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The High Costs of Sprawl:

Why Building More Sustainable Communities
Will Save Us Time and Money

ACKNOWLEDGEMENTS

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Environmental Defence would like to thank Pamela Blais and Enid Slack for their pioneering work on the economic drivers and consequences of urban sprawl.



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EXECUTIVE SUMMARY

The Greater Golden Horseshoe (GGH), Canada's largest urban region, will undergo a profound change as it grows to accommodate an anticipated 4.4 million new residents by 2041, making it home to nearly 13.5 million people.

The decisions we make about how to accommodate this growth will determine what types of communities we live in, how much time we spend stuck in traffic, the quality of the air we breathe and whether our farmland and forests continue to provide us with food and habitat for our unique wildlife. There's no question that new housing will be needed. The question is what form it will take.

For decades, the region has spread outwards as the population has grown, and it has taken a toll on residents' health, quality of life and pocketbooks. But that has started to change, in part due to major shifts in peoples' housing preferences and the Ontario government's *Places to Grow Act* (2005) and Growth Plan for the Greater Golden Horseshoe (Growth Plan). These policies were designed to curb sprawl in favour of housing developments that use land more efficiently and produce communities where we can live, work, shop and play — all within a short walk or bike ride.

Despite this progress, underlying economic distortions continue to subsidize low-density sprawl over more livable, sustainable communities. This needs to change if the GGH is to grow in a smarter, more sustainable way as it absorbs new residents. And it needs to change to prevent municipalities and taxpayers from being on the hook to pay for more expensive patterns of growth.

Contrary to what many sprawl proponents claim, wasteful development patterns occur due to distortions in the housing market created by government policies at several levels. This report shows that these policies create a mismatch between the wider social, economic and environmental value of the land being developed, the cost of providing the land with basic municipal services (such as water, hydro and sewage connections, telecommunications lines and paved roadways) and the price that consumers pay to live there.

The ways municipalities charge developers and structure their tax systems tend to make the cost of purchasing a home in a low-density housing development on a greenfield area appear cheaper than one in a more compact neighbourhood in an existing urban area. This is because the real costs of sprawl are hidden from the new homeowner. In reality, new homes in pre-existing urban areas are far more cost-effective than those built on farmers' fields.

Municipalities collect development charges (DCs) — a toll paid by developers for each new housing unit built — to theoretically pay for the one-time installation costs of infrastructure like roads and sewers as well as costs to upgrade existing infrastructure like water treatment plants. In the GGH, municipal DCs range from thousands to tens of thousands of dollars per home, depending on what services a municipality provides its residents and how it calculates the cost of providing services to those that move there in the future.

DCs are usually averaged across all housing types, regardless of whether it costs more to provide services to some locations. The result is that units in (or near) existing urban areas that are cheaper to provide with municipal services — services such as roads, water pipes, schools and emergency services — end up subsidizing those units that are in less efficient locations far away from existing urban areas. For example, imagine it costs \$20,000 per unit to provide services to a compact development, and \$60,000 to provide services per unit to an inefficient, sprawl development. Typically, a municipality would charge developers for these services through averaging the costs, or \$40,000 per housing unit. This doubles the cost to the efficient houses while giving a steep discount to the inefficient ones.

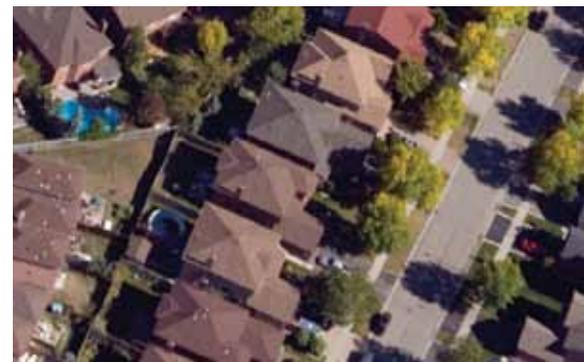
This means developers building large houses on huge lots don't need to pay the full costs of installing or running the services that these homes actually need. It also means developers (and purchasers) of smaller new houses built on modest lots overpay in development charges and inadvertently subsidize sprawl developers and homebuyers.

Municipalities also don't collect enough money through DCs to cover the full cost of building the infrastructure needed to service new developments, leaving existing taxpayers on the hook for up to 39 per cent of the costs (see appendix for methodology).

Our market value property tax system is based on the amount for which the government estimates you can sell your home. This penalizes residents who live in central locations and use municipal services efficiently.

Centrally located houses have higher market values because buyers are willing to pay more money to live in them. Because the property tax system is based on the market value of the house, centrally located houses have higher taxes. Owners of these homes are charged higher taxes even though they are less likely to drive, require less road space, and their smaller, narrower yards allow for more efficient municipal service delivery. The same system rewards newer low-density developments that tend to use municipal services more heavily. In low-density developments, residents tend to drive more and require more road space, which increases the cost for road maintenance. Houses also tend to be further apart than in the city, making efficient delivery of services, such as snow removal, nearly impossible. As a result, providing homes in low-density neighbourhoods with municipal services, including water pipes and wastewater pipes, is much more costly.

The result is that low-density, car-dependent residential neighbourhoods, which are more expensive to build and maintain, are often cheaper to buy and pay less taxes than homes in denser, mixed-use neighbourhoods in established parts of a city.



Developers building large houses on huge lots don't need to pay the full costs of installing or running the services that these homes actually need.

Beyond financial implications, there are other hidden costs of sprawl that affect the quality of life and environment of southern Ontarians. Low-density neighbourhoods are almost entirely car dependent, which contributes to the massive congestion choking the GGH's economy. Residents have virtually no transportation alternatives to meet their basic daily needs.

As a result, most GGH communities have experienced about as many smog days as Toronto's core in recent years. In 2008, the Ontario Medical Association estimated that 9,500 people died prematurely because of the smog — the vast majority of them in the region's suburban communities.

Studies show people who commute longer distances are also more likely to miss work or get injured on the job, and they don't get paid for all the time they spend stuck in traffic. The time we're spending getting around means less time to spend with our families and friends or relaxing on our own, reading, gardening or watching a favourite TV show.

Wasteful suburbanization practices have already cost us some of Canada's best farmland. And they're threatening the GGH's status as North America's second largest food hub. The food production and processing industry is the province's largest employer, with over 130,000 jobs — a number that increases by five per cent each year in the Greater Toronto Area.

Sprawl has also cost the GGH countless hectares of natural areas that provide residents with ecosystem services worth millions of dollars like cleaning our water and air and providing habitat for local plants. These services cost taxpayers a lot of money to replace, if they can be replaced at all.

Sprawl harms our health, our personal finances and our quality of life. The *Places to Grow Act* created a new framework for planning communities as the GGH grows. This was a good start, but more work is needed to prevent further sprawl. The air we breathe, the environment we share and our wallets will thank us. Now is the time to redouble our efforts to create healthy, financially sound, environmentally sustainable complete communities. The changes we make today will benefit those of us now living in the GGH and the many that will call our region home in the future.

RECOMMENDATIONS:

1 Show the true costs of sprawl

Residents, businesses and developers of efficient properties need to demand that municipal governments eliminate subsidies for inefficient development. Development charges must reflect the true costs of servicing new communities now and into the future. Incentives should be created to encourage compact, livable communities instead of more sprawl developments.

2 Get people moving

Residents and business leaders need to urge government to invest in transportation infrastructure that will move people and goods quickly. Complete communities need transportation options to work. Making our existing neighbourhoods complete or building new complete communities like Toronto's King West or Brampton's Mount Pleasant Villages requires us to invest in transportation infrastructure to move people and goods quickly across the region. This will allow our businesses to get the goods they need in time, while allowing people to connect to the jobs and places they want to be at regardless of where they live.

3 Encourage the right kinds of development in the right places

To kickstart the development of complete communities, governments should facilitate mid- and high-rise mixed-use development on existing and planned rapid transit lines using tax and DC incentives. Conversely, to end the pattern of building car-dependent communities, governments should use DC disincentives to discourage development in greenfields, which are difficult to service. Government should also gradually increase the Growth Plan's density and infill targets every 10 years to make sure we're using land efficiently.

