



POLICY SERIES

NO. 162 • APRIL 2014
FRONTIER CENTRE FOR PUBLIC POLICY

Housing Affordability and the Standard of Living in Calgary

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He has written and spoken widely on the role of housing affordability in the standard of living and in poverty reduction, including national speaking tours of Australia and during numerous international presentations.

He is author of *War on the Dream: How Anti-sprawl Policy Threatens the Quality of Life* and the co-author with Richard Vedder of *The Wal-Mart Revolution: How Big-Box Stores Benefit Consumers, Workers, and the Economy*. In addition to these books, he has been a frequent book chapter contributor and is the author of a regular column in www.newgeography.com.

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Date of First Issue: April 2014.

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ISSN 1491-78

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Table of Contents

Title	Page
Executive Summary	4
1. Focusing on priorities	9
2. The Calgary Area: Trends and planning	12
3. Fundamentals of the housing market	16
4. Shortage of new housing and lots	21
5. Mobility and economic growth	30
6. Mobility in Calgary	33
7. Sustainability	49
8. Broader economic effects	54
9. Putting people first for a more prosperous Calgary	56
Recommendations	57
Appendix A	59
Appendix B	61
Appendix B	64
Endnotes	67

Executive Summary

1. Focusing on Priorities

Over the past two centuries, the world has become more urban, as people have moved to the cities to better their lives. Cities exist because, as large labour markets, **they facilitate a higher standard of living for residents and reduce poverty.** Governments place a high priority on these social goods. Achieving them requires that governments pursue policies that lead to higher household discretionary income. Governments must also proactively avoid policies that reduce discretionary income. Regrettably, urban containment policy, the subject of this report, increases house prices relative to income, thereby reducing discretionary income and the standard of living while increasing poverty.

Alain Bertaud, former principal urban planner at the World Bank, expressed the important role played by urban planning as follows: “Increasing mobility and affordability are the two main objectives of urban planning. These two objectives are directly related to the overall goal of maximizing the size of a city’s labor market, and therefore, its economic prosperity.”

Yet, the dominant strain of urban planning, urban containment policy, leads to a lower standard of living and greater poverty by increasing housing costs relative to income. This occurs because urban containment policy places artificial limits on the supply of land and housing, which drive up prices because of an excess of demand over supply. The cost of housing is the largest element of household budgets and is thus a major determinant of the standard of living and the extent of poverty. There is a need to focus on the fundamental priority of improving the standard of living and reducing poverty (Section 1).

This report examines urban planning policy and its impact on housing affordability in the Calgary area.

2. The Calgary Area: Trends and Planning

Calgary is Canada’s fastest-growing metropolitan area. Like metropolitan areas around the world, the Calgary area population is dispersing. Approximately 80 per cent of the population lives in the city of Calgary. However, it is projected that 44 per cent of the population growth through 2039 will be outside the city.

As the largest jurisdiction in the area, the City of Calgary plays a dominant role. It has adopted strong urban containment policies that require significant densification, the expansion of transit and a staged development program intended to curb the geographic expansion. The philosophy behind this program was adopted in the Calgary Metropolitan Plan, which applies to some jurisdictions outside the city but not all, as some jurisdictions withdrew (Section 2).

3. The Impact of Urban Containment Policy and the Standard of Living

Other things being equal, economic principle indicates that when there is a shortage of a good that is in demand, prices will tend to increase. This relationship is not just

theoretical; it has been documented in decades of actual experience (at least since the work of Sir Peter Hall and others, referenced below, more than four decades ago). It is so compelling that economist Paul Cheshire, of the London School of Economics, has concluded that urban containment policy is irreconcilable with housing affordability.

With its strong urban containment policies, the Calgary area could be at risk of repeating the even-more severe cost escalation that has occurred in metropolitan areas with longer histories of urban containment policy, such as Vancouver and Sydney (Section 3).

4. Housing Affordability and the Standard of Living in the Calgary Area

Historically, Calgary was characterized by broad-based housing affordability. Until 2000, the median single-family house price was approximately 3.0 times the median household income. This is consistent with other metropolitan areas throughout the New World (Canada, Australia, New Zealand and the United States) following World War II prior to their adoption of urban containment policies.

Over the last decade, Calgary has developed its stronger urban-containment planning regime (Plan It Calgary), and house prices have escalated strongly. The most recent data indicate that the median single-family house is approximately 4.8 times the median household income, a 60 per cent increase since 2000.

The result is that many households are priced out of the housing market. At today's house prices, 64,000 fewer Calgary-area households qualify for a mortgage on the average-priced house than would qualify if the house price to income ratio had remained at the same level as in 2005. There is an even larger reduction in the number of households (80,000) that would qualify to purchase the average new house. This is more households than reside in Alberta's third-largest city, Red Deer.

Calgary's housing affordability loss is typical of metropolitan areas that have adopted urban containment policy. As policies are publicly formulated and then adopted, land prices rise where development is permitted, removing the competitive supply of land on which housing affordability depends (Section 4).

5. Mobility and Economic Growth

Metropolitan areas are unitary labour markets. Any attempt to fragment these markets is likely to lead to lower levels of economic growth. Yet, urban containment policy seeks to localize commuting trips within metropolitan areas, a concept called the "jobs-housing" balance. As attractive as the concept may seem, virtually all attempts in democratic societies have failed.

Economic growth improves with greater mobility, which is the ability of residents to commute to the maximum number of jobs in the metropolitan area in a specific amount of time (such as 30 minutes). Transit, cycling and walking are appropriate for many. However, these modes are unable to compete with the automobile in providing quick and comprehensive mobility throughout the metropolitan area. Further, the mobility and standard of living of low-income households are improved by automobile access (Section 5).

6. Mobility in Calgary

Calgary has developed the most highly patronized light rail system in the New World (Canada, Australia, New Zealand and the United States). Further, Calgary has a larger transit market share than nearly all metropolitan areas of similar size in the New World. Yet, per capita transit ridership has not materially increased in the three decades since light rail started. Cars continue to be the dominant mode of travel in Calgary, and the latest National Household Survey indicates an increase in the market share of people travelling to work by car.

The City's imagineCALGARY program has the objective of increasing per capita transit ridership by 40 per cent within little more than two decades. It is unlikely that this goal is achievable, since the transit markets with the highest potential for ridership are already served. Transit cannot attract material numbers of automobile drivers unless it can compete with automobile travel times, which are usually much shorter. The City's computer modelling confirms that expected transit improvements will not materially increase the share of travel on transit. The modelling indicates that significant penalties for driving would be necessary, eventually rising to more than \$1-billion annually, to materially increase transit's market share.

