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RESTRICTIVE LAND-USE REGULATION

Strategies, Effects and Solutions

BY WENDELL COX



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EXECUTIVE SUMMARY

Housing¹ is the largest expenditure item of the household budget. Large increases in house prices can significantly reduce household discretionary income (the amount left over after paying for necessities), reducing the standard of living and increasing relative poverty.

After decades of relative stability, house prices have raced ahead of household incomes in Canada since about 2000, retarding middle-income housing affordability. The most serious housing affordability problems are in the Vancouver and Toronto metropolitan areas, which have been rated as having some of the worst housing affordability in the world.

Middle income housing affordability is different from low income housing affordability, which is subsidized by public funds. This report focuses on middle-income housing affordability between housing markets (metropolitan areas).

To assess middle-income housing affordability, it is necessary to employ metrics. Price-to-income ratios are frequently used, such as the “median multiple.” Housing affordability metrics should be compared within housing markets (metropolitan areas) and between housing markets over time.

As in Canada, house price increases have occurred in a number of housing markets around the world. Research has shown a strong association between the imposition of “more restrictive” land use policies. The primary purpose of restrictive land-use policy is to stop the spatial expansion of urban areas (pejoratively called “urban sprawl”).

The particular land use policy most associated with unprecedented increases in house prices relative to incomes is urban containment, such as urban growth boundaries and other measures that prohibit or strongly discourage new housing development, on and beyond the urban fringe. Consistent with the law of supply and demand, the reduction in land supply is associated with higher land prices and in consequence higher house prices.

A second strategy, fees and levies can be a major impediment to housing affordability, as municipalities shift funding of functions to new home purchasers that were formerly paid through general taxation.

Proponents claim that housing affordability can be restored by building higher density, especially high rise buildings in urban cores. This would require liberalization of building heights and zoning regulations and would lead to higher land prices, possibly neutralizing any lower high density housing cost effect. Further, higher density housing is not a substitute for the ground-oriented, largely detached housing that is purchased by most Canadians. It is unlikely that a shift to an urban core oriented intensification can restore housing affordability.

The prospect is that housing affordability will continue to decline until the restrictive land-use policy is reformed.

The pervasive loss of housing affordability in metropolitan areas implementing urban containment policy has led to regulatory reform proposals. The most promising may be “event triggered” expansion of greenfield land supply for development.

Land and housing markets would be continually monitored and in any year the price to income ratio goal is not met, automatic expansion of greenfield land supply would occur. This would permit the competitive market for land to operate and result in progress toward housing affordability.

The surest strategy to retain housing affordability is to avoid urban containment policies in metropolitan areas where they have not been adopted.

1. Note: This report builds on *A Question of Values: Middle-Income Housing Affordability and Urban Containment Policy*, by Wendell Cox,² which contains a more detailed analysis of the impact of land-use policy on housing affordability, and, *Canada's Middle-Income Housing Affordability Crisis*, by Wendell Cox and Ailin He.³ Parts of the present report are adapted from these earlier reports.

1.0 INTRODUCTION

Middle-income housing affordability has become a major concern in Canada and a number of other nations. A significant factor in the loss of housing affordability has been restrictive land-use regulations, which have been adopted in many metropolitan areas. Previous Frontier Center for Public Policy research reports have documented the association between more restrictive land-use regulations⁴ and the loss of housing affordability⁵ and the pervasive losses by metropolitan area in Canada.⁶

This research report examines and evaluates specific land-use regulatory strategies and their association with housing affordability at the metropolitan area (housing market) level. The report also reviews policies that have been advanced as having potential for improving or preserving housing affordability.

MIDDLE-INCOME HOUSING AFFORDABILITY

2.0

Housing affordability is measured in relation to income. This paper uses a price-to-income ratio called the “median multiple,” to measure middle-income housing affordability. The median multiple is the median house price divided by the median household income (middle house price divided by the middle household income).⁷ Price-to-income ratios can provide a standard for housing affordability for comparison between metropolitan areas and historical comparisons within metropolitan areas.

Middle-income is different from low-income affordable housing (also called “social housing”), which relies on public subsidies to serve the needs of households unable to afford the house prices that prevail in the open market. Obviously, low-income housing is an important public concern. Generally, middle-income households have been able to afford to own their own homes, though that is becoming increasingly difficult.

Housing Markets (Metropolitan Areas)

The geographic focus of this report is housing markets, which are metropolitan areas (census metropolitan areas or CMA’s). Housing affordability in metropolitan areas is compared between and within metropolitan areas and over time.

3.0 CANADA'S MIDDLE-INCOME HOUSING AFFORDABILITY CRISIS

Typically, housing is the largest expenditure in the household budget. As a result, the cost of housing is of particular importance to middle-income households, who are generally characterized by limited discretionary income. In addition, housing represents the largest cost-of-living difference between metropolitan areas. As a result, as house prices increase ahead of increases in incomes, they reduce the household standard of living by reducing discretionary incomes and result in greater real poverty.⁸

Canada has a middle-income housing affordability crisis, with house prices escalating far ahead of income increases. Concerns about the Canada's inflated house prices damaging the economy have been raised by the Bank of Canada,⁹ and international financial institutions, such as the Organization for Economic Cooperation and Development (OECD),¹⁰ and the International Monetary Fund (IMF).¹¹

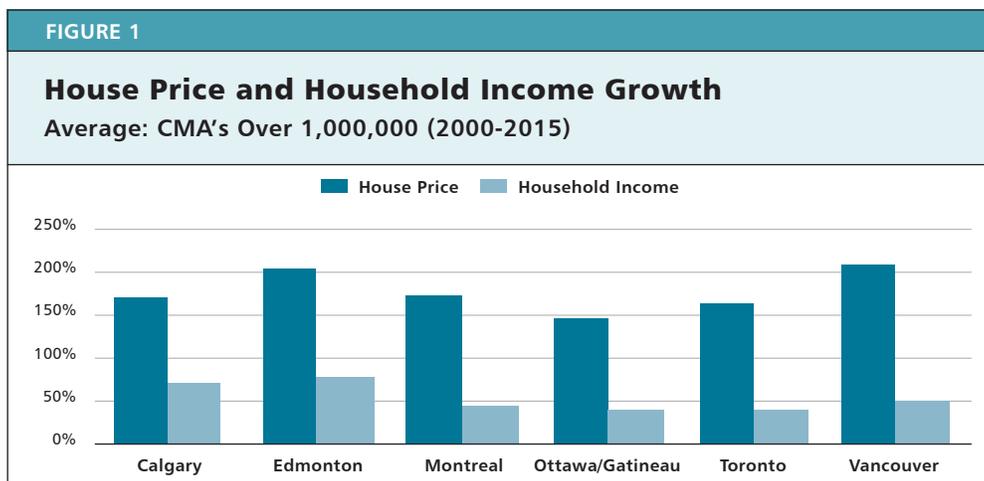
Recently, the Canada Mortgage and Housing Corporation (CMHC) has issued a "red warning" for the entire housing market in Canada." Red warnings were issued for the Vancouver, Toronto, Hamilton, and Québec City housing markets (census metropolitan areas). CMHC also noted that higher prices are spreading to markets near Vancouver, such as Victoria and Abbotsford (in the Fraser Valley), Kelowna, as well as to markets near

Toronto. "Moderate" warnings were also issued for Montréal, Calgary, Edmonton, Saskatoon, and Regina.¹²

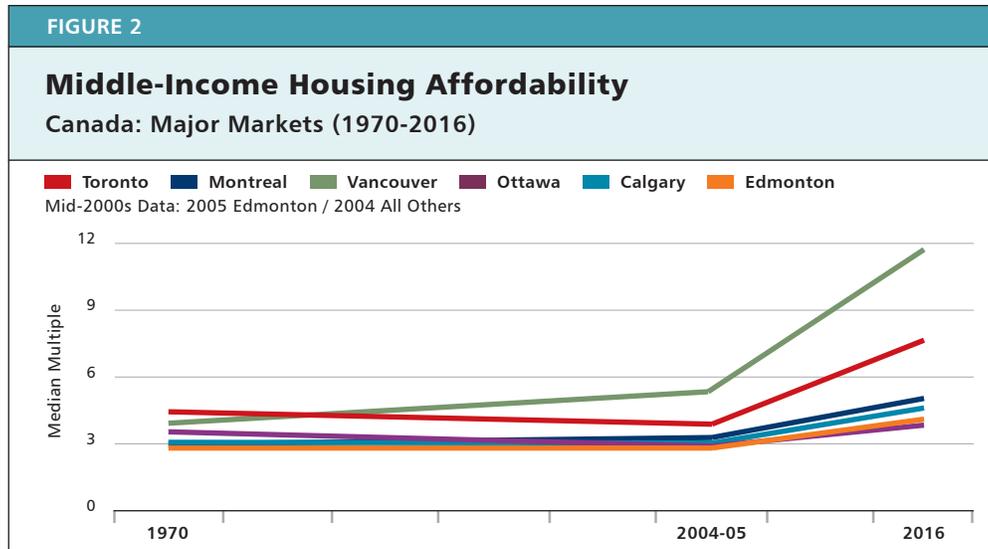
According to the CMHC, red warnings indicate "strong evidence of problematic conditions for Canada overall. Home prices have risen ahead of economic fundamentals such as personal disposable income and population growth, resulting in the overvaluation of houses in many cities."