4 Model best practices

To help local governments adopt best practices for development charges, the provincial government should partner with the City of Toronto and the Association of Municipalities of Ontario to establish a resource similar to British Columbia's Development Cost Charge Best Practices Guide. It should also support efforts to highlight some of the innovative products produced by developers that are good for the environment, support the establishment of complete communities and promote the financial sustainability of municipal governments by using land and services efficiently.

5 Encourage complete communities

Municipalities should begin loosening controls in single-use zoned areas to allow small businesses and employers to establish locations in what are now primarily residential neighbourhoods. This change would begin the process of providing suburban residents with complete communities where they can walk to many of their daily amenities, such as work, schools, grocery stores, etc.

INTRODUCTION

The Greater Golden Horseshoe (GGH) is undergoing a major transformation in how it develops as an urban region.

The transformation will result in changes to how we live, how we build our homes and how we get around. In the future, more of us could be living in communities where most of our daily needs are only a short walk away. More than 70 per cent of us could live within two kilometres of rapid transit.¹ More of us could live in neighbourhoods where the services provided by our municipalities will be cost-effective. For many communities in the GGH, this would mark a dramatic change.

The transformation underway is due in part to the Ontario government's internationally acclaimed *Places to Grow Act*. This Act sets the framework for one of the world's fastest growing regions to develop in a way that weaves the separate threads of economic sustainability, responsible environmental stewardship and a high quality of life together into our urban fabric. The resulting communities will be more cost- and resource-efficient, benefiting residents, taxpayers, municipalities and the environment.

The Greater Golden Horseshoe and Ontario's Greenbelt



Note: The information on this map is not to scale, does not accurately reflect approved land-use and planning boundaries, and may be out of date. For more information on precise boundaries, the appropriate municipality should be consulted. For more information on the Greenbelt Area boundaries, the Greenbelt Plan 2005 should be consulted. The Province of Ontario assumes no responsibility or liability for any consequences of any use made of this map.

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In the past, the region experienced a lot of sprawl. Communities were built that devoured farmland and forests, and were far from people's daily amenities, creating car-dependent lifestyles. The GGH's transformation could result in far better outcomes. If we keep going down this new and better path for urban development, when the GGH's transformation is complete, many of the ecological and agricultural values of the region will be preserved: some of the world's best farmland will still grow our food, our green spaces will still clean our water and purify our air for free, and provide a home to the unique plants and wildlife of southern Ontario.

In recent years, changes have occurred across the GGH, which is expected to grow from over 9 million people in 2011 to almost 13.5 million by 2041.² After years of decline due to shopping malls and big box stores, main streets of towns in the GGH are starting to bustle once again with local shops and restaurants, providing residents with places to work, live and relax much closer than before. By becoming more efficient and cost-effective in how they grow, cities, such as Markham, Mississauga, Hamilton and Barrie, are quickly becoming some of the region's most desirable places to live and are drawing new residents, visitors and customers from the entire region.

While some developers understand the benefits of creating more livable and efficient communities, other developers want to turn back the clock. Rather than evolve and adapt to the new market, they want to make money the old-fashioned way, by sprawling across the countryside and building car-dependent residential areas that cost more for taxpayers, and damage both our quality of life and the environment.

This report will illustrate that sprawl-based development costs too much. In the GGH, there's no question that there will be new houses and communities built over the coming decade. It's a matter of what they'll look like. Sprawl destroys the farmland that provides us with local food and damages the ecosystems that clean our air and water. Sprawl costs us in higher taxes and fewer services. Sprawl wastes our time and money by making many of us car dependent. Worst of all, sprawl prevents us from building more economically and environmentally sustainable communities, which are better for human health and involve many less hours stuck in traffic jams.



WHAT IS SPRAWL?

Although many people confuse sprawl and suburbanization, these terms describe two different things. Put simply, suburbanization is the conversion of land from non-urban uses, such as farming, forests and wetlands, to urban uses like buildings and roadways. Sprawl is the pattern of making the conversion from non-urban to urban land uses inefficiently, resulting in high costs to our shared environment, our health and our wallets.

In this way, suburbanization versus sprawl can be seen as using land versus wasting land. As our region's population grows, we will need to use more land, but we don't need to waste land by using it inefficiently.

Wasted land, or sprawl development, happens primarily through low-density residential developments built on non-urbanized land, called greenfields, which are often disconnected from the existing urban fabric. They tend to be far away from the core, with occasional commercial clusters like big box stores, strip malls, and power centres that replace the traditional main streets and local shops as the prime retail areas. Because they are single use, most of these developments are almost entirely car-oriented. People must drive everywhere for their daily needs and activities, with very few convenient or safe transportation alternatives like walking, bicycling or transit.



GREENFIELD BEFORE



GREENFIELD AFTER



INFILL BEFORE



INFILL AFTER



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GREENFIELD VERSUS INFILL

When developments are built on land that was previously non-urban, such as farmland or forests, they are considered to be greenfield developments. Infill developments are those built on land that is already urbanized, such as on a parking lot or vacant parcel, by repurposing an existing building or tearing down an existing structure and starting over.

THE PLACES TO GROW ACT (2006 - PRESENT)

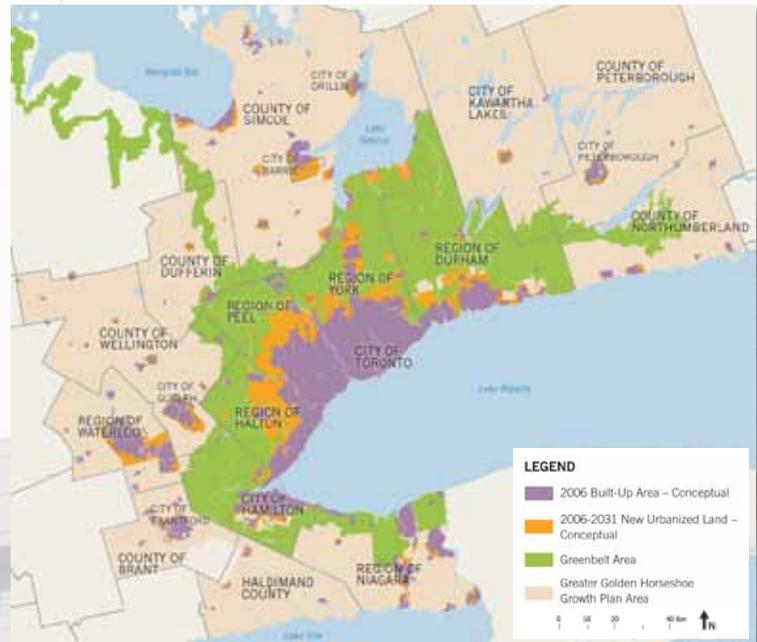
Towards the end of the 20th century, as the environmental, social and economic consequences of endless sprawl began to pile up, consensus emerged that the GGH needed to grow more efficiently. In 2005, the Ontario government introduced the *Places to Grow Act*, a new framework for managing the province's rapidly growing population and urban regions.

Through the Act, the province created the Growth Plan for the Greater Golden Horseshoe (Growth Plan), an initiative to plan and manage urban growth around the entire GGH in a more sustainable fashion. The Growth Plan is a comprehensive strategy to prevent new sprawl developments and promote more efficient land use and the development of complete communities (see definition on next page). It's the tool enabling a profound transformation in how the GGH develops.