Moreover, no metropolitan area in the Western world has attempted to develop an automobile-competitive transit system. The annual cost of such a program could rival a city's gross domestic product.

Further, higher densities are associated with more-intense traffic congestion. In combination with the inability to substantially increase the share of transit, densification is likely to lead to much more serious traffic throughout the Calgary area (Section 6).

7. Sustainability

Sustainability is a principal underlying the justification of urban containment policy, particularly the reduction of greenhouse gas (GHG) emissions. Yet urban containment policy produces only minimal GHG emissions reductions and at an exorbitant cost.

In the United States, the Environmental Protection Agency (EPA) estimates that its fuel economy improvements will cost a *negative* \$200 to \$300 per tonne of GHG emissions reduction. McKinsey & Company estimates that GHG emissions sufficient to achieve the Intergovernmental Panel on Climate Change (IPCC) recommended reduction rates to 2030 could be achieved at an average cost of *minus* \$9 per tonne.

The cost of urban containment policy is far higher than these metrics indicated by Mckinsey & Company and the EPA above. The estimated cost of reducing GHG emissions through transit alternatives is \$1,000 per tonne, and the additional housing costs incurred to reduce GHG are estimated at nearly \$20,000 per tonne in the United States. Expenditures of this magnitude can seriously delay economic growth.

Further, urbanization is not a threat to agricultural production. There has been a reduction in Canada's farmland, but not because of urbanization. Farming has become more productive and, thus, less land is necessary. In fact, due to improved productivity, the amount of land covered by urban areas is less than the reduction

in farmland (Section 7).

8. Broader Economic Impact

Not surprisingly, the reductions in household discretionary income associated with urban containment have also led to less robust metropolitan-area growth according to research in the United Kingdom, continental Europe and the United States.

The Bank of Canada has expressed concerns about rising household debt and rising house prices. These concerns were also a factor in the downgrading of most major Canadian banks by international rating agencies in 2012. They are heightened by the longer-term possibility of higher interest rates that would put even more pressure on household budgets.

The experience of Australia and New Zealand suggests that house-price escalation in Canada could be greater in the years to come than what has already occurred.

Housing costs, the largest expenditure item of household budgets and a significant driver of inflation, are beyond the policy purview of the Bank of Canada. The land-use policies of provinces and metropolitan areas are the principal determinant of house-price escalation beyond historic norms (Section 8).

9. Putting People First for a More Prosperous Calgary

If house prices continue to increase at a rate greater than incomes in the Calgary area, the standard of living could decline further and real poverty could increase. There is a need for policies that put people first by restoring and maintaining historical housing affordability. The following recommendations are proposed.

The municipal jurisdictions of the Calgary area should do the following:

- Focus on improving the standard of living and eradicating poverty by establishing housing affordability standards and by monitoring house prices relative to the standards.
- Ensure that a competitive supply of land is available for immediate development at 2000 and before price ratios. (Jurisdictions such as Rocky View County, Foothills #31 and Wheatland County, which are not signatories to the Calgary Metropolitan Plan, are particularly well positioned to take the quickest actions to provide housing affordability to households.)
- Implement infrastructure finance options such as bonding, user fees and special housing districts that could improve housing affordability.
- Adopt transportation policies that maximize mobility throughout the Calgary area. These strategies should seek to minimize commute travel times throughout the metropolitan area regardless of the mode of travel.
- Revise the Calgary Metropolitan Plan so it is consistent with the recommendations for the Calgary-area jurisdictions listed above.

The City of Calgary should do the following:

- Revise its urban planning policies to focus principally on improving the standard of living and reducing poverty by restoring historic housing affordability.

- Revise its regularly scheduled land supply analysis to require a sufficient supply of affordable land. This would replace the present approach that fails to incorporate any historical land cost data. This would necessitate that sufficient land be available for immediate development at prices consistent with historic norms (2000 and before).
- The province should report annually on housing affordability in each of the census metropolitan areas (CMAs), census agglomerations and larger municipalities by using a price to income ratio (such as the median multiple, which is the median house price divided by the median household income).

Urban policies that improve the standard of living and reduce poverty by restoring housing affordability should attract broad political support. There is nothing more fundamental in public policy than facilitating higher standards of living and eradicating poverty (Section 9).

“If house prices continue to increase at a rate greater than incomes in the Calgary area, the standard of living could decline further and real poverty could increase.”

1. Focusing on priorities

Throughout history, people have moved to cities for better lives. Cities offered better opportunities because households could expect to enjoy greater discretionary incomes than in rural areas, and there were greater opportunities for upward economic mobility. Cities are economic entities. Former World Bank principal urban planner Alain Bertaud (2004) noted: “*Large labor markets are the only raison d’être of large cities.*”¹ **The very purpose of cities is to facilitate a higher standard of living for residents and to reduce poverty.** He continues: “Increasing mobility and affordability are the two main objectives of urban planning. These two objectives are directly related to the overall goal of maximizing the size of a city’s labor market, and therefore, its economic prosperity.”²

Consistent with this, the virtually universal domestic public policy priority of governments is the betterment of people by facilitating a higher standard of living and reducing poverty. Achieving this objective requires that governments pursue policies that lead to higher household discretionary income.³ Governments must also proactively avoid policies that reduce discretionary income. Regrettably, urban containment policy, the subject of this report, increases house prices relative to incomes, thereby reducing discretionary income and the standard of living while increasing poverty.

Urban containment policy has been advocated for at least seven decades.⁴ Urban containment is referred to as “smart growth,” “compact city policy,” “growth management,” “liveability,” and “densification” among others. One method urban containment uses to limit the expansion of urban areas (suburbanization or pejoratively called “urban sprawl”) is to severely restrict or prohibit development on or beyond the urban fringe (Box 1, next page).

A related element of urban containment policy is to limit the use of the automobile⁵ by transferring demand to transit, cycling or walking.

Economic principle holds that other things being equal, a scarcity in the supply of a product will tend to influence its price upwardly. This is true of land for urban development—policies that severely restrict the availability of land are associated with higher and rising house prices. Economists Richard Green and Stephen Malpezzi summarize the issue:

“When the supply of any commodity is restricted, the commodity’s price rises. To the extent that land-use, building code, housing finance, or any other type of regulation is binding, it will worsen housing affordability.”⁶

The higher prices associated with urban containment policy have broken the historical link between house prices and household income (Appendix B), reducing discretionary household income.