Indeed, house prices have been rising well above the economic fundamentals in Canada for at least a decade. The most serious problems are in Vancouver and Toronto. In the dozen years that the *Demographia Annual International Housing Affordability Survey*, has been published, Vancouver's housing affordability has deteriorated to the point that only two major metropolitan areas¹³ out of approximately 90 that have been ranked in nine nations, are more severely unaffordable. At the same time, in Toronto, house prices have more than doubled since 2004.

In June 2015, [Canada's Middle-Income Housing Affordability Crisis](#) showed that house prices rose faster than income in each of the nation's 33 metropolitan areas and two additional census agglomerations (CA's) that were examined between 2000 and 2015.¹⁴ The average increase in house prices was approximately three times that of household incomes. Across the 35 metropolitan areas and census districts examined,¹⁵ house prices rose five times as fast as general inflation between 2000 and 2015, and far faster than the Consumer Price Index.¹⁶



Estimated from Statistics Canada, CMHC and Conference Board data.



The greatest housing affordability deterioration was in the six markets with a population of more than one million (Calgary, Edmonton, Montréal, Ottawa-Gatineau, Toronto, and Vancouver). On average, prices rose 3.3 times that of household incomes in these six metropolitan areas between 2000 and 2015. Vancouver and Toronto house prices rose the most, at more than four times incomes (Figure 1, previous page). This confirms the most recent *Demographia Survey* findings that show the Vancouver and Toronto markets to have severely unaffordable housing, ranking third worst¹⁷ amongst 92 major metropolitan areas making up the 9 nations studied.

The rising house prices represents a significant decoupling of house prices from household incomes, which had existed for at least three decades. Between 1970 and

2004-05, house prices were comparatively stable relative to household incomes in five of the six major Canadian metropolitan areas. The exception was the Vancouver area, where there was a substantial increase in the price to income ratio. By contrast, there was a substantial increase in the price to income ratio in each of the six largest metropolitan areas between the middle 2000s and 2016. Even the large Vancouver area increase between 1970 and 2004-2005, was dwarfed by a more than five times as great increase from over the period (Figure 2).¹⁸

The trends worsened significantly in 2016, with detached housing prices increasing 24 percent in Toronto and 34 percent in Vancouver, both in a single year. Moreover, there is the ominous prospect of higher interest rates, which would make balancing the budget even more difficult for most middle-income households.

4.0 RESTRICTIVE LAND-USE REGULATION

For many years, land-use regulations have become more restrictive in many metropolitan areas of Canada and elsewhere in the world.

The principal purpose of more restrictive land-use regulations has been to contain the spatial expansion of cities (pejoratively referred to as “urban sprawl”).¹⁹ However, some strategies of restrictive land-use policies have been associated with producing severely unaffordable housing. This has occurred as more restrictive land-use policies have made it much more expensive to develop housing tracts on greenfield land, a process by which middle-income housing affordability has been expanded across the nation since World War II.

Maintaining or improving the standard of living and reducing poverty are priorities that, it can be argued are more important than any other, except national security and the rule of law.

Concurrent with the expansion of more restrictive land-use policies, house prices have increased relative to incomes and an association has been shown between more restrictive regulations and higher house prices relative to incomes. The academic evidence is reviewed in [A Question of Values: Middle – Income Housing Affordability and Urban Containment Policy](#)²⁰ and the actual experience is described in the annual [Demographia International Housing Affordability Survey](#).²¹

Restrictive land-use regulation may be called by various terms, such as compact city policies, smart growth, growth management, urban consolidation,²² livability, and others. Among urban planners, there may be technical differences among these policies but generally more restrictive land-use regulations have replaced liberal land-use regulations.

Vancouver was the first to apply more restrictive land-use regulation across a metropolitan area. Vancouver’s regulatory system is now approximately 50 years old. The province of Ontario adopted restrictive land-use (“Places to Grow”) regulation for the Greater Toronto Area in the early 2000s.²³ The Montreal metropolitan area has had restrictive land-use regulation in the form of an agricultural boundary established under Quebec law.

The city of Calgary, which accounts for an overwhelming portion of the metropolitan area population, adopted a restrictive land-use regulation in the 2000s, while stronger land-use regulation was also adopted in the Edmonton metropolitan area and the city of Ottawa.

More restrictive land-use regulation has also been adopted in many smaller metropolitan areas, such as Regina, Saskatoon, Saint John, and others. Smaller metropolitan areas in the Greater Golden Horseshoe are also subject to Ontario’s “Places to Grow” land-use policy.

This section evaluates the impact of commonly used land-use regulatory strategies and their association with middle-income housing affordability in housing markets.

Strategy: Urban Containment (Land Rationing)

4.1

Urban containment is one of the most important strategies of restrictive land-use regulation and broadly refers to a wide range of measures that severely ration land for development.²⁴ Urban containment involves substantial prohibition of new housing development on large swaths of developable land. The most frequently occurring urban containment strategies are urban growth boundaries (such as greenbelts), but there are also other strategies, as is indicated below. The common feature of urban containment strategies is the rationing of land on or beyond the urban fringe for housing development.

Urban containment strategies also include “priority growth areas” a euphemism for prohibiting new house construction in areas not so designated. Urban containment includes “infill” quotas, which require a certain percentage of new house building to occur within the existing built up urban area,²⁵ rather than on greenfield land. Often these quotas do not permit the level of urban fringe development demanded by the market, thus creating a shortage of housing in peripheral areas. Another strategy is moratoria on house construction, which are normally implemented only within sub-metropolitan sectors (such as municipalities), but if applied at the metropolitan area level would severely ration land. Large lot zoning or agricultural zoning can also be designed in such a way as to function as an urban containment boundary.

4.11 Association of Urban Containment with Reduced Housing Affordability

Urban containment proponents Arthur C. Nelson of the University of Arizona and Casey J. Dawkins of the National Center for Smart Growth Research and Education at the University of Maryland defined urban containment policies in an American Planning Association report:²⁶ “In its most basic form, urban containment involves drawing a line around an urban area. Urban development is allowed within the urban containment boundary and discouraged (if not prevented) outside it.” Nelson and James B. Duncan of Duncan and Associates describe the rationale for this policy:

Urban containment strategies represent an attempt to control the spatial pattern of development within a community or region. The benefits of successful urban containment techniques can include greater predictability of the development process, more cost-effective provision of public services, encouragement of *infill* and *redevelopment* of existing urban areas, reduction of urban sprawl, and protection of agricultural land and environmental resources.²⁷

They describe “two fundamental purposes”:

- (1) to promote compact and contiguous development patterns that can be efficiently served by public services,²⁸ and,
- (2) to preserve open space, agricultural land,²⁹ and environmentally sensitive areas that are not currently suitable for urban development.