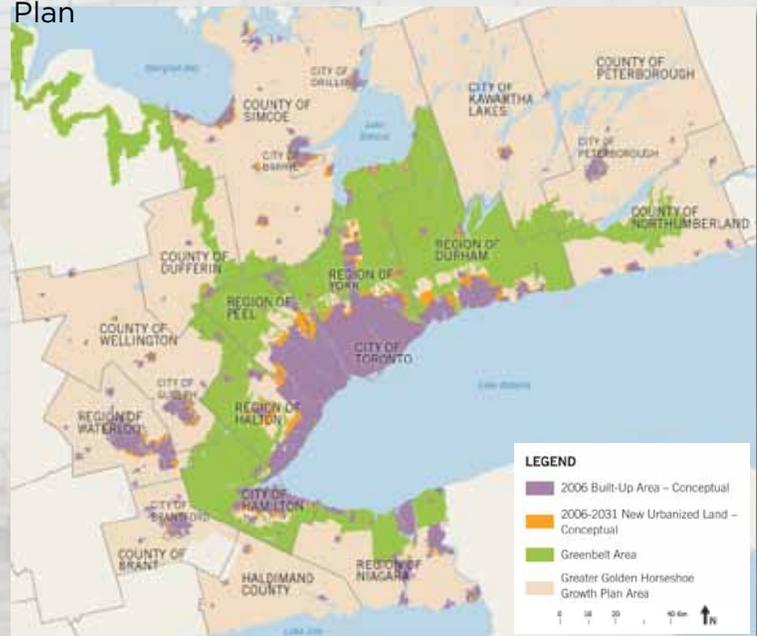
In the Growth Plan, the province provides forecasts for both employment and population growth that each municipality should anticipate every five years between now and 2041. This helps municipalities write their official plans, which outline how land in a community will

Projected GGH Urban Growth Scenarios (2006 - 2031)

No Growth Plan, "Business As Usual" Scenario



Fully Implemented Growth Plan



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be used, what services will be provided, when the new land uses and services will happen, and what community improvements will be made.⁴

Through the official planning process, municipalities determine how much room they need to grow. The province has mandated that by 2015, municipalities must direct more population growth into already urbanized areas, and newly urbanized land must house more people on it than the historical trend, a process known as intensification.

The Growth Plan established a meaningful limit on how far we can grow out, turning our attention on how to grow up and make better use of the land we have available. Though it represents a very good start to building healthy communities, capable of creating and sustaining a high quality of life for residents, the Growth Plan is not perfect and can't do all the work to transform the GGH. This report will suggest ways we can build on early successes and make some improvements in order to build complete communities.

COMPLETE COMMUNITIES

A complete community should be a great place to live, work, shop, and play. This means local access to options for food, transportation, housing, recreation, education, retail and employment.³ Under the Growth Plan, land in the region developed by 2006 falls within the built boundary, the dividing line between urbanized and non-urbanized land. All non-urbanized land that might be used for future development is considered to be in the whitebelt. The whitebelt ends at the Greenbelt, Ontario's permanently protected agricultural and wilderness lands.



Above: An example in Brantford of a complete community, where people can live, work, shop and play.



THE GREATER GOLDEN HORSESHOE'S HISTORY OF TRANSIT-BASED SUBURBAN DEVELOPMENT (1860 – 2000)

The GGH's urban history is one in which several small hamlets and villages scattered throughout the region grew as newcomers from other parts of the world settled in them. Some were farming communities, some were shipping centres and others were stops or plots of land along the way to other places. The urban form these settlements took depended on the primary mode of transportation residents used to connect to each other, and to the large urban centre in what is now downtown Toronto.

In the mid-to-late nineteenth century, the urban core of Toronto, located in what is now the financial district, was showing the pollution, crime and poverty problems typical of Victorian cities. Because of this, and to accommodate a rapidly growing population, between 1890 and 1910 new streetcar suburbs were developed in long, gridded blocks along streets like St. Clair West, Bloor, Dundas and College. These streetcar suburbs became very popular.^{5 6}

Many residents of these neighbourhoods worked in the factories and offices of downtown Toronto, travelling to and from their neighbourhoods to the city's core on the streetcars or the relatively short-lived commuter railways. Meanwhile, homemakers, merchants and children were all within walking distance to their daily activities. As these commuter communities grew, and as the City of Toronto grew along with them, the gaps between them filled in to create one continuous urban area.⁷

After the Second World War, an almost entirely new type of development started, one which emphasized using private vehicles to get around. A roaring post-war economy coupled with new large-scale housing production techniques⁸ meant developers designed communities in greenfields with the idea that they could be entirely self-contained.⁹ When newly affluent families could afford cars, many Toronto residents moved from the city's pre-war neighbourhoods to planned communities located on formerly agricultural land or wilderness on the urban periphery.¹⁰



Formerly small settlements and farming villages further outside the urban centres grew enormously as developers built community after community, most of them almost entirely residential and designed around private vehicle ownership. As these new outer suburbs saw their populations swell and their developed areas spread, the towns physically and politically merged into what is today's 905 region, blending in to one urban community called the Greater Toronto Area.¹¹ As the GTA ballooned out, it consumed more green space and needed more highways to connect people to the region's core.¹²

The development of sprawl in the GGH started with the assumption that residents would drive a car to meet all of their lifestyle needs. From there, communities began springing up that did not lend themselves to other modes of travel, and large areas were zoned for single uses — primarily housing. This meant the newer homes in the region were located driving distances from businesses, schools, places of work and recreational areas.¹³

With assumed dependence on automobile use, newer neighbourhoods began to look different than the ones in the city's core. Instead of gridded streets with tightly packed homes, houses were built on curvy, disconnected streets to discourage through traffic. Residential densities were relatively low, leaving houses spread apart. Neighbourhoods configured like this cannot support transit and the lack of street connectivity makes it hard for people to walk directly to a destination. This leaves no option but to drive everywhere (including to work, to school, to buy groceries, etc) in a reasonable amount of time and effort. From the 1950s through the early 2000s, these car-dependent communities located at increasing distances from employment centres became the most common development model of the GGH.

This inefficient development model has contributed to increased traffic and commute times for residents, and necessitates that we drive through other municipalities to get to work every day, increasing other communities' congestion along the way.

CITY OF TORONTO ARCHIVES PHOTO INDEX:

1. Looking east across Yonge at Eglinton, 1912 (Fonds 1244, Item 507.); 2. Toronto's Original Streetcar Service, pre 1890s (Fonds 1548, Series 393, Item 35); 3. Horse and dog hunting party, just north of Bathurst and St. Clair, 1907 (Fonds 1244, Item 159); 4. King and Yonge, looking east across Yonge, 1885-1895 (Fonds 1478, Item 19); 5. Yonge Street north of King, 1911 (Fonds 200, Series 372, Subseries 100, Item 239.); 6. Church of the Redeemer, northeast corner of Bloor Street and Avenue Road, 1924 (Fonds 1231, Item 349.)

CAUSES OF URBAN SPRAWL

Recent studies show that most people would prefer to live downtown or in downtown-like denser urban environments if given the choice at a reasonable price. Not all these people want to live in high rises, but 80 per cent of homebuyers would give up a large house and yard and a long commute for a modest or attached dwelling where they could walk to amenities, take transit to work and commute in under 30 minutes.¹⁴



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Wasteful development patterns occur due to distortions in the housing market created by government policies at several levels.

This has been illustrated in new downtown Toronto communities like King West Village, a medium-density neighbourhood of stacked townhouse condominium units built on former industrial lands. Located between major thoroughfares and regional train corridors, ads for the development promoted the “realities of an urban lifestyle” in the city, attracting young families and other households from the suburbs to what was a more affordable, public transit-friendly part of the city.¹⁵

The City of Brampton is also leading the urban revolution from an unlikely location — the suburbs. In Brampton, an entirely new, pedestrian-friendly community is being built within walking distance of the GO Train line. Brampton used to be synonymous with car-dependent sprawl,¹⁶ but Mattamy Homes’ Mount Pleasant Village boasts that it will “offer families everything they need for an enjoyable lifestyle all within a five-minute walk of their home.”¹⁷ According to Alex Taranu, Brampton’s manager of architectural design, unlike most other parts of Brampton, most Mount Pleasant Village households have only one car and the neighbourhood is designed to reduce the prominence of car use.¹⁸ This community of apartments, detached houses and townhomes built in a traditionally sprawl-oriented municipality shows that for residents to get the benefits of “downtown living,” i.e. being within walking distance of all your daily needs and transportation options, they do not need to live in the old, busy cores of big cities.