Since housing is the largest item in household budgets,⁷ more-expensive housing reduces discretionary income, which is the money left over after taxes and funds needed for necessities (non-discretionary income). Less discretionary income means

Urban Expansion in Context

Cities grow geographically as they add population. This has been the case since the first cities arose. The extent of this spatial expansion has become greater as cities have grown exponentially and transportation technology has improved. This spatial expansion is related to the desire on the part of people for better lives (Section 1). This paper does not argue that urban expansion (urban sprawl) is inherently wealth generating; however, it certainly has been associated with an unprecedented expansion of affluence and the reduction of poverty.

Virtually all of the largest cities in the world have expanded at least as rapidly as they have added population (see “Dispersion in the World’s Largest Urban Areas”¹⁰). Urban expansion is not a unique Canadian or U.S. phenomenon. It can be witnessed from Atlanta, with the world’s lowest major urban area density, to London, Paris, Tehran, Lagos, Jakarta and Shanghai and even to Dhaka,¹¹ which has the world’s highest urban density.

Urban containment policies seek to slow, stop, or even reverse this organic expansion. Nonetheless, in his recently published book, *Planet of Cities*, New York University professor and urban planner Shlomo Angel advises coming to terms with urban expansion.¹² He urges the abandonment of artificial limits on urban expansion and population growth (such as urban containment boundaries) and promotes programs to improve economic development and the quality of life. He decries the notion that “cities should simply be contained and enclosed by greenbelts or impenetrable urban growth boundaries” as “uninformed or utopian” because it makes sustainability “an absolute end that then justifies all means to attain it.”

a lower standard of living and higher rates of poverty.

Data over recent decades show that there is an association between house prices and household income, with houses generally costing approximately three times income. However, this nexus has been broken, nearly exclusively in metropolitan areas with urban containment policies, from the most vibrant (such as San Francisco, London and Sydney) to those that have experienced significant industrial decline (such as Liverpool and Glasgow).

Much of the justification for urban containment policy is the expectation that it will materially reduce GHG emissions. However, urban containment policy is an overly expensive and ineffective strategy for reducing GHG emissions (Section 7.1).

Housing affordability has deteriorated markedly in the Calgary area in recent years. At the same time, the City of Calgary, which contains most of the population of the Calgary area, has adopted strong urban containment policies, which are echoed in the Calgary Metropolitan Plan.

Experience elsewhere indicates that without policy reforms that prioritize people over the urban form, urban containment policies will substantially worsen housing affordability in the future. As is indicated in “Urban Policy: Time for a Paradigm Shift,”⁸ there is a need to focus on the fundamental

objectives of maintaining or improving the standard of living and reducing poverty. This report considers land-use, transportation policy and plans and their potential impact on the standard of living in the Calgary area. The principal focus is the cost of housing, which is the largest element of household budgets. Housing is also the budget element that is subject to the largest variation relative to income between metropolitan areas, with Vancouver's house price to income ratio being more than four times that of some markets in Atlantic Canada.⁹ Housing affordability, as used in this report, refers to broad measures of house prices relative to income for *all households* and is not limited to social housing, subsidized housing or housing for low-income residents. However, low-income housing is a crucial issue and tends to be more costly where public policies have allowed overall housing affordability to deteriorate substantially.

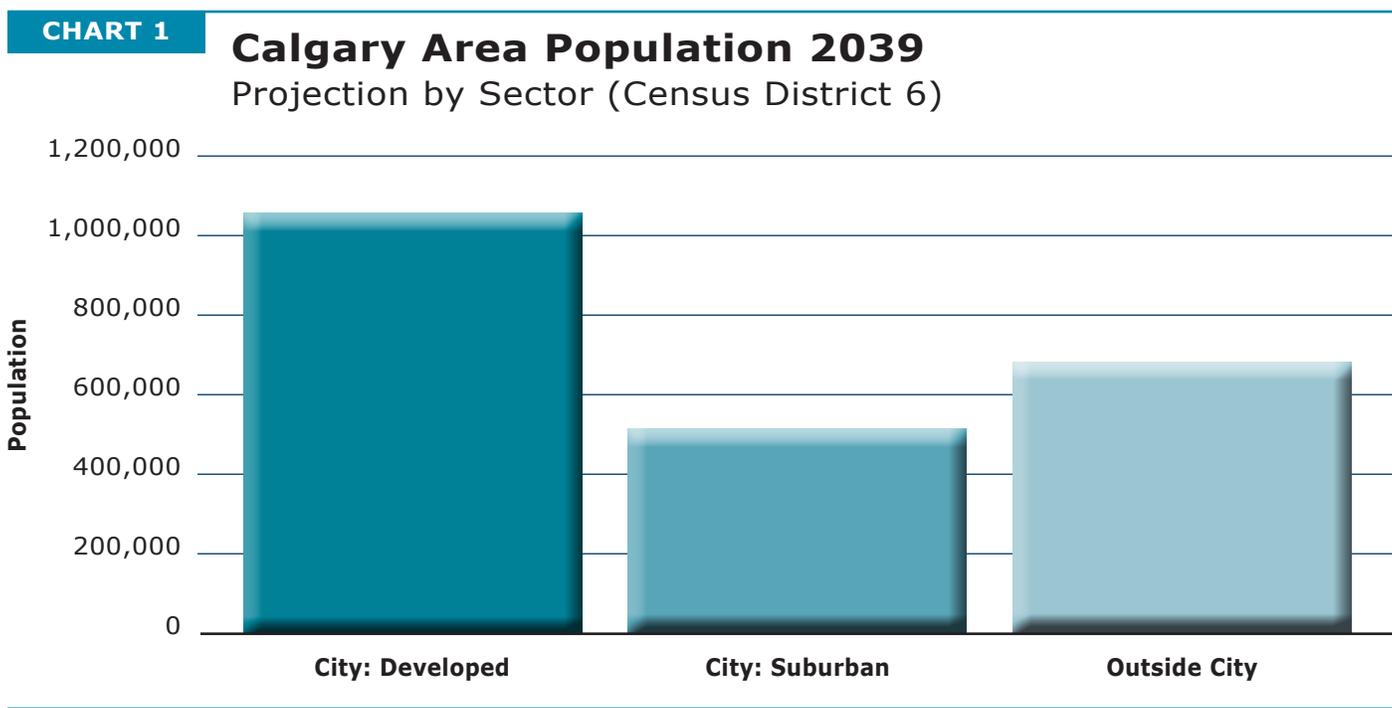
“Housing affordability has deteriorated markedly in the Calgary area in recent years.”