In recent years, environmental considerations have also affected the implementation of urban containment policies.³⁰

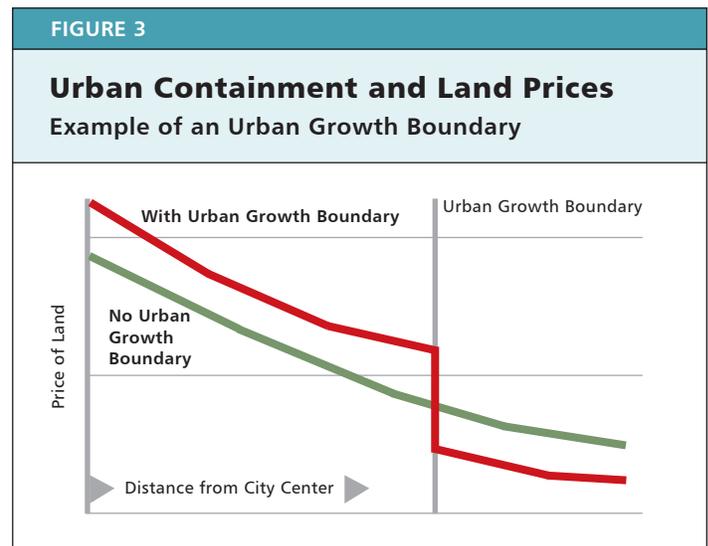
Because urban containment limits land supply, but not demand, the imbalance results in higher land prices (and house prices because land is an important factor in the costs of housing). According to economists Richard Green of the University of Southern California and Stephen Malpezzi of the University of Wisconsin: “When the supply of any commodity is restricted, the commodity’s price rises. To the extent that land-use, building codes, housing finance, or any other

type of regulation is binding, it will worsen housing affordability.”³¹

There is a general tendency for land values to rise³² from a minimum on the urban fringe to a maximum in the urban center.³³ Higher land values on the urban fringe influence generally increasing land values to the center and have a similar influence on land values throughout the metropolitan area. Hugh Pavletich, co-author of the *Demographia International Housing Affordability Survey* notes that the freedom to develop housing on the urban fringe, which is prohibited or strongly discouraged under urban containment policy, is the “safety valve” that preserves housing affordability in a metropolitan area.³⁴

Urban containment transfers demand for housing to inside the urban containment boundary or outside the metropolitan area entirely, through domestic migration (Section 4.11). This increases the demand for housing inside the boundary, while the supply of land remains constant. As a result, the value of land inside the urban growth boundary can be expected to increase, while land values to the outside can be expected to decrease (Figure 3).

This effect is acknowledged by urban planning theorists.



Adapted from Lincoln Institute of Land Use Policy.

Indeed, higher land values inside the urban containment boundary is *an objective of urban containment policy*. Nelson and Dawkins say:

... [B]ecause land outside the containment

boundary is restricted to resource uses or very-low-density residential development, the regional demand for urban development is shifted to the area inside the boundary. This shift should decrease the value of land outside the boundary and increase the value of land inside the boundary.³⁵

Indeed, Nelson and Dawkins stressed the importance of a land-value gap at the urban containment boundary:

If a gap in land values on both sides of the boundary does not emerge, either the boundary is too large in the near term or there is too much development potential remaining in rural areas regardless of any land-use restrictions.³⁶

Urban containment proponents had expected that housing affordability would be preserved despite the more limited land supply increasing housing densities within permitted development areas. The assumption was that smaller land plots would be less expensive so that the land component of housing costs would not rise. According to Gerrit Knaap of the National Center for Smart Growth Research and Education at the University of Maryland and Nelson, urban containment “boundaries ... were not intended to raise housing costs.”³⁷

In fact, rising housing costs relative to incomes were to become the rule in metropolitan areas with urban containment policy, as the research and experience indicates.

Academic Research

Nearly half a century ago, legendary urban planner Sir Peter Hall and his colleagues³⁸ concluded that “perhaps the biggest single failure” of urban containment has been that it has failed to prevent losses in housing affordability.”³⁹

Differing Focus on Housing Affordability

Compact City Policies: A Comparative Assessment, Published by the Organization for Economic Cooperation and Development (OECD)⁴⁰ illustrates a materially different approach to housing affordability from that in this report. “Compact City Policies” acknowledges concern that compact city policies (urban containment policies) can negatively impact housing affordability.

“Compact City Policies” uses Vancouver as a case study on housing affordability initiatives to avoid the negative externalities of urban containment policy. The report cites the municipality of Vancouver’s “alley-way” housing for its impact on affordability.

Yet, the report fails to provide any metrics (such as the “median multiple”) by which it is assessing housing affordability. The report provides no information about how this strategy has impacted housing affordability at the metropolitan area level, nor does it provide any historical comparisons to previous years in metropolitan Vancouver. It further does not compare Vancouver to markets in which there is no urban containment policy.

However, Vancouver metropolitan area has some of the most unaffordable housing in the world, which had been deteriorating markedly in the last few years. Between 2004 and 2011, for example, Vancouver’s house prices doubled relative to household incomes.⁴¹ These factors are not considered in the OECD report.

Yet, the document does not deal with housing affordability at the housing market level (metropolitan areas), nor does it compare housing affordability between metropolitan areas, nor does it compare affordability historically within metropolitan areas, nor with respect to any standard measure of housing affordability.

At the time of publication, Vancouver rated as the least affordable major metropolitan area in the nine nations surveyed in the *Demographia International Housing Affordability Survey*.⁴²

Since that time, a considerable body of research has associated significant house price increases with urban containment strategies, consistent with economic expectations. This has been described in greater detail in [A Question of Values: Middle – Income Housing Affordability and Urban Containment Policy](#).

The connection between urban containment and diminished housing affordability is also generally acknowledged in much of the international literature, though the focus is rarely on middle-income housing affordability, or metropolitan area measures of housing affordability (See Box: Differing Focus on Housing Affordability, previous page).

Recent Experience

The international reduction in housing affordability is indicated in the annual *Demographia International Housing Affordability Surveys*⁴³ The Survey has been published for 13 years and rates middle-income housing affordability in more than 350 metropolitan areas, and approximately 90 major metropolitan areas in nine international geographies (Canada, Australia, China, Ireland, Japan, New Zealand, Singapore, the United Kingdom and the United States), using the “median multiple” (median house price divided by median household income). The ratings are described in the table below (from the annual *Demographia International Housing Affordability Survey*).

TABLE 1	
Housing Affordability Rating Categories	
<i>(From the Demographia International Housing Affordability Survey)</i>	
Rating	Median Multiple
Severely Unaffordable	5.1 & Over
Seriously Unaffordable	4.1 to 5.0
Moderately Unaffordable	3.1 to 4.0
Affordable	3.0 & Under

Virtually all of the major metropolitan markets rated “severely unaffordable” in the last Survey and in all previous editions have urban containment policy.⁴⁴

And, virtually all of these severely unaffordable markets had price-to-income ratios of approximately 3.0 or less before adopting urban containment policy. Some have experienced a tripling or greater of their price-to-income ratios.⁴⁵

Further, no liberally regulated major metropolitan area is severely unaffordable in the *Demographia International Housing Affordability Survey*. Where urban containment policy has been avoided, housing has remained affordable.

Negative Externalities of Urban Containment

Urban containment policy has produced consequences far beyond its household impacts, dampening economic growth and increasing inequality.

Land regulation has imposed an annual reduction of nearly US\$2-trillion in the United States’ gross domestic product, according to Chang-Tai Hsieh of the University of Illinois and Enrico Moretti of the University of California. An economic loss of this magnitude equals about 12 per cent of the U.S. economy (2009). They referred to the effect as a “large negative externality.” [emphasis in original].⁴⁶

Matthew Rognlie of the Massachusetts Institute of Technology found that virtually all of the rising inequality identified by French economist Thomas Piketty⁴⁷ has been in the increase in housing values.⁴⁸ According to Rognlie:

... [T]he literature studying markets with high housing costs finds that these costs are driven in large part by artificial scarcity through land-use regulation

.... A natural first step to combat the increasing role of housing wealth would be to reexamine [sic] these regulations and expand the housing supply.