If most people would prefer to live in walkable, transit-friendly communities, why does sprawl happen? At its most fundamental level, the causes of urban sprawl are primarily economic. Contrary to what many sprawl proponents argue, wasteful development patterns occur due to distortions in the housing market created by government policies at several levels.¹⁹ These policies create a fundamental mismatch between the wider social, economic and environmental value of the land being developed, the cost of providing the land with basic municipal services (such as water, hydro and sewage connections, telecommunications lines and paved roadways) and the price that consumers pay to live there.

This mismatch creates hidden short- and long-term infrastructure, social and environmental costs that current residents and future residents living in more efficient houses must eventually pay in order to subsidize those developments that waste land.

HOW GOVERNMENT-GENERATED SUBSIDIES CONTRIBUTE TO MARKET FAILURE

Sprawl developments are expensive to build. They rely on subsidies from government in the form of infrastructure, services and cheap land. Without these subsidies, the high costs of sprawl — to the taxpayer and to municipalities — would be more visible. Subsidies make sprawl attractive not only to developers, but to consumers by masking the true costs of sprawl in a relatively cheap home price.²⁰

Even with the Growth Plan's targets to increase density and reduce sprawl, local governments still inadvertently subsidize sprawl through development charge systems that are aimed at raising money to provide municipal services for future residents rather than encouraging developers to create properties and communities that use those municipal services more efficiently.²¹ Municipal property tax regimes also subsidize sprawl developments by overtaxing efficient neighbourhoods and under-taxing inefficient neighbourhoods. Low-density housing developments use local and regional roads much more heavily. And because low-density residential neighbourhoods are so spread out, there is no way to deliver services to them efficiently, making it more costly to provide these areas with municipal services like pipes or fire protection. Municipal governments also zone in such a way that makes too much land available for housing, reducing the market value of those housing products on the market by creating the illusion of too much supply.

These well-established market distortions continue primarily because many people erroneously believe we have an endless supply of land to develop on at little to no cost to the public and few realize that we are paying a high price for this inefficient development pattern.

Few realize that we are paying a high price for inefficient sprawl development patterns.

WHO PAYS FOR SPRAWL?

Chart 1: Paying for Sprawl

Who Pays for Sprawl?	Impacts of Sprawl
Owners of New Efficient Homes	<ul style="list-style-type: none"> In many cases, DCs don't reflect the efficiency of a home, resulting in efficient home owners paying higher DCs to offset the subsidies sprawl-type homes receive.
Municipal Taxpayers	<ul style="list-style-type: none"> Higher property values for homes and businesses in more urban areas, where it's cheaper for municipalities to provide services, means properties in urban areas pay more taxes than those in lower property value sprawl developments — even though it costs local governments more money to build and operate services (such as roads, water pipes, schools and emergency services) for sprawl developments.
Agriculture and Related Industries	<ul style="list-style-type: none"> Loss of prime farmland harms the GGH's agri-food industry, which employs nearly 130,000 people and generates \$50 billion in Ontario per year.
Green Space and Water	<ul style="list-style-type: none"> Sprawl results in the loss of natural habitat for our plants and unique wildlife. The destruction of our natural spaces threatens the ecosystem services that forests and green spaces provide for free (water filtration, flood control and waste management) which are valued at \$2.6 billion each year in the Greenbelt and \$122.3 million in the whitebelt.
Health and Quality of Life	<ul style="list-style-type: none"> Car dependence is linked to increased obesity rates and hypertension rates. Longer commutes are linked with more workplace accidents.
Air Quality	<ul style="list-style-type: none"> Increased traffic contributes to worsening smog and a greater number of smog days for communities in the GGH. Poor air quality is difficult for those with respiratory challenges.
Community Life	<ul style="list-style-type: none"> Sprawl reduces the amount of contact we have with people other than our immediate neighbours. Unpaid hours commuting by car leaves us less time for spending with family and friends.



WHO PAYS? OWNERS OF NEW EFFICIENT HOMES

In Ontario, municipal governments rely on Development Charges (DCs) to fund one-time costs of infrastructure improvements required for new developments. Some of these costs are for hard infrastructure, such as roads, water, and sewers. Others are for soft infrastructure like libraries, police, and fire stations.²² The principle behind these charges is that new urban growth should pay for itself up front and not require existing residents to pay for the infrastructure needed to service it.²³ Developers include these costs in the final home price.

The problem is instead of charging higher DCs for units that cost more to service, many municipalities structure their DCs on average costs per resident and fail to account for the differences in how people in different housing types use services. Even worse, some municipalities average the cost of new infrastructure across their entire jurisdiction regardless of where the development is built.²⁴

The municipalities that attempt to fine-tune their DCs to reflect the different cost to service developments in rural versus urban environments often overcharge smaller units (e.g. townhouses or condominiums) and undercharge larger units (e.g. single family units). This is because they base it on the expected average per capita occupancy of the housing type rather than how efficiently the homes (and their residents) use municipal services. For example, three people living in a detached house will require more stormwater management for the runoff on their property and more road repair on their street than the one or two people living in an apartment. But it's the couple without a car, living in a condo near public transit who are subsidizing them through paying higher DCs that don't reflect the efficiency of their housing choice.

ACTUAL COST VS. AVERAGED DEVELOPMENT CHARGE

Using an average cost approach for DCs can mean more efficient units built in cheaper to service locations end up subsidizing those that are less efficient and located on sites that are expensive to service. For example, imagine it costs \$20,000 per unit to provide services to an efficient development on a greenfield and \$60,000 to provide services per unit on an inefficient development, also on a greenfield.²⁶ Typically, a municipality would charge developers for these services by averaging the costs or \$40,000 per housing unit. This doubles the cost to the efficient house while giving a steep discount to the inefficient one.

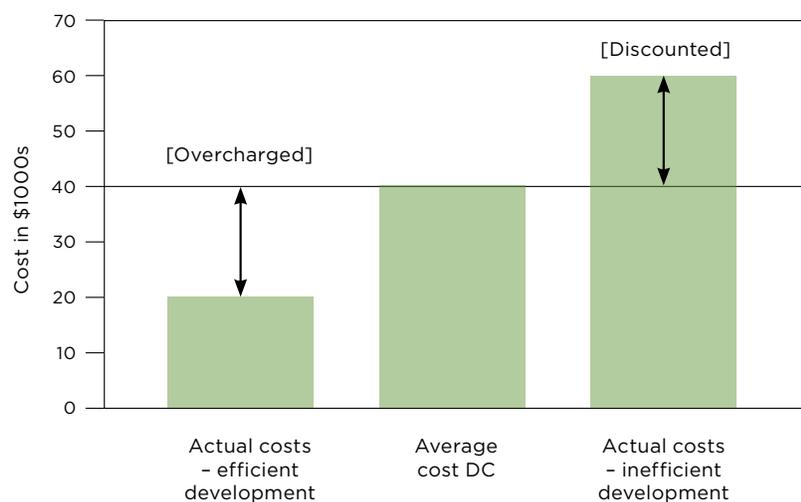
Worse still, DCs rarely cover the full cost of installing the necessary infrastructure and legally cannot cover any operating costs or future infrastructure upgrades. This means developers building large houses on huge lots don't need to pay the full costs of installing or running the services that these homes need. It also means developers (and purchasers) of smaller new houses built on modest lots overpay in development charges and inadvertently subsidize sprawl developers and homebuyers (see Chart 2).

In the GGH, municipal DCs range from several thousand to tens of thousands of dollars per home.²⁷ Comparisons between jurisdictions can be tough to find so

that's why we gathered the information for this report's Chart 3 (see page 19). This chart shows a range of GGH development charge systems including those that don't distinguish between builds on greenfields and builds in urbanized areas, and those that provide incentives for more efficient development.

