortunately, had little impact on changing the building code so that all jurisdictions benefit from the recovery of essential resourc-

Getting There

Public

If you're buying a home...

✓Ask whether the development meets any sustainable building or energy efficiency standards, such LEED or R-2000.

✓In new residential developments, look for surface-level stormwater control mechanisms, like vegetated swales or retention ponds that divert rainwater away from the storm sewer system.

✓Look for developments that provide a wide range of housing types and price options.

✓Look for developments that incorporate the conservation of water, such as low-flush toilets and rain barrels.

✓Ask for water-saving technologies in the new home.

In your home or neighbourhood...

✓ Participate in your municipality's Blue Box and Green Bin program. If curbside organic pick up is not available, urge your councillor to get it started

✓Buy the most energy/water efficient appliances possible.

✓Increase the permeability of your property by disconnecting your downspout from the storm sewer system and growing a vertical garden or installing a green roof.

✓Explore opportunities to add greywater capture systems, such as a rain barrel, to your home.

✓Use water-saving technology such as low-flush toilets.

✓Purchase electricity from a renewable power provider such as Bullfrog Power (www.bullfrogpower.com).

✓Consider retrofitting your home or business with small-scale renewable power systems, such as solar panels. Join with neighbours to save money.

✓Get an energy audit done. Retrofit your home to save energy.

✓Take advantage of rebates and programs offered in your municipality to save energy and water. If little support is offered to you to go green, start talking to your councillor about programs your council can initiate.

stay informed

In 2006, Toronto released a detailed set of Green Development Standards. While only optional with few direct incentives at this point, they are still an excellent example of how municipalities can deliver local building standards that suit community needs and character. Check out the Toronto Green Development Standards at **toronto.ca/environment.**

stay informed

To find a LEED project in your area or to see the list of the LEED, go to **cagbc.org**

es. Since municipalities often manage waste and regional governments administer many of the basic resources used in construction, both parties' input is vital to meeting the changing needs of communities. Prescribing mandatory use of certain amounts of recycled mineral aggregate, for example, not only reduces the load on municipal landfills, but decreases the toll mining has on local habitat, watersheds and ecosystems.

There are several green building evaluation systems in Canada, including BREEAM-Canada and Green Globes, but the most common is the LEED Green Building Rating System. It sets voluntary standards for sustainable buildings. Developed by the US Green Building Council, LEED defines "green building" as establishing a common measurement standard; promoting integrated, whole-building design practises; and raising awareness of the benefits of building green. The US is developing two new initiatives, called LEED for Homes (LEED-H), for private residences; and LEED for Neighborhood Development (LEED-ND), which integrates green buildings and smart growth. The LEED system has been adopted by the Canada Green Building Council and there's a Canadian version. According to the Council, cagbc.org, there are currently 114 registered LEED Canada projects in Ontario. The City of Toronto joined the Council in 2005 and will work with its Toronto Chapter to promote the design and construction of green buildings in the Greater Toronto Area.

The five principle LEED categories are: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, and Indoor Environmental Quality. The rating system consists of required elements (standards that must be met by all LEED building) and additional point-based measures of efficiency that increase the overall buildings LEED score. LEED standards reduce the home's energy requirements, waste contribution, water and resource demands, and also decreases demands on the municipal infrastructure systems. As the strain on our environment and municipal budget grows, governments would be well advised to take note of the best practices being developed by the Council through the LEED Canada program and periodically review building codes to codify elements of the LEED standard.

The cost of being green

One of the primary obstacles to sustainable building practices is cost. The perception of developers and homebuyers is that green homes are considerably more expensive to build and purchase compared to standard buildings. In reality, while green homes do not add considerable cost to construction, the potential savings over the building's life are enormous. Part of the problem lies in what is counted as a cost. We need to go beyond the standard definition, and include the total value of a green building, such as environmental protection, energy and water savings, and better inside air quality.

According to a report by California's Sustainable Building Task Force, a sustainable approach costing an extra 2 per cent can result in a 20 per cent savings on total construction costs over the life cycle of the building, and studies conducted in the UK show similar results.[199]

Canada's first green condominium development, located in the town of Dundas, Ontario, details the kinds of savings that are possible. The 8,300m^2 six-storey building was constructed as part of a neighbourhood on a remediated brownfield. Some of the green strategies included the installation of high performance windows, which eliminates the need for perimeter heating; air-tight walls with R22 value insulation, which removes thermal bridging; and heat recovery ventilators in each unit, which improves energy efficiency and lowers peak energy demand, while also improving indoor air quality.[200] These strategies added less than one per cent to the total construction cost, and cut the building's water use in half, as well as over $36,000 per year in energy savings.