Bank for International Settlements economist Giani La Cava associated rising inequality in part with to “constraints on the supply of new housing in some large US cities.”⁴⁹

4.12 Counter-Arguments

Doubts have been raised about the association between urban containment policy and diminished housing affordability. A more detailed discussion can be found in [A Question of Values: Middle – Income Housing Affordability and Urban Containment Policy](#).⁵⁰

Supply and Demand: Some researchers have claimed that the higher house prices are simply a matter of supply and demand and that demand has outstripped supply. That is rather like arguing that the gasoline shortages of the 1970s were simply a matter of supply and demand. In fact, the excess of demand over supply in those years was a consequence of an arbitrary decision to limit supply by producers in the Organization of Petroleum Exporting Countries (OPEC). Similarly, an excess of demand over supply, which drives up prices, has resulted from government policies that arbitrarily limit land supply.

Superior Amenities: Some researchers claim that housing has become unaffordable because some metropolitan areas have superior amenities. Yet, generally, these metropolitan areas have had the same amenities for years and, as living environments, some might argue a reduction in amenities.⁵¹ More importantly, these superior amenities do not seem to be evident in rented housing in the same metropolitan areas. As noted below, rents have generally risen at rates more consistent with incomes, as house prices have increased at a rate far exceeding that of rents.

At the same time, the most unaffordable markets have experienced substantial out-migration. This represents a *decline* in demand, as households “vote with their feet.” It would be expected that if the less affordable metropolitan areas had substantially better amenities, they would attract, rather than repel, new residents.⁵²

Topography: Another objection is that there has been insufficient land for housing development on the periphery, and house prices have risen as a result. Topographical barriers can impede housing affordability, but are less important than prohibitions on development that stand between the central built-up urban area and topographic barriers.⁵³

Vancouver has mountains, the U.S. border, and bodies of water that restrict development. However, within the area constrained by these barriers, there are significant areas that could be developed, such as the agricultural land reserve in Greater Vancouver and the Fraser Valley. As noted above, prohibitions on this land are a major contributing factor to Vancouver’s severely unaffordable housing,⁵⁴ which is rated the third worst market in the *13th Annual Demographia International Housing Affordability Survey*.⁵⁵ Any effect that the topographical barriers and international borders might have on prices is secondary to that of the agricultural land reserve.

Toronto has virtually no topographic barriers. The water bodies and hills in the Greater Golden Horseshoe are no more constraining than the topographic barriers of the New York built-up urban area, which is the world’s largest in geographic area.⁵⁶ New York covers five times as much land as Toronto (including the Toronto, Hamilton and Oshawa population centres). An urban area five times as large is no less feasible in the Toronto area than in New York, and would be capable of supporting an urban population of more than 33 million people, nearly as large as Canada itself.⁵⁷

Threat to Agriculture: The use of agricultural land for urbanization is a recurring theme among proponents of urban containment. However, research by New York University professor Shlomo Angel shows that the world has sufficient agricultural land for food security even as cities continue to expand.⁵⁸ Canada has reduced its agricultural land significantly over the decades, while agricultural productivity has improved markedly. The land withdrawn from agricultural production has exceeded the area covered by the Maritime provinces. The land covered by urbanization is only a fraction of this. More than six hectares of land has been withdrawn from production for each hectare of land used in *all* urbanization.⁵⁹ In particular, the Vancouver metropolitan area agricultural reserve has been identified as being irrelevant to local food security and as an important contributor to its severely unaffordable housing.⁶⁰

“...the substantial direct costs of the presumed public good — farmland preservation — have been foisted upon a minority of citizens, and the indirect costs have fallen disproportionately upon those who can least afford them.”

Assessment of the Counter Arguments: The arguments favoring urban containment policy seem less than compelling. Analysis that challenges something as fundamental as the law of supply and demand has a special burden — to state such a compelling case to the contrary that there is little possibility for reasonable doubt. It is rather like an economist showing that the rationing decisions of the Organization of Petroleum Exporting Countries (OPEC) have not driven oil prices higher, but are due to other factors. The reality is that the inordinate and persistently severely unaffordable housing has been shown only where there is urban containment policy (land rationing).

then “dedicated” to the local government, becoming its property to manage.

Opposition from developers and home builders has intensified as local governments have financed more public functions in fees and levies. Local governments claim that new housing does not pay its “fair share,” which, in the view of municipalities justifies the fees and levies. This is debatable. Land-use economist Claude Guen, for example, indicates that public service provision tends to be less expensive in newer housing areas, and that repair and upgrading of infrastructure is more costly in more dense, established areas.⁶³

4.13 Urban Containment Assessment

Urban containment policy is strongly associated with diminished middle-income housing affordability, consistent with the fundamentals of economics. London School of Economics’ Paul Cheshire referred to “the irreconcilable conflict between current planning policies and underlying economic forces” in contending that housing affordability is irreconcilable with urban containment.⁶¹

There is little consistency in the fees and levies between local governments. For example, a 2009 Canadian Mortgage and Housing Corporation survey found that municipal fees and levies on new single detached houses varied by more than ten-fold.⁶⁴

In some municipalities, fees and levies now finance services such as subsidized housing, development related studies, child care, parks and recreation facilities, civic improvements, and health. Fire and police services and the cost of building new transit lines and services are now also being added to the fees and levies in Toronto. Each of these has traditionally been financed out of general revenues (such as property taxes).

4.2 Strategy: Fees and Levies

Fees and levies are increasingly charged to developers in order to pay for the costs of off-site (outside the subdivision) municipal improvements, such as streets, utilities, parks, and other public services. Generally, these charges are a flat rate per unit of housing, by type of unit (such as single detached, semi-detached, town house, apartment, or condominium). Before the imposition of these fees and levies, such additional services were typically paid from general revenues.

Transit lines are a particular concern because of their routine cost escalation. International research shows that the capital and operating costs often rise far beyond projections, which suggests the potential for much more significant fee and levy increases. In just three years, for example, the transit fees and levies in the city of Toronto rose 135 percent,⁶⁵ and the total fees and levies doubled over the same period.

Before home builders can begin construction, raw land must be converted into finished lots. The land developer, arranges, and pays for, the local streets and utilities, such as sewage, and natural gas lines that are required in the subdivision. These infrastructure improvements are made consistent with laws, regulations, and standards established by the local government (usually a municipality), rather than covering entire metropolitan areas. These costs are included in the price of the houses⁶² and are in addition to off-site fees and levies.

This process is also occurring in other municipalities, such as Ottawa, Hamilton, and Winnipeg. In Winnipeg, for example, a recently proposed fee and levy increase would have added more than \$18,000 to the cost of a 1,800 square foot house.⁶⁶ Nearly one-fifth of the charge would have been used to finance an ambitious rapid transit system, which is so early in its development that substantial cost escalation seems unavoidable. This, combined with the other charged services and infrastructure, could require substantial fee increases in the coming years, further reducing housing affordability in that prairie city.

The then “serviced land” is ready for building houses, with prices that include the cost of the infrastructure provided by the developer. The roads and utilities are

There is considerable concern among housing affordability advocates that municipalities, and other local governments which are continually faced with challenges in balancing budgets, are increasingly using fees and levies as a way to finance day-to-day operating expenses. This may be inequitable, especially where the same services were previously provided to residents from general taxation rather than through fees and levies assigned to new houses whose owners pay the same property tax rates as those who avoided the fees and levies. Further, substantial burdens are placed on buyers of new houses, condominiums, and people who occupy rental units to pay for public facilities in advance while existing owners have been permitted to pay their shares of such expenditures over time, through general taxation.

These fees and levies, consequently, tend to worsen housing affordability. Economic literature indicates that these charges are associated with *both* higher new house costs and higher existing house costs, all things being equal.⁶⁷ In effect, new home buyers pay for the new infrastructure while existing home and multi-family housing owners receive a windfall from the higher values induced by the development charges. Because fees and levies are typically implemented at the municipal level, rather than at the metropolitan (housing market) level, little or no research was identified as estimating metropolitan area effects on housing affordability.

However, house prices could be driven upward throughout a metropolitan area if fees and levies were applied throughout. This is a particular threat where a municipality dominates the metropolitan area (such as in Calgary and Winnipeg). In such places, the weak or non-existent competition for new housing between jurisdictions in a metropolitan area might remove incentives to compete with lower fees and levies which would lead to reduced housing affordability.