DC rates are based on what it costs for a municipality to cover the capital costs for infrastructure required to accommodate population and employment growth. Greenfield developments complicate this because they may begin with a small number of residents, who rely on wells and residential septic systems. Because they don't immediately require some municipal services, such as water distribution or wastewater management, they are given a greenfield discount (as is the case in

Chart 2: Actual costs vs. Typical development charge²⁵



Bradford West Gwillimbury and Grimsby) even though they'll use most other services inefficiently. Alternatively, municipal services are hooked up but the DCs charged to the developer don't cover all the public costs associated with a project. Existing taxpayers or more efficient developments that were overcharged DCs are left to close the funding gap.

By managing DCs inefficiently, municipalities provide an incentive for developers to build single-use residential neighbourhoods on remote greenfields and miss an opportunity to use the charges to encourage an urban form that is sustainable.²⁸ For example, the majority of employers require municipal services hooked up to their facilities to operate. Greenfield developments without water and wastewater connections are not suitable for setting up new businesses. As a result, often only houses are built on this type of greenfield. This replicates the pattern of single-use, car-dependent residential neighbourhoods being placed on farmland at the edge of town. In addition, homes that manage their own water on site, like those built on many greenfields, require more land per housing unit than if the municipality takes care of it. This means that fewer houses can be built on a given piece of land, which continues the wasteful pattern of building low-density residential areas.

Municipalities could use their DC systems to encourage development that puts less strain on municipal budgets by encouraging growth to areas where services already exist and are underused. Both Kitchener²⁹ and Waterloo³⁰ have used DC systems to facilitate growth in their old downtown cores, areas with services that were underused. Following Caledon's example,³¹ municipalities could also provide discounts for innovative non-residential developments that put less strain on municipal services.

Some municipalities, such as Kitchener, Hamilton (below) and Brantford, charge higher development charges for builds in greenfields than builds in urbanized areas, providing a financial incentive not to bulldoze farmland and forests.



Photo of Hamilton © Queen's Printer for Ontario, photo source: Ontario Growth Secretariat, Ministry of Infrastructure

Chart 3: Sample of Development Charges Levied by Municipalities and their Regions in the GGH*

Municipality	Regional Government	Urbanized Area Units (\$)				Greenfield or Rural Area Units (\$)			
		Single/ Detach	Town-house	2+ brm	1 brm or less	Single/ Detach	Town-house	2+ brm	1 brm or less
Ajax	Durham Region	31,000/35,000	28,500	21,000	21,000	Same as urbanized area	Same as urbanized area	Same as urbanized area	Same as urbanized area
Bradford West Gwillimbury	Simcoe County	40,000	34,600	23,300	17,900	25,800	21,600	15,300	12,200
Brantford	N/A	10,700	7,300	5,600	4,900	14,800	10,100	7,700	6,700
Caledon	Peel Region	57,600	53,300	40,800	23,100	Caledon has discounts for services not required, special area charges and 10 - 44.5 per cent discounts for environmental efficiency.			
Grimsby	Niagara Regions	20,500	13,300	10,800	8,600	18,900	12,200	9,900	8,000
Hamilton	N/A	29,100	21,000	18,000	12,041	30,600 - 32,600	22,300 - 23,600	19,300 - 20,400	13,000 - 13,900
Kitchener**	Waterloo Region	20,400	14,700	12,429	12,429	24,500	17,600	14,700	14,700
Niagara-on-the-Lake	Niagara Region	18,200	13,500	11,500	9,400	10,900 - 12,598	8,200 - 9,700	7,500 - 8,900	5,500 - 6,600
Oakville	Halton	54,700	41,100	31,200	27,400	63,900	48,000	35,800	32,000
Peterborough	N/A	14,900	12,900	8,600	8,600	Peterborough has eight special planning area charges for its greenfields, all of which add thousands of dollars to recover costs for providing services from these harder to service areas.			
Pickering	Durham	33,000	29,130	19,600	13,600	Same as urbanized area	Same as urbanized area	Same as urbanized area	Same as urbanized area
Vaughan	York	55,163	48,200	34,600	26,600	Vaughan has nine special area charges which result in mostly modest per unit increases on developments.			
Waterloo	Waterloo Region	26,700	18,957	16,500	14,900	Same as urbanized area	Same as urbanized area	Same as urbanized area	Same as urbanized area
Whitby	Durham	35,000	28,500	27,100	14,100	Same as urbanized area	Same as urbanized area	Same as urbanized area	Same as urbanized area

N/A Denotes a single tier municipality

* Different jurisdictions use different measures for unit types. This chart is for illustration only and is rounded to the nearest \$100. For exact amounts, visit municipal websites.

**Based on the "Full Services Suburban" category. Two other partial service suburban categories exist, with lower fees depending on water/wastewater services



WHO PAYS? MUNICIPAL TAXPAYERS

Because of how costs are allocated in our fragmented municipal system, taxpayers who already live in the municipality or region that permits sprawl end up paying for sprawl developments through higher taxes and/or lower service levels.

A study conducted by the Canadian Mortgage and Housing Corporation (CMHC), Canada's national housing agency and main provider of mortgage loan insurance, shows how much cheaper it is to build and maintain infrastructure in efficient, desirable neighbourhoods versus sprawl developments. Though the study focuses on the Ottawa region, its results can be transferred to the GGH because they share a common policy framework. The CMHC study compared conventional post-war low-density housing with an alternative form of new urban development known as neo-traditional, where detached, semi-detached homes and apartments are created in neighbourhoods that emphasize walkability, mixed use, many parks, close proximity to shops and amenities — much like the ones built in Toronto before the Second World War.

The study found it is 16 per cent cheaper per unit to construct infrastructure for the alternative, neo-traditional model than the conventional post-war, low-density sprawl model, and roughly 9 per cent cheaper to maintain over its life.³² Yet because of how we have structured our DC system in Ontario, there is no financial incentive for developers to build these more efficient, cost-effective neighbourhoods.

In addition to failing to consider whether or not a development will efficiently or inefficiently use municipal infrastructure, many DC regimes also fail to factor in whether the new homes will be in an already urbanized area, which already has many of the services, or on a greenfield, which will require all of the services to be installed from scratch.

Correcting this oversight would create incentives to encourage developers to build more cost-effective infill developments rather than wasteful sprawl that destroys farmland and green space.

Using the same CMHC study, but factoring in the cost of inflation since it was conducted, we can see how this failure to properly account for the cost of building infrastructure leads to the cost of development shifting from the developer onto the municipality, resulting in a discount for sprawl and a hefty bill for local taxpayers. The land in the CMHC study was a greenfield located a fair distance from the nearest built-up area. Using today's DC regime, installing the infrastructure to service either development option would result in an estimated 17 to 39 per cent financial shortfall for the municipality. In other words, the City of Ottawa would have to find \$23 million to \$91 million to connect the new homes to the grid, roughly \$4,600 to \$15,300 per household that DCs do not cover.



Maps © Queen's Printer for Ontario, photo source: Ontario Growth Secretariat, Ministry of Infrastructure

Taxpayers who already live in a municipality or region that permits sprawl end up paying for sprawl developments through higher taxes and/or lower levels of services like road maintenance.

This subsidy amounts to a form of regressive taxation because the people buying the five-bedroom house on a large lot are likely to have greater financial means than the people subsidizing them who buy the 1,500-square-foot condo or a two-bedroom house on a smaller lot. Many existing taxpayers cannot afford to buy their own homes and pay their property taxes through their monthly rent. It's unfair that the people who subsidize sprawl development are those making housing decisions that put far less strain on the local tax base and in many cases, even help it operate more efficiently.

Sprawl developments that are car dependent and far away from most amenities often maintain comparatively low market values compared to their downtown, walkable counterparts. With almost every housing type, the further away from an urban centre, the less expensive the housing becomes.³³

Our market-based property tax system translates that distance discount into lower property taxes than those paid by most existing homes closer to the urban centre. Sprawl developments contribute less overall for the services that are more expensive to provide to them. This means the cost of providing services to new sprawl is offset by existing taxpayers and those that live in more efficient developments who either pay more for services or face cutbacks to keep taxes affordable, a proposition Mississauga recently faced.