Getting There

Provincial Government

✓Review the Ontario Building Code to ensure it allows private property owners to adopt the latest green building innovations, such as greywater capture systems, energy efficiency features, and small-scale power systems (e.g. solar panels, geothermal systems).

✓Divert investment from unsustainable power sources (like nuclear and coal) to renewable energy sources (like wind and small scale hydro) and energy conservation programs.

✓ Place a moratorium on the planning and construction of new nuclear plants pending completion of a full provincial environmental assessment of the electricity plan being developed by the Ontario Power Authority and pass a regulation to end coal burning by 2009.

✓ Increase the province's conservation and demand management targets to their full economic potential (at least double the Ontario government's current target) in order to close the efficiency gap with other leading North American and European jurisdictions.

✓ Update the energy efficiency provisions of the building code and Energy Efficiency Act standards every three years, like California and many other U.S. states are doing.

✓Purchase green power for all provincial offices and facilities.

✓Pass a net metering law to ensure that net metering technology is available to support small-scale power systems and expand the Standard Offer Contract for low-impact renewable power while taking steps to ensure that such projects do not adversely affect natural ecosystems and intact forest areas.

✓ Give low and zero emission renewable energy projects priority access to the transmission grid.

✓ Develop a comprehensive study of the current provincial waste stream in order to ensure that maximum possible waste reductions are made at the production and consumption stages of a product's lifecycle.

✓ Implement user-pay systems for residential and small business waste and ban recyclable products from landfills while improving access to recycling and sorting facilities in multi-unit buildings.

✓ Enforce and expand the existing regulations requiring waste audits, waste reduction plans, and source separation by institutional, commercial, industrial and municipal waste generators.

✓ Require full environmental assessments for all proposed energy-from-waste projects, including consideration of their climate-change impacts relative to diversion programs.

✓Provide financial incentives for companies to adopt a cradle-to-cradle waste management system.

✓ Support the development of new markets for recycled materials and expand the list of items in the Blue Box.

✓ Require the reduction or elimination of toxic substances in product development rather than relying on much riskier recycling or reuse

✓New emerging products and technologies should be subjected to a full life cycle analysis to ensure that they will not add to existing waste problems and that their impacts on waste diversion and climate change are fully understood. Extended produce responsibility requirements similar to current European requirements for electronics, cars and other difficult to recycle products should be established.

"…comfort has almost nothing to do with how big a space is. It is attained, rather, by tailoring our houses to fit the way we really live and to the scale and proportion of our human form."

Sarah Susanka
The Not So Big House

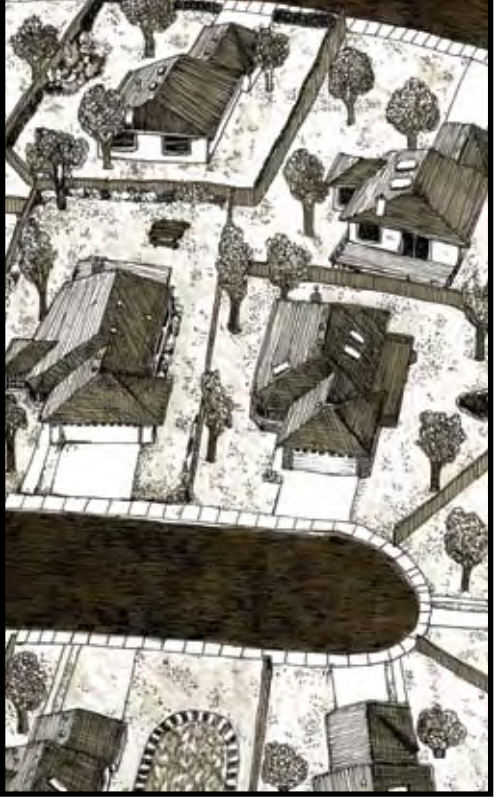
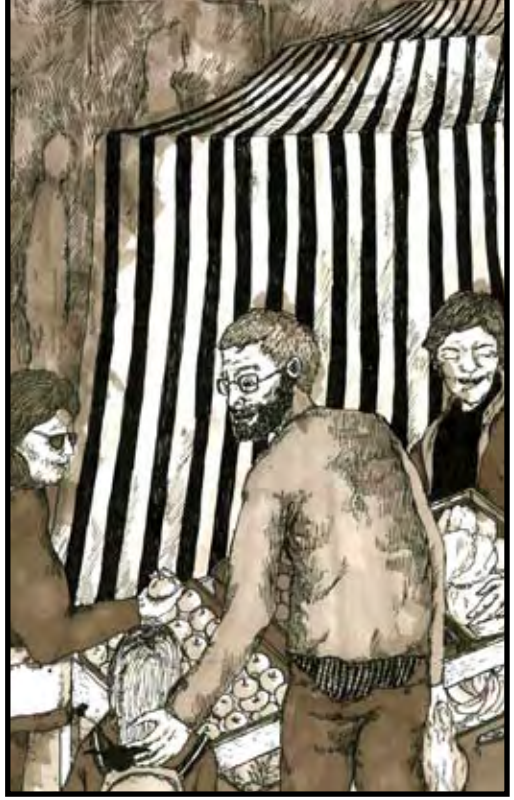
Affordability