4.3 Other Restrictive Land-Use Strategies

Maximum density (large lot zoning) regulation is frequently cited as a cause of diminished middle-income housing affordability. Such regulation can create a “*de facto*” urban containment boundary (Section 4.1), such as very large lot requirements, such as 10 or 20 acres per house. However, the much more modest density regulation (often one acre) in suburban areas of many US metropolitan areas is not

associated with a decrease in housing affordability.⁶⁸

No research was identified associating the loss of middle-income housing affordability at the metropolitan area (housing market) level or between metropolitan areas (such as historical preservation, relaxation of parking requirements, narrower residential streets, the provision of sidewalks, alleys, etc.).⁶⁹

Most Destructive Land-Use Strategies 4.4

The discussion above has identified two strategies of restrictive land-use policy that can lead to severely unaffordable middle-income housing at the metropolitan area level.

The greatest potential greater harm to housing affordability is attributable to urban containment policy (land rationing). This is evident in Canada, with the greatest housing affordability losses have been in the Vancouver and Toronto metropolitan areas. The experience in these metropolitan areas, combined with that of international cities (noted above) has associated severe reduction in housing affordability with urban containment (land rationing). Indeed, the evidence is so compelling that urban containment might be called urban planning’s “killer app” for its association with severe destruction of middle-income housing affordability.

The other potentially harmful strategy is fees and levies, which could lead to much higher prices in a metropolitan area if they are not kept under strict control.

In an article on the housing affordability losses that are associated with London’s (England) urban containment policy, *The Economist* noted: “Suburbs rarely cease growing of their own accord. The only reliable way to stop them, it turns out, is to stop them forcefully. But the consequences of doing that are severe.”⁷⁰ Former governor of the Reserve Bank of New Zealand, Donald Brash, said, “... [T]he affordability of housing is overwhelmingly a function of just one thing, the extent to which governments place artificial restrictions on the supply of residential land.”⁷¹ The other particularly destructive strategy is fees and levies, which can lead to much higher prices in a metropolitan area if they are not kept under strict control. They have their greatest risk is where a single municipality controls an overwhelming share of the housing market (such as in Calgary or Winnipeg).

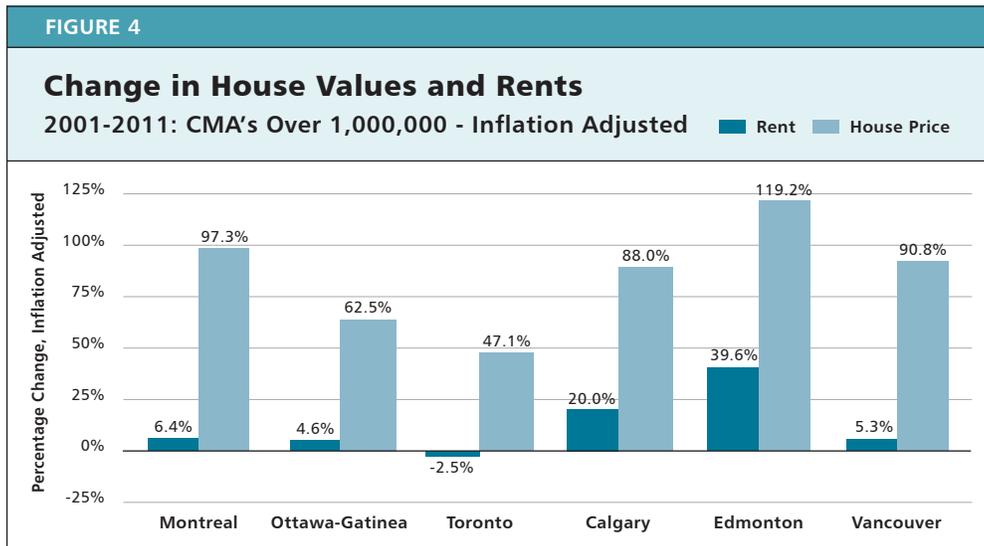
5.0 DIFFERING TRENDS IN THE RENTAL AND HOME OWNERSHIP MARKETS

As noted, the housing market is comprised by two major segments, rentals and homeownership. The demand for housing can be met either by renting or by buying. Historically, trends in rents and house prices have been similar and closely related to household income trends. However, in recent years, there has been a serious decoupling of rent and home price trends from trends in incomes. House prices have risen not only far more rapidly than household incomes but also much faster than rents.

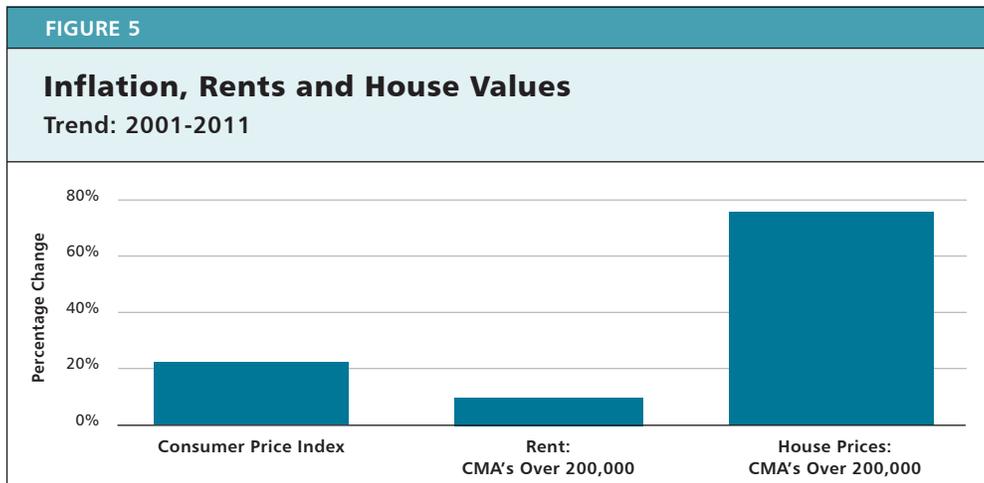
From 2001 to 2011, average gross rents increased only 9.6 percent in the metropolitan areas with populations

above 200,000. By contrast, over this period, house values increased nearly eight times as much, at 75.3 percent. Similar to the longer 2000 to 2015 period, house values rose 3.5 times the rate of inflation and at a rate far greater than any other major part of the Consumer Price Index. Rents rose at less than one-half the rate of inflation (Figure 4). In addition, house values rose much more steeply than rents across the major metropolitan areas (Figure 5).

In contrast to the rental market, the substantial house price increases relative to the economy is evidence of a massively distorted market. This is the type of distortion that can be expected in an environment of extreme regulatory interference in the most significant important consumer market (housing).



Derived from Statistics Canada data (2001 Census, and 2011 NHS).



Derived from Statistics Canada data (2001 Census, and 2011 NHS).

The rental market may be better reflective of the actual market influences in housing. Single-family houses on the urban fringe have been a particular target of urban land-use regulations, and their extreme cost escalation, evident particularly in the price of land, which have spread throughout metropolitan areas, driving up housing price-to-income ratios. On the other hand, the multi-family market, which is dominated by rentals, has not been impacted to the same extent by regulations intended to slow or even prevent new construction. Moreover, it seems implausible that households would, of their own accord, seek to increase their spending on housing at four times the rate of increase in their incomes or five times the rate of inflation.

More restrictive land-use regulations have been directed primarily at single-family houses rather than at rental units. It seems likely that rents, without the more restrictive regulation of single-family houses, are a more accurate indication of market forces. The much greater increase in house prices is further evidence of the tendency for more restrictive regulation to reduce housing affordability.

6.0 PROPOSED SOLUTIONS TO RESTORE OR PRESERVE HOUSING AFFORDABILITY

No doubt, it is difficult to restore housing affordability in a metropolitan area that has become severely unaffordable. Residents who have benefited from the land-use regulations with far higher house prices will naturally resist strategies that would reduce the value of their houses. Indeed, short of a financial bust, such as occurred in the United States in the late 2000's, significant price reductions in severely unaffordable housing markets have generally not occurred among urban containment markets around the world.⁷² And, in the United States, where there were substantial house price reductions, much of the improved housing affordability turned out to be temporary, as prices and median multiples have climbed, or are climbing back toward their peaks reached in the housing bust.⁷³ Where it has occurred, the improvements in housing affordability that occurred during the housing bust have been virtually reversed in most urban containment markets. It is likely that housing affordability will deteriorate even more in many urban containment markets without serious actions to increase land supply and restore the competitive market for land on the urban fringe.