OTTAWA'S AREA-SPECIFIC CHARGES

In Ottawa, an Area-Specific Charge (ASC) — also called “zone charges” by some municipalities — is added onto developments built on land that has significant additional servicing costs, primarily stormwater management facilities. If the development in the CMHC study were to pay the ASC applied to the land beside it, the taxpayer subsidy of the development would drop to between \$7.7 million and \$67.6 million, or roughly \$1,900 to \$12,000 per home in the conventional post-war development, and \$1,200 to \$9,900 per home in the neo-traditional one.

This same market value-based tax assessment also discourages more efficient land use through intensification. Increasing the value of a property in a dense neighbourhood will increase the owner's tax bill.³⁶ Consider a homeowner who chose to build an expansion for a new bedroom, bathroom and larger kitchen to accommodate a growing family in a dense neighbourhood that is relatively cheap to service. On the next assessment, the property value will have increased, and the property owner would have a much higher tax bill, even though the owner lives in an efficient-to-service neighbourhood.³⁷ Although the suburbs are more expensive to service, their lower property values — and lower tax bills — could make a move to the suburb a more attractive option for the family's pocketbook.

If the municipal tax system was a business it would quickly go bankrupt. By undercharging for sprawl developments, the tax system creates demand for a product it loses money on (sprawl homes) and discourages a product (efficient homes) that could save it money. This is like a restaurant charging \$1 for a prime steak and \$300 for a hamburger — not exactly a financially sound pricing model, but that is precisely how our municipalities are structuring their development charges and property tax systems.

MISSISSAUGA PAYS FOR SPRAWL

The Municipality of Mississauga understands the financial consequences of sprawl. Mississauga currently requires steep annual property tax increases to cover the cost of basic services like libraries and roads. According to the Toronto Star's Christopher Hume, Mississauga Mayor Hazel McCallion acknowledges that her city's planners and politicians "have made every mistake in the book, allowing the construction of one car-dependent subdivision after another, each more isolated and wasteful than the next. Postwar planning, based as it was on cheap oil, single-use zoning and endless highways, is writ large [there]."³⁴ Today, much of the infrastructure that was built so wastefully in Mississauga needs to be replaced. The mayor, formerly an advocate for sprawl development, has recently been instrumental in the push for smart growth and transit supportive communities across the GGH.³⁵

BEYOND TAX: OTHER COSTS OF SPRAWL

It's not just residential taxpayers impacted by sprawl. There are some significant costs that spread over municipal boundaries and don't show up in your tax bill. But these costs aren't any less significant.

COSTS TO AGRICULTURE AND RELATED INDUSTRIES

Some of the social and environmental costs of sprawl that we pay are plainly visible like less farmland to grow food locally. Between 1996 and 2001, 16 per cent of prime farmland in our region was lost to urban development. Some of this was the best farmland in Canada.³⁸

Agriculture production and food processing plays a huge role in the GGH's economy. The GGH is one of North America's largest agri-food business clusters, second only to Los Angeles. It's like having our own Silicon Valley but devoted to food, and like Silicon Valley it creates a lot of jobs, wealth and tax dollars. In the GGH, we sell some food off the farm, but we also turn a lot of it into ready-to-eat products, such as pies, jams, chips, cookies, beer, wine and ready-to-eat meals. While much of this food is sold in Ontario, a lot is shipped all over North America.

Our agri-food business cluster (see definition on next page) employs 130,000 people,³⁹ nearly 60,000 in the Greater Toronto Area alone — a number that increases by roughly five per cent each year and is expected to double within the decade.⁴⁰ The industry's success depends on the prime farmland located throughout the GGH, growing more than 200 agricultural commodities that are processed in Ontario.⁴¹ As sprawl devours our farmland, it risks damaging our thriving agri-food business cluster.



AGRI-FOOD BUSINESS CLUSTER

A business cluster is a geographic concentration of interconnected businesses, suppliers, and associated institutions in a particular field. Silicon Valley is one of the most famous clusters, but there are clusters in other fields, everything from banking to food.⁶¹

When a critical threshold of skills and resources is reached, it can give the geographic region a key position in a given economic branch of activity and a sustainable competitive advantage over other places and sometimes even global supremacy. Clusters can increase the productivity and innovation of the firms located within them and can lead to the creation of new businesses in the field.⁶²

Ontario's agri-food business cluster supports over 3,200 food and beverage companies. It includes small and mid-size businesses, as well as major companies such as General Mills Canada, H.J. Heinz Company of Canada, Labatt Breweries of Canada, Maple Leaf Foods, Kellogg Canada, Saputo, Sleeman Breweries, Dare Foods, Ferrero Canada, Dr. Oetker Canada, McCormick Canada, Cargill Canada, George Weston Ltd., and Unilever.⁴²

Prime farmland not only constitutes an indispensable component of regional food security, it is also a major driver of our regional economy. Agriculture, food and beverage processing in the province generates \$50 billion in revenue in Ontario — more than the automotive industry.⁴³ Sprawl developments pave over prime farmland, eating into the economic fabric of our region and harming our agri-food cluster's global competitiveness.



COSTS TO OUR GREEN SPACE AND WATER

Sprawl also costs us in terms of less natural habitat for our plants and animals. The GGH's forests and green spaces provide ecosystem services including water regulation, water filtration, flood control, waste treatment, recreation, wildlife habitat, carbon storage, pollinator services, recreation and culture. These services are worth an estimated \$3,487 per hectare per year in the protected Greenbelt (\$2.6 billion total every year),⁴⁴ and \$1,367 per hectare per year in the area available for development, the whitebelt (\$122.3 million total every year).⁴⁵

As sprawl spreads, there are fewer green spaces available to clean our air and water for free. When a greenfield is developed, much of it gets paved over with concrete, creating surfaces that are impenetrable to water. Land that once absorbed water and stored it underground, slowly filtering it out into rivers and streams, no longer does this. Instead pricier engineered solutions are required to manage stormwater and drainage to prevent dirty sewer water from backing up into our homes.

Inappropriate management of storm runoff also results in major problems, such as pollution of the water we drink, as well as basements and riverbank flooding during storms. The solutions to these problems are often expensive both for municipalities and for homeowners with flooded basements. This is compounded for sprawl developments. With their wide streets and spread out houses, the solutions cost a lot more per home. Some developers avoid the most costly water management systems, opting instead for the bare minimum required by law, leaving the long-term costs to be borne by future residents and the municipality.



N. Finney, Conservation Halton

COSTS TO OUR HEALTH

The hidden costs of sprawl to our health are often overlooked. When developers are allowed to build sprawl unchecked, everything becomes very spread out and daily errands, such as buying groceries, going to work, and picking up and dropping off the kids at school, necessitate a lot of driving. And most sprawl developments are difficult to walk through. Curving roads and few intersections encourage people to drive rather than walk or cycle (see comparison figures below).

While this constant driving harms the environment by increasing global warming pollution, all this driving has also been linked to poor health outcomes for residents, including increasing obesity rates.⁴⁶

Research shows that residents in sprawl communities tend to walk less in leisure time, weigh more and have greater prevalence of hypertension than residents of compact communities.⁴⁸ Studies on the increase in childhood obesity have found that the rate of children walking or biking to school has seen a major decline, and while there are several reasons why, the increase of sprawl is a major factor. Schools are simply too far away for many kids to reach by walking or cycling.

In one study, the most common reason parents cited for why they drove their children to school was “too much traffic and no safe walking route,”⁴⁹ hallmarks of sprawl. Educational and motivational programs to encourage children to be more active can help, but lasting behaviour changes will require changes to our communities.⁵⁰

In addition to encouraging less active populations, sprawl adds so many cars to the road that it can hurt a neighbourhood’s air quality. Transportation arteries become clogged with commuters from sprawl developments heading to and from work. This harms the environment by increasing global warming pollution and makes it difficult for many Ontarians to breathe due to increased smog.⁵¹



Comparing a one-mile walk in a compact neighbourhood and a sprawling suburb



Above: Comparing a one-mile walk in a compact neighborhood (left) and a sprawling suburb (right). A one-mile walk in Seattle’s Phinney Ridge takes you through a grid-like network with a mix of residences and businesses. A one-mile walk in Bellevue, WA with cul-de-sacs and winding streets has few shops and services within walking distance.