An important but often overlooked aspect of an ecological community is the idea that a community must be affordable to a greater range of people and incomes than is currently the case.

According to Statistics Canada, the three population groups that are most likely to have low incomes are new immigrants, Aboriginal people, and single-parent families. These groups are more likely to live in low-income neighbourhoods, which in Toronto tend to cluster around a relatively prosperous downtown core. Toronto's Official Plan has acknowledged that new developments in the downtown area have focused primarily on middle- to high-income single and two person households, and that "the Downtown is essentially benefiting the higher educated, professional work force."[201] Lower-income, single person and family households, on the other hand, are offered a limited supply of existing rental units.

The Provincial Policy Statement (PPS), which came into effect in 2005, requires municipalities to establish minimum affordable housing targets for low--and moderate-income levels. The PPS defines affordable home ownership as the least expensive of either "housing for which the purchase price results in annual accommodation costs which do not exceed 30 per cent of gross annual household income for low - and moderate-income households," or "housing for which the purchase price is at least 10 per cent below the average purchase price of a resale unit in the regional market area."

Can a community call itself 'sustainable' if only a few can afford to live there? Building 'greener' is not only beneficial for the environment – it can increase affordability to a wider range of incomes, which the market does not address well.



Moving

forward

The need to shift how we build communities has never been more urgent. With our population projected to increase rapidly, the pressure to build is greater than ever. An ecological city recognizes that human health, environmental protection and community design are inextricably linked. We don't have to sprawl ever-outward. Instead, we could connect urban residents and the rural economy. An ecological city is built compactly, uses available land efficiently, and ensures that housing, jobs, amenities and recreation are all within easy distance of one another. Few people own cars because they don't need them. They take public transit, cycle and walk. An ecological city is lively and values vibrant compact neighbourhoods with room for nature to thrive. Citizens of an ecological city are not energy hogs, water wasters or garbage makers. They live and work in places that work thanks to conservation, efficiency, reuse and recycling and have produced some fine art, music, literature and people along the way.

Sustainability indicators are an excellent means of monitoring progress towards building green communities. Hamilton's Vision 2020, for example, sets out a strategy for a sustainable future through the partnership and involvement of government, community groups, businesses and organizations, and releases a report on sustainability each year. These include measurements such as transit ridership per capita and average residential electricity consumption.