6.1 Intensification (Densification)

One proposed approach for restoring or improving housing affordability is to intensify (densify) residential development inside urban containment boundaries, principally in the urban cores. This approach is generally favored by the urban planning community as a solution to the housing affordability problem.

In its pure form, intensification could result in virtual "deregulation" of land-use in already built-up urban areas. As a result, it would be expected that "Granny flats," or laneway housing, would be constructed in single family neighborhoods and that there would be no significant limit to high-rise condominium and apartment development.

Regulatory relaxation, such as "upzoning," or deregulation of residential densities can be used to encourage residential intensification. The theory, consistent with

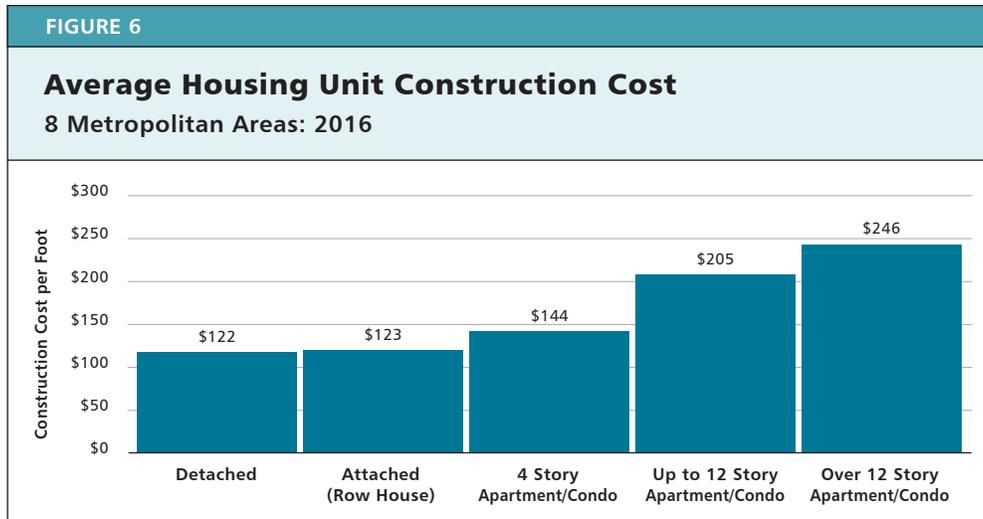
the law of supply and demand, is that allowing more residential units on a plot of land (densification) will reduce the land cost per unit. It assumes that this would reduce the overall housing price to consumers for the higher density unit, all else remaining equal.

However, all else is not equal. If there is an excess of demand over supply for intensification housing (such as may be the case in some neighborhoods in Vancouver and Toronto), it can likely be traced to regulatory limits on residential density or building height. As a result, regulatory relaxation is likely to be a prerequisite to intensification.

However, once regulations are revised to permit higher density, the value of the land is likely to increase if there is still an excess of demand over supply. The increase in land value may be enough to cancel out any unit price reduction that would result from constructing housing units at higher density.

On the other hand, if there are no serious regulatory impediments to density, the level of intensification demanded by consumers is likely to have already been achieved. There is an important example of deregulated residential development⁷⁴ in North America, the municipality of Houston. There, structures can largely be built to meet consumer demand, without regard to location. At the same time, the Houston metropolitan area (which includes the Houston built-up urban area) has liberal greenfield land use regulation, without urban containment policy. Housing has historically been affordable in the Houston area.

Higher construction costs also stand in the way of improved affordability through intensification. Higher density housing is more expensive to build per unit of space (square foot) than ground-oriented residences (detached and attached houses). According to data in the *Altus Construction Cost Guide 2016*, 13 story-plus high rise condominium and apartment units cost 100 percent more per square foot than detached houses. Also, lower rise multi-family apartment units cost nearly 20 percent more per square foot.⁷⁵ In Vancouver and Toronto, where the demand for intensification is the greatest, the cost per square foot in the highest rise buildings (60 or more floors) is more than 200 percent above the cost of detached houses, according to Altus.



Derived from *Altus Construction Cost Guide 2016*.

Finally, even if intensified housing was less expensive, it is not a substitute for the ground-oriented, largely detached housing purchased by most Canadian home owners.⁷⁶ The prospects for middle-income households, many with already strained budgets, to acquire the same space or amenities in intensified development than they would have in ground-oriented housing would be small. Such accommodations are likely to be attractive to households that desire back yards for pets and children. “Granny flats,” a favourite among intensification advocates, will not meet the needs of many households. Many households, in fact, are likely to identify intensified housing with a lower standard of living.

There is virtually no research that suggests that intensification has restored middle-income housing affordability at the metropolitan area level. In fact, the evidence from 13 years of the *Demographia International Housing Affordability Survey* is that metropolitan areas that have reached severely unaffordable median multiples have not been restored to affordability. For example, in 2016, Vancouver’s median multiple reached 11.8, well above its level of 4.0 before urban containment policy. Similarly, Toronto’s price to income ratio is 7.7, more than double its 3.5 in 2000, before implementation of urban containment policy.⁷⁷

Thus, there are enormous barriers to improving middle-income housing affordability across metropolitan areas through intensification.

As noted above,

- (1) The very regulatory relaxation required to make intensification possible could lead to land price increases that neutralize any efficiencies from denser development.
- (2) The higher cost per square foot of housing units is likely to severely limit the attractiveness of intensified housing to much of the consumer market.
- (3) Intensified multi-family housing is not a substitute for the single family ground-oriented housing preferred by many households.

Finally, for Vancouver and Toronto to restore an affordable median multiple of 3.0 would require house price reductions of from 50 percent to 75 percent. As a result, it seems unlikely that intensification would result in material housing affordability improvement, much less restore middle-income housing affordability.

Sufficient Development Allocations

6.2

Many urban containment programs include greenfield allocations for house building to ensure a sufficient supply of greenfield land to maintain housing affordability. Development allocations are defined using planning projections for new housing. The loss of housing affordability in urban containment metropolitan areas is a strong indication of the failure of development allocations.

This is evident in metropolitan areas that have maintained land supplies (development allocations) to provide the capacity for the future development, such as for 15 or 30 years of new housing). However, the theoretical capacity of a development allocation does not ensure that there is a sufficient land supply to maintain housing affordability over the long term. That can only be genuinely determined by price. If land prices have risen faster than incomes, then by definition there is an insufficient supply of land.

In fact, land supplies have routinely been insufficient to retain the competitively priced land necessary to preserving housing affordability and pre-regulation price-to-income. Moreover, releasing land for building houses has been inflexible, being only at scheduled intervals of five years or more.

As Andrew Evans of the University of Reading (UK) has observed: “The scarcity of land is created by the planning system and this scarcity gives market power to the owners of the land.” If development allocations are not sufficiently large, the owners of the land will be able to bid the price up sufficiently to decrease housing affordability.⁷⁸

According to Paul Cheshire of the London School of Economics (LSE), planning procedures cannot ensure there will be sufficient land to preserve housing affordability by simply estimating demand.⁷⁹ Evans and Oliver Hartwich of the Policy Exchange suggest that development allocations should be 40 percent greater than theoretical demand over the planning period.⁸⁰ Shlomo Angel of New York University suggests a larger margin, 50 percent.⁸¹

Whatever the development allocation size required to ensure housing affordability, the record shows that public officials have not sufficiently monitored land and house prices so that corrective action can be taken in urban containment metropolitan areas (such as by increasingly the size of development allocations). Land and house price data is readily available in metropolitan areas, and there has been plentiful evidence of declining housing affordability as house prices were rising well ahead of income where there is urban containment policy.

These political and administrative failures have led, at least in part, to substantial proposals to overhaul development allocations among economists.

Event-Triggered Greenfield Land Supply Expansion

6.3

The failure of the development allocation policies to preserve housing affordability has led to reform proposals that could preserve or even restore housing affordability in metropolitan areas with urban containment policies. Generally, these proposals would seek to substantially improve housing affordability through “event triggered” expansion of land-development allocations. This has been proposed by LSE’s Paul Cheshire, Max Nathan, and Henry Overman, and in New Zealand, by the New Zealand Productivity Commission and the City of Auckland.⁸²

A longer term metropolitan area price-to-income ratio goal could be adopted that would represent a substantial housing affordability improvement. For example, a metropolitan area with a price-to-income ratio of 7.5 or higher might set a goal of 3.0 for 2030. Incremental annual price-to-income ratio goals could be adopted, toward the end of the gradual achievement of the longer term goal.