Maps courtesy of Lawrence Frank & Co. and the Sightline Institute.⁴⁷ Top photo copyright Queen’s Printer for Ontario, photo source: Ontario Growth Secretariat, Ministry of Infrastructure.

In recent years, most GGH communities have experienced about as many smog days as downtown Toronto (see Chart 4). Only the parts that remain rural have fared significantly better. In 2008, the Ontario Medical Association estimated that 9,500 people died prematurely because of smog — the vast majority of them in the region’s suburban communities.⁵²

Chart 4: SMOG ADVISORIES 2012, Ontario Ministry of the Environment⁵³

Air Quality Forecast Region	Number of smog days
Barrie-Orillia-Midland	15
City of Hamilton	18
City of Toronto	16
Dufferin-Innisfil	15
Dunville-Caledonia-Haldimand	16
Haliburton	6
Halton-Peel	17
Niagara	16
Oxford-Brant	16
Peterborough-Kawartha Lakes	13
Waterloo-Wellington	15
York-Durham	16

For people with asthma, allergies or other respiratory challenges, sprawl can hurt a lot. According to the Ontario government, about 38 per cent of the volatile organic compounds (VOCs) that hurt our air quality are emitted by the transportation sector. And the more sprawl there is, the more cars are on the road, sitting in traffic jams and driving through neighbourhoods. One of the most prevalent VOCs, ground-level ozone, irritates the respiratory tract and eyes when present in significant quantities. At higher concentrations, it can cause chest tightness, coughing and wheezing in healthy people. These effects are more pronounced at lower levels for people with health issues and can result in increased hospitalizations and premature death.⁵⁴ A U.S. study found that city-regions with high rates of sprawl had “statistically significant... and reasonably strong” associations with ozone levels above the safe limit, even when other factors such as population size and climate are taken into account.⁵⁵

These long commutes also harm our productivity at work, risking our jobs or potential for advancement. Studies indicate that those who commute long distances experience higher absenteeism and are more prone to accidents at work.⁵⁶

COSTS TO COMMUNITY LIFE

Research shows that sprawl development tends to lead to atomization of our communities, which is the sense that we exist within a place, but have very little contact with people other than our immediate neighbours.

Over 50 years ago, Jane Jacobs observed that “where neighbourhoods are configured to maximize informal contact among residents, street crime is reduced, children are better supervised, and people express greater happiness with their physical surroundings.”⁵⁷ Many of our suburban neighbourhoods lack these sites of informal contact, partially due to their car dependency.

Sprawl developers have created residential environments with large private backyards instead of high value parks. There are power centres, instead of more complex commercial strips and employment areas, devoid of the unique visual landmarks that provide a sense of place. Many of us have front yard driveways and garages, reducing the possibility of informal contact with our neighbours compared to if we walked, biked or took transit to our daily activities. In a neo-traditional neighbourhood, which promotes walkability, we would have more opportunities to connect with people who live in our area.

Being stuck in a car also eats into time that we could spend volunteering or hanging out with our families or friends or relaxing on our own, reading or gardening.

“...where neighbourhoods are configured to maximize informal contact among residents, street crime is reduced, children are better supervised, and people express greater happiness with their physical surroundings.”

— Jane Jacobs



Above: Markham’s Cornell is an example of a neo-traditional neighbourhood that demonstrates the market shift to a new type of suburban development. Cornell is compact and walkable, with plenty of green space and nearby amenities. In a neo-traditional neighbourhood, residents have more opportunities to interact with each other.

CONCLUSION AND RECOMMENDATIONS

Historically, the development pattern of the Greater Golden Horseshoe (GGH) has been shaped by the main mode of transportation people relied on. For a very brief period, this was primarily by foot. With the advent of streetcars and commuter rail in the 19th century, we began growing outwards along public transit very quickly. In the past, the villages and boroughs that sprung up around the region were well connected to the economic centre in the urban core while being self-contained, complete communities in their own right.

Beginning only 70 years ago, all of this changed. We began designing our region so it would be easier for cars to get around instead of people. Highways became wider and faster. The places we live were put further away from where we worked. Eventually, the cities in our region were planned so that almost everything we need to do in a day was a car trip away rather than a walk or bike ride away. Commutes got longer, reducing our leisure time and harming our health. Public transit became a secondary, rather than a primary focus.

This development pattern of creating scattered, far apart car-dependent communities has cost us a lot. It has cost us both the farmland that provides us with food and the green space that offers habitat for local wildlife. It has cost us some of the fresh air and clean water we depend on. It has cost us increasing sums of taxpayer dollars to provide houses in sprawl developments with basic services like water and waste water management. And it is costing us by hurting our health. Sprawl development is completely alien to how the region had grown for over 100 years before and it risks undermining our future prosperity.

In the early 2000s, the high economic, social and environmental costs of sprawl became too much for the region to ignore. New laws were introduced with broad support to facilitate smarter growth in the GGH. Today, we're beginning to see the results. Gradually, some of our existing neighbourhoods are becoming complete communities, capable of supporting local businesses and a variety of transportation options. And many newer communities are being built having learned from mistakes of the past.



Above: St. Lawrence Drive in Port Credit Village is an example of a complete community. This suburban neighbourhood, which has a mix of apartments, townhouses and live-work lofts, is near the GO station, the Waterfront Trail as well as several pubs, shops and restaurants.

To stay on the path to more sustainable and livable communities, we need to strengthen the Growth Plan and the Greenbelt. We need to build a regional transportation system fit for the almost 9 million people already in the region as well as the 4.4 million more that are expected to arrive over the next generation. If we do that we will see a countryside protected from wasteful land practices. We will see improved access to fresh, local food. Our economy will be strengthened and more competitive. We will see more communities with better public transit and other basic amenities just a short walk away. The investments and changes we make today will help our communities grow and thrive in sustainable, diverse and healthy ways for years to come.

The GGH is on the path to becoming a great urban region. In order to secure the best outcomes for the region's current and future residents, we recommend the following:

1 Show the true costs of sprawl

Residents, businesses and developers of efficient properties need to demand that municipal governments eliminate subsidies for inefficient development. Development charges must reflect the true costs of servicing new communities now and into the future. Incentives should be created to encourage compact, livable communities instead of more sprawl developments.

2 Get people moving

Residents and business leaders need to urge government to invest in transportation infrastructure that will move people and goods quickly. Complete communities need transportation options to work. Making our existing neighbourhoods complete or building new complete communities like Toronto's King West or Brampton's Mount Pleasant Villages requires us to invest in transportation infrastructure to move people and goods quickly across the region. This will allow our businesses to get the goods they need in time, while allowing people to connect to the jobs and places they want to be at regardless of where they live.

3 Encourage the right kinds of development in the right places

To kickstart the development of complete communities, governments should facilitate mid- and high-rise mixed-use development on existing and planned rapid transit lines using tax and DC incentives. Conversely, to end the pattern of building car-dependent communities, governments should use DC disincentives to discourage development in greenfields, which are difficult to service. Government should also gradually increase the Growth Plan's density and infill targets every 10 years to make sure we're using land efficiently.

4 Model best practices

To help local governments adopt best practices for development charges, the provincial government should partner with the City of Toronto and the Association of Municipalities of Ontario to establish a resource similar to British Columbia's Development Cost Charge Best Practices Guide. It should also support efforts to highlight some of the innovative products produced by developers that are good for the environment, support the establishment of complete communities and promote the financial sustainability of municipal governments by using land and services efficiently.

5 Encourage complete communities

Municipalities should begin loosening controls in single-use zoned areas to allow small businesses and employers to establish locations in what are now primarily residential neighbourhoods. This change would begin the process of providing suburban residents with complete communities where they can walk to many of their daily amenities, such as work, schools, grocery stores, etc.