2. The Calgary Area: Trends and planning

As noted above, virtually all of the largest metropolitan areas in the world have decentralized and have experienced declining urban population densities.¹³ This occurred as the automobile became the principal mode of transport in all major Western world metropolitan areas, and households sought detached houses or other ground-oriented accommodation¹⁴ in lower density suburban areas (with a few exceptions¹⁵).

2.1 Population projections in Calgary

These trends have characterized the Calgary area’s growth. Calgary continues to grow rapidly. Like virtually all of the world’s large metropolitan areas, Calgary¹⁶ is decentralizing. Based upon Alberta Ministry of Finance and City of Calgary projections, it is likely that approximately 30 per cent of the Calgary area population will be outside the city. Approximately 20 per cent of the Calgary area population is already outside the city. The present population of under 300,000 would rise to nearly 700,000 (Chart 1). Approximately 56 per cent of the increase in the Calgary Region population is projected to be in the city, with 23 per cent in the fully developed¹⁷ area and 33 per cent in the newer suburbs and approximately 44 per cent of the growth would be outside the city through 2039 (Chart 2).

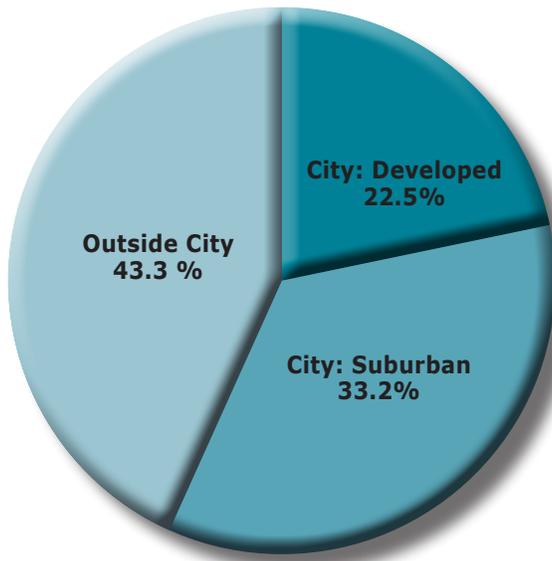


Source: Derived from Alberta Ministry of Finance, and the City of Calgary.

CHART 2

Calgary Area 2010-2039

Share of Population Growth (Census District 6)



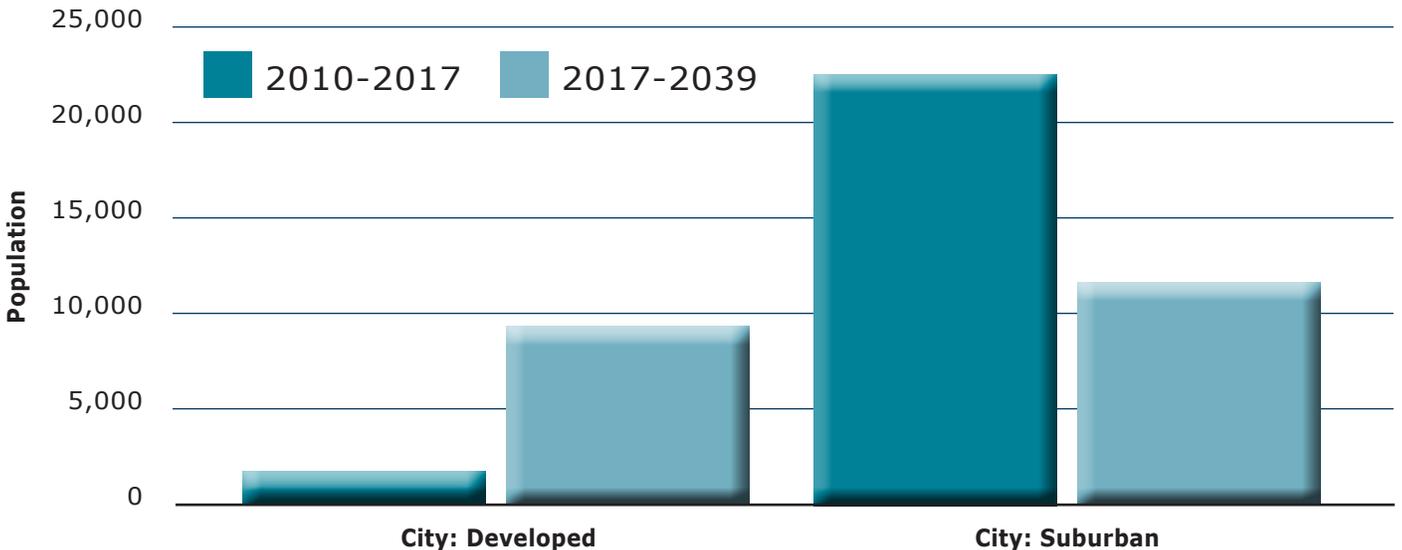
Source: Derived from Alberta Ministry of Finance, and the City of Calgary.

Between 2017 and 2039, it is anticipated that the fully developed area will add more than six times the population on an annual basis as it did between 2012 and 2017. At the same time, a near mirror image decline is projected to occur in the annual population growth of the suburban areas in the city (Chart 3). The expectation of such a large spurt in fully developed area growth could be optimistic in view of existing development patterns and trends.

CHART 3

City Growth: Fully Developed vs Suburban

Annual Projections - 2010-2017 and 2017-2039



Source: Derived from City of Calgary data.

2.2. Urban planning in the Calgary area

The City of Calgary and other local jurisdictions in the Calgary area have made significant changes to their urban planning approaches.

Most importantly, the City of Calgary has implemented policies that require significant densification of new suburban developments and greater intensification of fully developed areas. Through various processes, such as the Envision Calgary program, City policy has evolved into a much more rigorous urban containment-planning regime, which goes under the title of Plan It Calgary.

Plan It Calgary requires that newly developed areas meet population and employment density levels. Residential growth is strictly directed into specific areas designated by the City, and greenfield development is generally prohibited elsewhere. This higher density development severely reduces the land on which urban development is permitted compared with the planning approach in effect before the adoption of Plan It Calgary.