A binding and virtually automatic “event trigger” (automatic) expansion of the land-development allocation would be adopted to be implemented any time the interim annual price-to-income goal is not met. The extent of the greenfield expansions would be large enough to restore progress toward the longer term price-to-income ratio goal.

Event-triggered greenfield land supply expansion could, in fact, restore middle-income housing affordability at the metropolitan area level, if adopted and rigorously enforced.

6.4 Avoiding Urban Containment Policy

Metropolitan areas without urban containment policy can preserve middle-income housing affordability by rejecting its implementation. This approach is the most reliable for retaining housing affordability, but is available only in metropolitan areas that have not implemented urban containment.

Managing Fees and Levies

6.5

As noted previously (Section 4.2), fees and levies have the potential of becoming a much greater driver of housing affordability losses. There are other public service financing approaches that would permit new home buyers to pay the attributable costs on a “pay as you go” basis. These include municipal debt and user fees. Another approach would be to allow the establishment of municipal utility districts, which could issue public bonds that finances necessary infrastructure and, again, is repaid by homeowners in the affected development. These approaches have been successful in California, Texas and Colorado and are presently under consideration by the New Zealand government.⁸³ Moreover, municipalities and other governments should avoid the temptation of using fees and levies to finance services and infrastructure that are more appropriately funded through general tax revenues and user fees.

7.0 THE FUTURE OF HOUSING AFFORDABILITY AND MIDDLE-INCOME HOUSEHOLDS

The rise in house prices can be expected to continue as long as urban containment regulations continue, not unlike covering a boiling pot in which pressure builds up until the pressure is released. Until incentive-based, corrective strategies are implemented, the result is likely to be far more serious for citizens as their household budgets increase and their discretionary income declines. This is especially ominous in view of the concern about rising inequality and the likelihood that the next generation will not live as well as the present generation.

Yet, much of the land use policy debate has excluded the destructive effects of urban containment policy and its association with some of the worst housing affordability. A Ryerson University policy report criticised this omission pointing referring to the necessity of greenfield land development. The report said that "... the only viable solution to dealing with deteriorating longer-term affordability — significantly increasing the number of new ground-related housing units built."⁸⁴

Finally, the fundamental issue is not urban sprawl, rather it is the threat to the standard of living and the likelihood of greater real poverty. As Cheshire, Nathan, and Overman suggest, there is a need for urban policy to focus on people, rather than "places".⁸⁵ Effectively dealing with the housing affordability crisis is important for both governments and citizens. Otherwise, worsening housing affordability is likely to will lead to a lowering of citizens' lower standard of living, greater real poverty, and more inequality. Ultimately this process will impose significant costs on Canada's economy and on the social structure that people depend upon.

ENDNOTES

1. Note: This report builds on *A Question of Values: Middle-Income Housing Affordability and Urban Containment Policy*, by Wendell Cox,² which contains a more detailed analysis of the impact of land-use policy on housing affordability, and, *Canada's Middle-Income Housing Affordability Crisis*, by Wendell Cox and Ailin He.³ Parts of the present report are adapted from these earlier reports.
2. Wendell Cox, *A Question of Values: Middle-Income Housing Affordability and Urban Containment Policy*. Frontier Centre for Public Policy. October 2015. https://www.fcpp.org/a_question_of_values.
3. Wendell Cox and Ailin He, *Canada's Middle-Income Housing Affordability Crisis*. Frontier Centre for Public Policy. June 2016. <https://fcpp.org/wp-content/uploads/2016/06/Cox-He-Middle-Income-Housing-Crisis.pdf>.
4. The land-use regulations considered in this report are assumed to be "binding," meaning that they are enforced and that circumventing them is difficult, if not impossible.
5. Wendell Cox, *A Question of Values: Middle-Income Housing Affordability and Urban Containment Policy*.
6. Cox and He, *Canada's Middle-Income Housing Affordability Crisis*.
7. The median multiple is used in the *Demographia Housing Affordability Survey*, which is referenced elsewhere in the report. Wendell Cox and Hugh Pavletich, *13th Annual Demographia Housing Affordability Survey*, <http://www.demographia.com/dhi.pdf>.
8. Determined by income, adjusted for the local (metropolitan area) cost of living.
9. Bank of Canada, "Financial System Review – December 2015." Available online at <http://www.bankofcanada.ca/2015/12/fsr-december-2015/>.
10. Organisation for Economic Co-operation and Development, "OECD Economic Surveys Canada," June 2014. Available online at http://www.oecd.org/eco/surveys/Overview%20_CANADA_2014.pdf.
11. International Monetary Fund, "2014 Article IV Consultation – Staff Report; Staff Statement; and Press Release," IMF Country Report No. 15/22, January 2015. Available online at <https://www.imf.org/external/pubs/ft/scr/2015/cr1522.pdf>.
12. Canada Mortgage and Housing Corporation, Housing Market Assessment: Released 4th Quarter 2016. <https://www03.cmhc-schl.gc.ca/catalog/productDetail.cfm?cat=192&itm=1&lang=en&fr=1481755443583>.
13. Over 1,000,000 population.
14. Cox and He (2016), *Canada's Middle Income Housing Affordability Crisis*.
15. The 33 CMA's and the Fredericton and Charlottetown census agglomerations (CA's), These are the only provincial capitals that are not CMA's.
16. Analysis of Consumer Price Index data (Statistics Canada) and Cox and He (2016), *Canada's Middle Income Housing Affordability Crisis*.
17. Wendell Cox and Hugh Pavletich, *13th Annual Demographia Housing Affordability Survey*, <http://www.demographia.com/dhi.pdf>.
18. September 2016 from September 2015. Benchmark price in Vancouver, from the Real Estate Board of Greater Vancouver and average price in Toronto, from the Toronto Real Estate Board.
19. "Cities" as used in this report refers to built-up urban areas (continuous urbanization, exclusive of rural areas), which are called "population centres" by Statistics Canada.
20. Wendell Cox, "A Question of Values: Middle-Income Housing Affordability and Urban Containment Policy."
21. *Demographia International Housing Affordability Survey: 2015*. Demographia. <http://www.demographia.com/dhi.pdf>.
22. In Australia.
23. The author predicted substantial losses in housing affordability in the Greater Golden Horseshoe (including the Toronto area) as a result of the "Places to Grow" urban containment government in Ontario as the program was being finalized. See: Wendell Cox (2004), *Myths About Urban Growth and the Toronto Green Belt*, Fraser Institute. <https://www.fraserinstitute.org/studies/myths-about-urban-growth-and-toronto-greenbelt>.
24. The urban fringe is where the continuous urbanization meets the rural area.