APPENDIX: METHODOLOGY FOR APPLICATION OF DEVELOPMENT CHARGES TO THE SCENARIOS USED IN CONVENTIONAL AND ALTERNATIVE DEVELOPMENT PATTERNS PHASE 1: INFRASTRUCTURE COSTS

The costing methodology of the Conventional and Alternative Development Phase 1: Infrastructure Costs⁵⁸ (the study) was compared with what is covered by Ottawa’s DC structure today. Line items that were not included in both, such as child care and garbage collection, were removed from the calculation.

Note: The study’s category “works and parks department” was considered to be the same as the DC’s “vehicle and works yard.”

Study Costing Method	Ottawa’s 2013 DC Structure (Area 2)
Roads (utilities, service connections)	Roads and related services (considered to include sidewalks)
Sidewalks and street lighting	Sanitary sewers
Sanitary sewers	Water
Stormwater management	Stormwater drainage
Water distribution	Police
Transit	Emergency services (fire)
Fire protection (considered to include paramedic services)	Transit
Police protection	Parks development
Parkland	Recreation
Recreation facilities	Libraries
Libraries	Child-care
Works and parks departments	Paramedic services
Garbage collection	Vehicle and works yards
Hydro-electric services	Affordable housing
School facilities and transportation	Corporate studies
	Education development charges (both residential and commercial)

Using only the remaining cost categories, the study’s residential public costs listed on tables 6A and 7A were recalculated in their 1994 dollars.

Recalculated public costs associated with the development patterns			
Conventional	Public Cost	Alternative	Public Cost
Study cost	\$87,092,596	Study cost	\$134,643,922
Recalculated cost	\$84,571,596	Recalculated cost	\$130,423,922

The 2013 development charges for Area 2 in Ottawa were amended to align the cost categories with those in the study.⁵⁹

Unit Type	DC	Education DC
Singles and semis	\$24,236	\$1,626/unit
Large apartment	\$14,119	\$1,626/unit
1 bedroom apartment	\$9,503	\$1,626/unit
Townhouse	\$18,875	\$1,626/unit
Commercial	n/a	\$1.06/sq. ft

Using inflation information from Statistics Canada, the recalculated public costs in the study were converted into 2013 dollars using:

- Ottawa area specific high-rise construction cost inflation from 1994 to 2012
- Consumer Price Index (CPI) inflation from 1994 to 2012
- An average of construction and CPI inflation from 1994 to 2012

Note: Because there was not low-rise residential construction cost inflation available, the average is being used as a proxy. A fair assumption is that, as other construction cost inflation has outpaced CPI, so would low-rise. To err on a conservative figure, the difference between the two rates was averaged.

2013 Dollar Cost Conversion	Construction Inflation	CPI	Average
Conventional	\$158,773,025.45	\$120,290,798.41	\$138,344,814.07
Alternative	\$244,855,266.63	\$185,509,065.12	\$213,351,457.14

The amended development charge structure was applied to the number and types of units the study provided on Tables 1 and 2.

Conventional Plan Development Charge Calculation				
Type	Units	DC	ED DC Per Unit	Total DCs Raised
Single	2,460	\$24,236.00	\$1,626.00	\$63,620,520.00
Semi	415	\$24,236.00	\$1,626.00	\$10,732,730.00
Row	1,035	\$18,875.00	\$1,626.00	\$21,218,535.00
Apartment	95	\$10,657.00	\$1,626.00	\$1,166,885.00
Commercial (sq. ft.)	645,834		\$1.06	\$684,584.04
Total				\$97,423,254.04

Alternative Plan Development Charge Calculation				
Type	Units	DC	ED DC Per Unit	Total DCs Raised
Single	2,944	\$24,236.00	\$1,626.00	\$76,137,728.00
Semi	261	\$24,236.00	\$1,626.00	\$6,749,982.00
Row	3,002	\$18,875.00	\$1,626.00	\$61,544,002.00
Apartment	650	\$10,657.00	\$1,626.00	\$7,983,950.00
Commercial (sq. ft.)	1,657,642		\$1.06	\$1,757,100.74
Total				\$154,172,762.74

The 2013 Dollars Cost Conversion figures were subtracted from the Total DCs Raised to determine whether there was a surplus or a shortfall, and by how much.

Conventional Development Scenario				
Inflation type	Cost	DCs Raised	Difference	As a Per Cent
Construction	\$158,773,025.45	\$97,423,254	-\$61,349,771.41	-38.64%
CPI	\$120,290,798.41	\$97,423,254	-\$22,867,544.37	-19.01%
Average	\$138,344,814.07	\$97,423,254	-\$40,921,560.03	-29.58%

Alternative Development Scenario				
Inflation type	Cost	DCs Raised	Difference	As a Per Cent
Construction	\$244,855,266.63	\$154,172,763	-\$90,682,503.89	-37.04%
CPI	\$185,509,065.12	\$154,172,763	-\$31,336,302.38	-16.89%
Average	\$213,351,457.14	\$154,172,763	-\$59,178,694.40	-27.74%

These shortfalls were then broken down to a household basis.

Shortfall Per Household			
Plan	Housing units	Shortfall Range	Per Household
Conventional	4005	\$61,349,771.41	\$15,318.29
		\$22,897,544.37	\$5,709.75
		\$40,921,560.03	\$10,217.62
Alternative	6857	\$90,682,503.89	\$13,224.81
		\$31,336,302.38	\$4,569.97
		\$59,178,694.40	\$8,630.41

Finally, the Area-Specific Charge (ASC) for Napean South Urban Centre⁶⁰ was applied to the development alternatives, given the zone's proximity to the neighbourhood.

Note: The ASC for commercial was not applied, as no other non-educational development charges for commercial areas were applied.

Conventional Plan Development Charge Calculation with ASC				
Type	Units	DC	ED DC Per Unit	Total DCs Raised
Single	2,460	\$28,420.00	\$1,626.00	\$73,913,160.00
Semi	415	\$28,420.00	\$1,626.00	\$12,469,090.00
Row	1,035	\$21,847.00	\$1,626.00	\$24,294,555.00
Apartment	95	\$11,843.00	\$1,626.00	\$1,279,555.00
Commercial (sq. ft.)	645,834		\$1.06	\$684,584.04
Total				\$112,640,944.04

Alternative Plan Development Charge Calculation with ASC				
Type	Units	DC	ED DC Per Unit	Total DCs Raised
Single	2,944	\$28,420.00	\$1,626.00	\$88,455,424.00
Semi	261	\$28,420.00	\$1,626.00	\$7,842,006.00
Row	3,002	\$21,847.00	\$1,626.00	\$70,465,946.00
Apartment	650	\$11,843.00	\$1,626.00	\$8,754,850.00
Commercial (sq. ft.)	1,657,642		\$1.06	\$1,757,100.74
Total				\$177,275,326.74

The 2013 Dollars Cost Conversion figures were subtracted from the DC and ASCs Raised to determine whether there was a surplus or a shortfall, and by how much.

Conventional Development Scenario				
Inflation type	Cost	DC and ASCs Raised	Difference	As a Per Cent
Construction	\$158,773,025.45	\$112,640,944.04	-\$46,132,081.37	-29.06%
CPI	\$120,290,798.41	\$112,640,944.04	-\$7,649,854.33	-6.36%
Average	\$138,344,814.07	\$112,640,944.04	-\$25,703,869.98	-18.58%

Alternative Development Scenario				
Inflation type	Cost	DCs and ASCs Raised	Difference	As a Per Cent
Construction	\$244,855,266.63	\$177,275,326.74	-\$67,579,939.89	-27.60%
CPI	\$185,509,065.12	\$177,275,326.74	-\$8,233,738.38	-4.44%
Average	\$213,351,457.14	\$177,275,326.74	-\$36,076,130.40	-16.91%

These shortfalls were then broken down to a household basis.

Shortfall Per Household with ASCs Included			
Plan	Housing units	Shortfall Range	Per Household
Conventional	4005	\$46,132,081.37	\$11,518.62
		\$7,649,854.33	\$1,910.08
		\$25,703,869.98	\$6,417.95
Alternative	6857	\$67,579,939.89	\$9,855.61
		\$8,233,738.38	\$1,200.78
		\$36,076,130.40	\$5,261.21

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