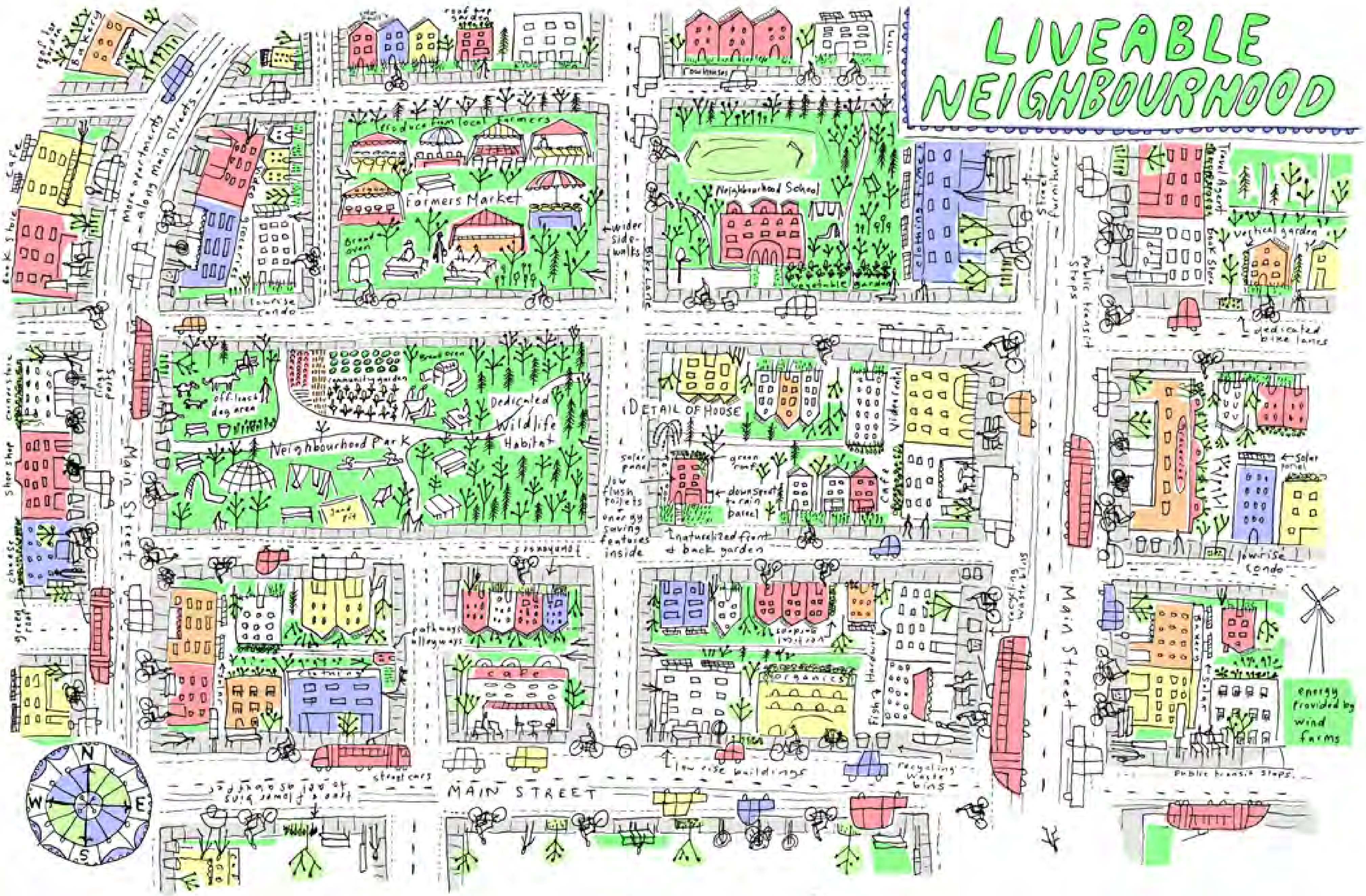
In Toronto there is *Vital Signs*, the city's annual check-up, which is produced by the Toronto Community Foundation, and measures progress from a broad perspective. It looks at things like income distribution, safety, health and well-being, learning, mobility, arts and culture and environmental leadership.

According to the provincial government, however, most municipalities in southern Ontario tend to focus more on recording information like housing statistics than a more integrated way to assess urban growth and sustainability; there is little coordination between districts. "Municipal departments tend to generate data independently, potentially missing opportunities to avoid overlap or spot emerging trends."[202] Most of all, municipalities are missing the opportunity to work together to address some of the most urgent problems of our time.

This report's recommendations emphasize that responsibility for achieving ecological cities does not rest with any one level of government or sector of society – it rests with all of us. An ecological city must be built at all scales – from small changes to individual properties and lifestyle to far-reaching changes in government policy. Whether we are citizens, policymakers or business leaders, we are deciding what future generations will inherit. Most people want to leave their children and grandchildren vibrant communities with clean air and water, flourishing ecosystems and reliable healthy food sources. It's time to get going.

Turn the page and spend a bit of time looking at Toronto-based artist Marlena Zuber's depiction of a "Liveable Neighbourhood." What would your neighbourhood look like if it were a more ecological city? We have left a page blank for you to sketch out some ideas.

We urge you to get involved. If you live in a municipality where many green initiatives are underway, then work with your councillor to ensure that future municipal budgets include opportunities to expand these programs and to foster ideas that will make your city even greener. If you live in a community that is doing little to address issues of sustainability, then take some of our recommendations and start the ball rolling.



Create Your Own Eco Neighbourhood →

neighbourhood parks rooftop gardens neighbourhood schools low rise buildings dedicated bike lanes public transit stops public transit recycling bins

neighbourhood parks rooftop gardens neighbourhood schools low rise buildings dedicated bike lanes

furniture wider sidewalks vertical gardens neighbourhood parks organic recycling bins organic market

dedicated bike lanes public transit stops public transit organic market

neighbourhood parks rooftop gardens public transit stops public transit

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