Even so, the City of Calgary has indicated in various documents its commitment to ensuring a supply of land to maintain or even improve housing affordability. For example, in reporting the 2006 mediation agreement between the City and Rocky View County, the City of Calgary noted:

The annexation ensures a healthy land supply that Calgary needs in order to retain its competitive edge as a city, while at the same time ensuring it becomes a more affordable city to live in. This future land will be developed for all uses, allowing for the comprehensive planning of new areas, promoting a competitive marketplace and encouraging a greater supply of new housing choices.

The City conducts regular surveys to ensure that there is sufficient land available for housing so that it can support future population growth. However, this approach is incomplete because the metrics that would ensure a competitive market for land (a prerequisite for housing affordability) are excluded (Section 3).

Plan It Calgary also includes substantial improvements to transit and the infrastructure necessary for walking and cycling and seeks to reduce automobile use from projected levels.

Calgary Metropolitan Plan: Under the Calgary Metropolitan Plan, other jurisdictions in the Calgary area are also committed to urban containment policies. However, not all jurisdictions have adopted the Plan. Furthermore, Rocky View County, Wheatland County, Foothills #31 and High River withdrew from the sponsoring Calgary Regional Partnership. The province is currently considering regional planning legislation.

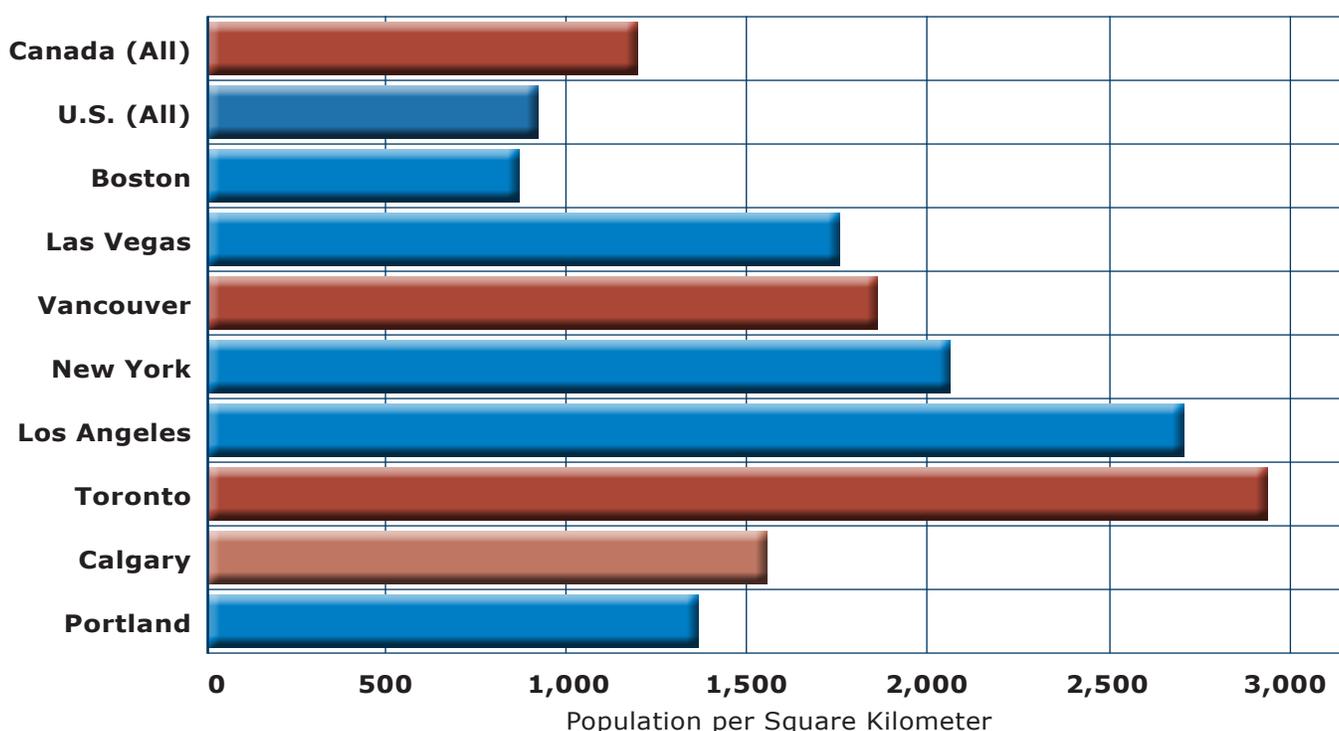
2.3. Compact Calgary

Despite contentions of urban sprawl, the Calgary built-up urban area (“population centre” is the new term used by Statistics Canada) is comparatively compact. Among the 45 built-up urban areas in Canada and the United States with more than 1,000,000 people at the last censuses (2011 in Canada, 2010 in the United States), all areas that were denser than Calgary were more than double its population. Of those between 1,000,000 and 2,000,000 residents, only Las Vegas, with a population of 1.8 million, was denser. Calgary was approximately 15 per cent denser than Portland, which is renowned for its urban containment policies, which date back nearly four decades (Chart 4).

CHART 4

Calgary Urban Density in Context

Selected Canada and U.S. Built Up Urban Areas - 2010-2011



Canada
 United States

Source: Calculated from Statistics Canada and U.S. Census Bureau data.

3. Fundamentals of the housing market

For decades, there was a fundamental relationship between house prices and household income. This relationship, which is indicated by an approximate ratio of 3.0 times (or less) between median house prices and median household income, predominated in Canada, the United Kingdom, Australia, Ireland, New Zealand and the United States (Appendix B).¹⁸

Generally, the fundamental connection between house prices and household incomes has been retained in the metropolitan areas that are not governed by strong urban containment policy or government policies that create land scarcity. On the other hand, the connection between house prices and household income has been substantially broken only where there are strong urban containment policies. All of the major metropolitan areas (in nine nations) with severely unaffordable housing (median multiples above 5.0) over the 10 years of the “Annual Demographia International Housing Affordability Survey” had strong land-use policies, principally urban containment policy.¹⁹ Conversely, none of the major metropolitan areas with liberal land-use policies had severely unaffordable housing. In other words, severely unaffordable housing is strongly associated with urban containment policy. No liberally regulated major metropolitan area in these nations reached severe unaffordability (not even in the disastrous U.S. housing bubble).