25. The area of continuous urban development (as opposed to the metropolitan area, which includes the rural area and smaller urban areas from which many people commute to the principal urban area. Statistics Canada began calling urban areas "population centres" in the 2011 census. For more information, see Demographia World Urban Areas.
26. Arthur C. Nelson and Casey J. Dawkins, *Urban Containment in the United States: History, Models and Techniques for Regional and Metropolitan Growth Management*, American Planning Association Planning Advisory Service, (2004)2.
27. Arthur C. Nelson and James B. Duncan, *Growth Management Principles and Practices*, APA Planners Press, 1995, p. 73.
28. *Question of Values*, Appendix Section 1.
29. Some dispute the achievement of this objective through urban containment. See Cox, *A Question of Values*, Appendix Section 2.
30. There is less disagreement about the effectiveness of urban containment policy regarding this objective. See Cox, *A Question of Values*, Appendix Section 3 in Cox, "A Question of Values."
31. Richard K. Green and Stephen Malpezzi, *A Primer on U.S. Housing Markets and Housing Policy*, Urban Institute Press, 2003, p. 146.
32. This effect is also called the "bid rent" theory. This is an idealized conception that assumes a monocentric metropolitan area with a single dominating central business district. In recent decades, metropolitan areas around the world have become more polycentric, with peaks in land prices at the location of secondary centres but generally below the values achieved in the central business district. See William Alonso, "Location and Land-use: Toward a General Theory of Land Rent," Cambridge, Massachusetts, Harvard University Press, 1964, and Richard F. Muth, *Cities and Housing: The Spatial Pattern of Urban Residential Land Use*, Chicago, IL: University of Chicago Press, 1969.
33. Gerard Mildner, "Public Policy & Portland's Real Estate Market," *Quarterly and Urban Development Journal*, 4th Quarter 2009. <http://www.pdx.edu/sites/www.pdx.edu.realestate/files/1Q10-4A-Mildner-UGB-1-31-10.pdf>.
34. Wendell Cox (October 4, 2016), "Urban Containment: Endangered Working Families and Beleaguered Minorities", <http://www.newgeography.com/content/005407-urban-containment-endangered-working-families-and-beleaguered-minorities>.
35. Nelson and Dawkins, *Urban Containment in the United States*.
36. *Ibid.*
37. Gerrit J. Knaap, and Arthur C. Nelson, "The Effects of Regional Land-use Control in Oregon: A Theoretical and Empirical Review", *The Review of Regional Studies* Vol. 18, No. 2 (1988): 37-46.
38. Peter G. Hall, Ray Thomas, Harry Gracey and Roy Drewett. *The Containment of Urban England: The planning system: objectives, operations, impacts*. Vol. 2. Allen and Unwin [for] PEP, 1973.
39. Hall *et al.* *The Containment of Urban England*.
40. Organisation for Economic Cooperation and Development (2012), *Compact City Policies: An Assessment*, <http://www.oecd.org/greengrowth/compact-city-policies-9789264167865-en.htm>.
41. Data from *Demographia International Housing Affordability Survey*, multiple editions.
42. Data from *Demographia International Housing Affordability Survey*, multiple editions.
43. Wendell Cox and Hugh Pavletich, *12th Annual Demographia International Housing Affordability Survey: 2016*, Demographia, 2016. <http://www.demographia.com/dhi.pdf>.
44. There is one notable exception, Boston, without urban containment policy. Boston's severe unaffordability is the result of large lot zoning that has resulted in the metropolitan region's (combined statistical area) development of an urban footprint second only to New York in the world, despite having less than one-third the population. By virtue of Boston's large population, its large lot zoning has become a "de facto" land rationing strategy. <http://www.newgeography.com/content/004987-the-evolving-urban-form-sprawling-boston> and Glaeser, Edward L., Jenny Schuetz and Bryce Ward. "Regulation and the Rise of Housing Prices in Greater Boston." Rappaport Institute for Greater Boston, Pioneer Institute for Public Policy Research (2006).
45. Cox, *A Question of Values*.
46. Chang-Tai Hsieh and Enrico Moretti, "Why Do Cities Matter? Local Growth and Aggregate Growth," The National Bureau of Economic Research, May 2015. <http://www.nber.org/papers/w21154>.
47. Thomas Piketty and Arthur Goldhammer, *Capital in the 21st Century*, 2014.

48. Matthew Rognlie, "A note on Piketty and diminishing returns to capital," June 15, 2014. http://www.mit.edu/~mrognlie/piketty_diminishing_returns.pdf.
49. Giani La Cava (2016), "Housing Prices, Mortgage Interest Rates and the Rising share of Capital Income in the United States," BIS Working Papers No 572, Berne, Switzerland: Bank for International Settlements, <http://www.bis.org/publ/work572.pdf>.
50. Cox, *A Question of Values*.
51. See, for example, William A. Fischel, *Regulatory Takings: Law, Economics, and Politics*. Harvard University Press, 1995.
52. Cox, *A Question of Values*.
53. Wendell Cox, "Constraints on Housing Supply: Natural and Regulatory," *Econ Journal Watch* Vol. 8, No. 1, (2011): 13-27. <http://econjwatch.org/articles/constraints-on-housing-supply-natural-and-regulatory>.
54. Dianne Katz, *The BC Agricultural Land Reserve: A Critical Analysis*, Fraser Institute (2009). <https://www.fraserinstitute.org/sites/default/files/BCAgriculturalLandReserve.pdf>.
55. *Demographia International Housing Affordability Survey*, www.demographia.com/dhi.pdf.
56. *Demographia World Urban Areas: 13th Annual Edition*, <http://demographia.com/db-worldua.pdf>.
57. Calculated using data from 2011 Statistics Canada for population centres, 2010 United States Census Bureau data for urban areas and *Demographia World Urban Areas*, www.demographia.com/worldua.pdf. The calculation assumes the Toronto population centre density.
58. Shlomo Angel, *Planet of Cities*, Lincoln Institute of Land Policy, 2012.
59. Wendell Cox, *Urban Policy: Time for a Paradigm Shift*, Frontier Centre for Public Policy (2013), https://fcpp.org/files/1/PS151_UrbanPolicy_JL03F2.pdf.
60. Dianne Katz, *The BC Agricultural Land Reserve: A Critical Analysis*.
61. Cheshire, Paul. *Urban containment, housing affordability and price stability – irreconcilable goals*.
62. This is under normal circumstances. A developer is not likely to proceed with a project unless a competitive return on investment can be made, including the fees and levies. Developers may not be able to recoup all of these costs when land prices fall. However, this is unusual in urban containment markets.
63. Claude Gruen, *New Urban Development: Looking Back to See Forward*, Rutgers University Press, 2010.
64. CMHC, "Government-imposed Charges on New Housing in Canada (2009)," CMHC Social-economic Series 10-022, Research Highlight, November 2010. <http://www.cmhc-schl.gc.ca/odpub/pdf/67163.pdf?fr=1454362810755>.
65. Per single-family dwelling room. See: Residential Development Charges: Effective February 1, 2016, City of Toronto, <http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=acd97487cdd61510VgnVCM10000071d60f89RCRD&vgnnextchannel=a90b285441f71410VgnVCM10000071d60f89RCRD>, and, Residential Development Charges: Effective November 1, 2013, City of Toronto, http://www1.toronto.ca/City%20of%20Toronto/Corporate%20Finance/Developmental%20Charges/Files/pdf/D/DevChargesPhamplet_final_accessible.pdf.
66. Hemson Consulting, Ltd. (August 2016), *Determination of Regulatory Fees to Finance Growth: Technical Report*, <http://winnipeg.ca/finance/pdfs/growth/HEMSON-DeterminationOfRegulatoryFeesToFinanceGrowth.pdf>, and, "Review of Growth Financing Mechanisms," <http://winnipeg.ca/finance/pdfs/growth/HEMSON-ReviewOfMunicipalGrowthFinancingMechanisms.pdf>.
67. See for example, Keith R. Ihlanfeldt and Timothy M. Shaughnessy. "An empirical investigation of the effects of impact fees on housing and land markets." *Regional Science and Urban Economics* 34, no. 6 (2004).
68. This strategy has been used to stop further urban expansion, such as in the suburbs of Washington, DC (See Section 4.1).
69. Four decades after the Portland metropolitan area adoption of more restrictive land-use policies, many streets in the southeast and northeast quadrants of the core city of Portland continue to have either no sidewalks or only intermittent sidewalks.
70. "Places Apart: A Planet of Suburbs," *The Economist*. http://www.economist.com/node/21634591/sites/all/modules/custom/ec_essay.
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72. *Demographia International Housing Affordability Surveys* (annual).
73. *13th Annual Demographia International Housing Affordability Survey* (2017), www.demographia.com.
74. Houston does is without the typical zoning of North American municipalities.
75. Altus Group, "Canadian Cost Guide 2016," <http://us.altusgroup.com/press-release/altus-group-releases-2016-construction-cost-guide/12885>.
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83. See Wendell Cox (September 24, 2013), *Unblocking Constipated Planning in New Zealand*, <http://www.newgeography.com/content/003950-unblocking-constipated-planning-new-zealand>, and, Joe B. Allen and David M. Oliver, Jr. *Texas Municipal Utility Districts: An Infrastructure Financing System*, <http://westten.com/sites/default/files/texas-municipal-utility-districts-an-infrastructure-financing-system.pdf> (Texas).
84. Clayton and David (2017).
85. Cheshire, Nathan and Overman, 2014.