3.2 The economic research

Perhaps the earliest evaluation of urban containment policy was *The Containment of Urban England*, which was a five-year project by a team of academics led by urbanologist Sir Peter Hall (1973) of University College, London. The subject of this early 1970s work was the housing market as it evolved since the enactment of the *Town and Country Planning Act* in 1947. Hall, et al. found that “perhaps the biggest single factor of the 1947 planning system is that it failed to check the rise in land prices which is probably the largest and most potent element of Britain’s postwar inflation.” The results are characterized as being inconsistent “with the objective of providing cheap owner occupied housing.” Moreover, they note that the planning system has imposed the greatest burden on lower-income households.²⁰

In an introduction to the “4th Annual Demographia International Housing Affordability Survey,” former governor of the Reserve Bank of New Zealand Donald Brash wrote, “The 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.”²¹

In reports commissioned by the Blair government, former Bank of England Monetary Policy Committee member Kate Barker also wrote about the strong relationship between unaffordable housing prices and urban containment policy.²²

A New Zealand government report written by Arthur Grimes (2007) when he was chairman of the Board of the Reserve Bank of New Zealand attributed the loss of housing affordability in the nation's largest urban area, Auckland, to urban containment policies. In another report, Grimes (2009) found that per acre prices just inside Auckland's urban growth boundary were 10 times that of comparable land on the other side of this boundary.

The link is so compelling that London School of Economics professor Paul Cheshire concluded from his research that urban containment policy is irreconcilable with housing affordability.²³ Given the importance of housing affordability in household budgets, this means that urban containment policy is incompatible with maintaining or improving the standard of living.

One of Ireland's most respected economists, Colm McCarthy of University College, Dublin, described how the adoption of urban containment policies not only undermined the fundamentals of the housing market, but also led to Ireland's destructive bubble and bust (and one of the most significant economic reversals suffered by any nation in decades).²⁴

Ireland passed its first major piece of land-use planning legislation in 1963, modelled on the UK's *Town and Country Planning Act of 1947*. The intentions were laudable, to restrict the construction of unwelcome developments and to empower local authorities to take a more active role in shaping the built environment.

... Our old friend, the Law of Unintended Consequences, began to impact from the mid-Seventies onwards as house prices in Dublin began to diverge from the national average.

... Before land-use zoning came along, house-builders extended the city by buying up farms on the city's edge and building at whatever densities the market would support. But as more and more lands were withdrawn from the buildable stock by the planners, prices began to rise and the house-builders moved further away from the city proper.

McCarthy noted that urban containment policies had been adopted with good intentions. The impact, however, has been disastrous.

The literature documenting the relationship between urban containment policy and house price increases is reviewed in more detail in Appendix A.

3.3 Raising housing costs and forcing low-income residents out of Portland

The loss of housing affordability is not limited to those who seek to own their own homes. There are indications of a significant and even disproportionate impact on low-income households.

This is evident in Portland, which is one of the international leaders in urban containment

policies. Portland has experienced major house-cost escalation relative to income (Appendix C). However, Portland’s low-income households have experienced an even greater loss in housing affordability than the rest of the metropolitan area.

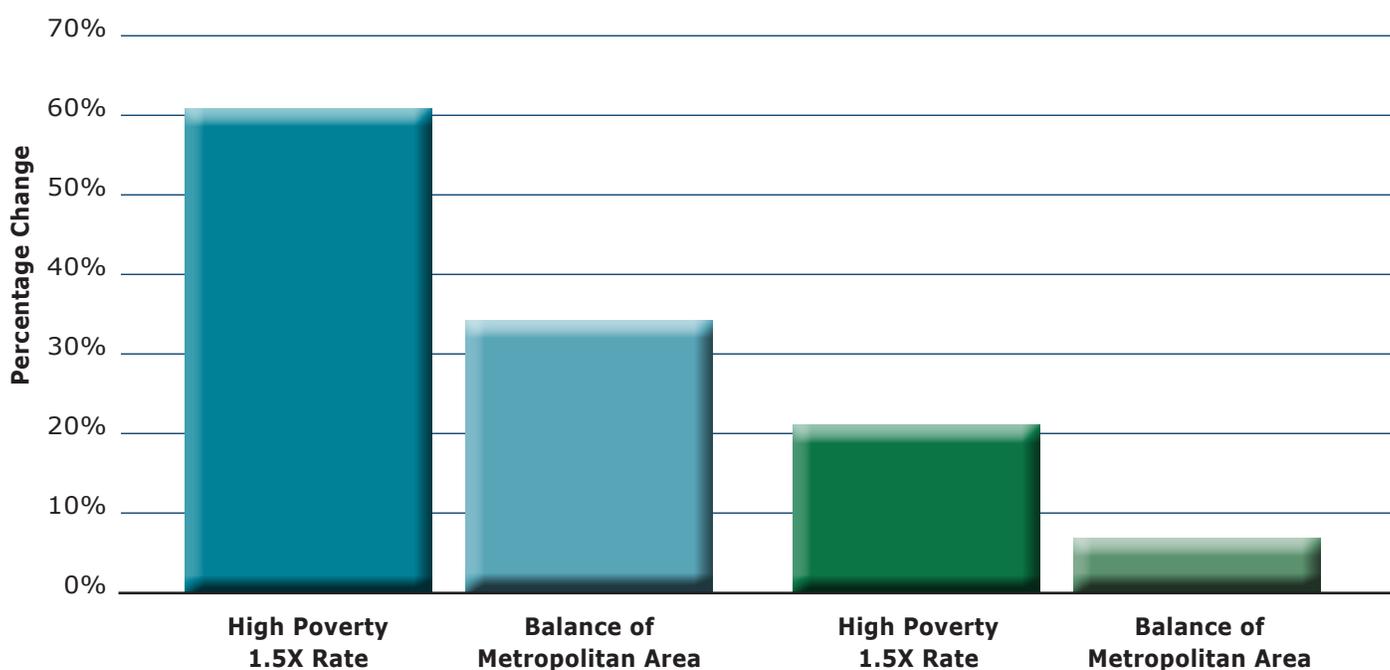
An analysis of postal code areas with poverty rates of 50 per cent or more above average indicates housing cost increases for both owned and rented housing. Owned housing rose in value relative to incomes approximately 75 per cent more in the high poverty areas than elsewhere in the metropolitan area. The cost of rental housing (adjusted for income) rose nearly three times as much in high poverty areas (Chart 5).

The greater rise in housing costs in higher-poverty areas indicates that the social cost of urban containment is even more burdensome on low-income households than is the additional cost that has been imposed on households with average incomes.

CHART 5

Low Income Household Impact 1999-2009

Portland: Urban Containment and Poverty Areas



Owned Housing (Median Multiple)
 Rental Housing (Gross Rent)

Source: Postal Code data from U.S. Census Bureau.

Based on a comparison of 2000 and 2010 census data, *The Oregonian* (the metropolitan daily newspaper) noted that ethnic diversity was on the decline in some denser Portland neighbourhoods.²⁵ In particular, *The Oregonian* noted that many black households have been forced to move from their former more-central location to more-remote areas with less transit service. This is particularly burdensome for lower-income households that generally have lower levels of access to automobiles.

Portland also illustrates the consequences of City government-directed neighbourhood rehabilitation, especially when using devices such as urban renewal and tax incentives. These programs are routinely directed to less affluent neighbourhoods or disused industrial areas. They have had harsh consequences for Portland's largest historic black community, Albina. Residents have been forced out of this formerly lower-income area, as they are unable to afford the newer, more expensive housing that is aimed at young professionals.²⁶

Urban deconstruction and displacement of lower-income residents is not new in the United States. According to the Douglas Commission report (which was headed by long-time Illinois Senator Paul H. Douglas), between 1949 and 1967, 400,000 homes were demolished in urban renewal programs and another 330,000 in urban freeway construction projects.²⁷ The deconstruction was disproportionately conducted in lower-income and minority neighbourhoods.²⁸ According to Mindy Thompson Fullilove of New York's Columbia University, little replacement housing was built.²⁹

More recently, advocates for the remaining minority community in Portland opposed the building of a new store (Trader Joe's) that caters to affluent consumers out of fear that it would encourage even more displacement of the present residents.³⁰

Related research by Guanyu Zheng for the New Zealand Productivity Commission found that the higher prices generated by Auckland's urban growth boundary were more severe for lower-cost housing: "... [W]hen the supply of land on the urban periphery is restricted, the price of available residential land rises and new builds tend to be larger and more expensive houses."³¹

California best illustrates the potential for social and economic consequences. It has the highest poverty rate, adjusted for housing costs, in the United States.³² This, combined with the highest housing costs relative to income in that state, is stark testimony to the economic and social costs of urban containment policy.

In this connection, economist Anthony Downs wrote, "Higher prices then reflect a pure social cost because the efficiency of society's resource allocations has decreased." This means that if households have to pay more for their basic living expenses, such as for housing, they will have a lower standard of living.

3.4 Urban containment devices

Perhaps the most detrimental effect on the price of land for residential development is urban containment policies that severely restrict the land that can be used for new housing. There are three principal strategies (below). Each of these strategies is often devised to allow for expansion as the demand for urbanization increases, although generally at higher population densities than before adoption. The purpose of this expansion is to ensure that there is a land supply for a specified number of years of urban expansion (such as 20 years or 30 years). Scheduled expansions, however, have been difficult and sometimes have not been implemented.

The first such strategy is the urban containment boundary, which may also be called an urban growth boundary. The urban containment boundary permits development within a line drawn around the urban area or jurisdiction, and it permits no urban development outside of it. Urban containment boundaries are in place in such metropolitan areas as Vancouver, Portland, Auckland and Melbourne. Urban containment boundaries can lead to higher land prices and thus higher new-house prices if there is not enough land within the boundary to preserve competitive land prices.

The second urban containment strategy is the greenbelt. A greenbelt is an area around an urban area in which urban development is not permitted. A greenbelt is nearly identical to an urban containment boundary except that development may be permitted outside the greenbelt. The greenbelt is the principal urban containment strategy in England, and London's is perhaps the best known. Toronto also has a greenbelt. Greenbelts can also lead to higher land prices and higher new-house prices if not enough land remains within the greenbelt to preserve competitive land prices. If development is banned or severely limited outside the greenbelt (as is the case in London), the house price increase effect can be indistinguishable from that of an urban containment boundary.

The third urban containment strategy is the growth area, which can be referred to by other labels such as "urban growth areas" and "priority growth areas." Planning authorities designate growth areas, which are often identified in plans such as municipal comprehensive plans. Areas not included in growth areas are, in effect, no-growth areas. Growth areas have virtually the same effect as urban containment boundaries and greenbelts if they do not include sufficient land to preserve competitive land prices. Sydney, for example, relies on growth areas. The City of Calgary's urban containment strategy generally relies on designated growth areas.

3.5 Infrastructure costs

Higher infrastructure and public service costs are often cited as justification for a more compact urban form and the imposition of urban containment strategies.

At the same time, it is important to ensure that levies and charges on new housing do not materially interfere with housing affordability. However, the approach typical of urban containment policy is to front-load attributable costs, which makes new houses more expensive and thus less affordable. Economic research indicates that levies and fees can represent an add-on to house prices where market conditions permit.³³ More often than not, this is likely to be the case in a strong housing market such as Calgary's. This approach is inequitable to buyers of new houses and is associated with higher house prices, including existing housing (Box 2, next page).

Fees and levies are a contentious issue. Developers and home builders often think that fees and levies are too high or that they can cover non-essential infrastructure and services. Municipal leadership often thinks that they are not high enough. Moreover, fees and levies are not an exact science. Different jurisdictions take radically different approaches to them. For example, a 2009 Canada Mortgage and Housing Corporation survey found that municipal fees and levies on new detached houses

varied by a factor of more than 10.³⁴ This may indicate differing perceptions (or tastes) with respect to the effect and desirability of new housing. Some jurisdictions in a metropolitan area, for example, might have a different perception of the fees and levies that are appropriate to charge new-home buyers.

BOX 2

Government-imposed costs, fees and levies

Before home builders can commence construction, raw land must be converted into finished lots. This is usually a principal task of the land developer, who arranges (and pays for) the local streets and utilities such as sewage, electricity and natural gas lines. Home builders purchase the finished land, the price of which includes the roads and utilities that were put in place by the developer. The street and utility improvements are turned over to the municipality and utility system owners.

In addition, government-imposed charges are an important element of new-house costs.³⁶ These charges include provincial sales tax, the GST and land transfer taxes as well as transaction fees and infrastructure fees (sometimes known as development levies).

In addition to the expense of preparing the land for construction, developers are also responsible for the public service levies and fees (sometimes called impact fees) paid to municipalities to offset the cost of off-site municipal improvements including infrastructure fees (for streets outside the subdivision and for utilities) and land dedication fees (such as for parks). Generally, these fees are a flat rate per unit of housing, by type of unit (such as single detached, semi-detached, townhouse and apartment or condominium).

There are equity concerns about funding public facilities through up-front charges on developers, which are routinely included in the lot prices charged to home builders and home purchasers.³⁷ Economic literature indicates that these charges are associated with both higher new-house costs and higher existing house costs, all things being equal.³⁸ In effect, new-home buyers pay for the new infrastructure, while existing homeowners and multi-family housing owners receive a windfall from the higher values induced by the development charges. At the same time, buyers of new houses, condominiums and rental units must pay for public facilities in advance, while existing owners are permitted to pay their share of such expenditures over time.

Other public facility financing methods are available that would permit owners of homes and multi-unit buildings to pay the attributable costs on a pay as you go basis. These include municipal debt instruments and user fees. Reliance on such instruments could reduce the pressure for higher housing costs, in both new and existing stock, leading to improved housing affordability.

Economist Claude Gruen notes further difficulties with government-imposed charges,³⁹ such as the fact that public service provision tends to be less expensive in newer suburban communities, and repair and upgrading (required for increasing densities) of infrastructure are more costly in denser, established areas.

New-house prices could be more affordable if attributable charges were financed by debt payable over time. For example, special debt issues payable through the benefitting homeowners' property taxes could accomplish this. Another approach would be to allow the establishment of municipal utility districts that issue public debt that finances necessary infrastructure, and, again, is repaid by the purchasing homeowners. These approaches have been successful in California, Texas and Colorado and are presently under consideration by the New Zealand government.³⁵

3.6 Universal applicability of economic principles

The City of Calgary commissioned research that largely dismissed the connection between the urban containment policies of Plan It Calgary and higher house prices. This is covered in Appendix C.

The reality is that economic principles apply in the Calgary area just as they do throughout the world. Limitations on supply lead to higher prices, other things being equal. Urban containment strategies are associated with higher land prices and thus higher new-house prices unless they are liberal enough to maintain a competitive land supply.

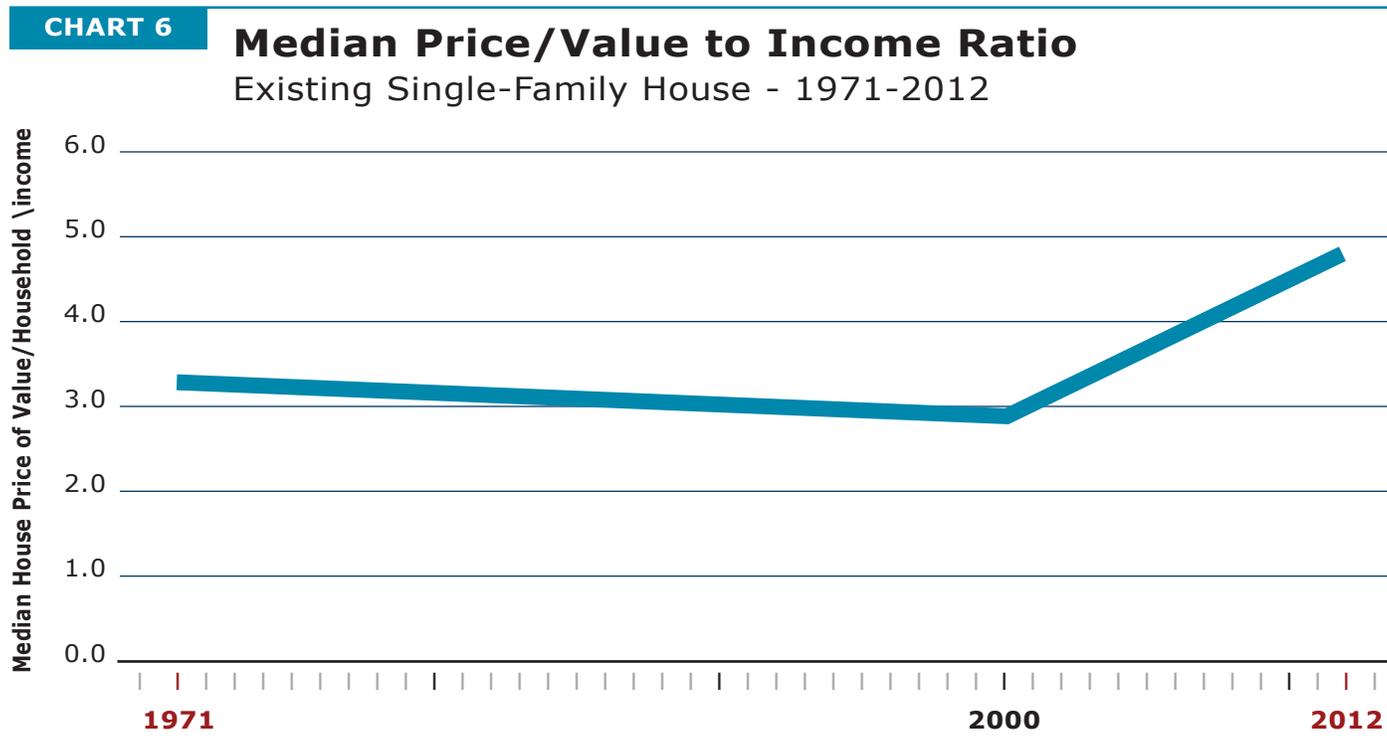
4. Shortage of new housing and lots

In recent years, the Calgary area has developed a serious housing affordability problem, as house prices have escalated substantially in relation to household income.

4.1 Housing affordability losses

Calgary used to be affordable, even with land-use policies that produced a comparatively compact city. Until the early 2000s when Calgary was characterized by liberal land-use policies, housing was affordable. According to the 1971 census, the median single-family house value in the Calgary metropolitan area was 3.1 times the median household income. Indications are that housing affordability slightly improved over the next three decades, when the median single-family house price was 2.9 times the median household income. This price to income ratio is consistent with the fundamental relationship that has existed between house prices and household income for decades, both in Calgary and nearly all of the metropolitan areas of Canada, Australia, New Zealand and the United States (Appendix B).

Since then, the median price of an existing single-family house in the City of Calgary has increased to 4.8 times the median household income (Figure 6). Thus, for the median household income, the median-priced single-family house now costs almost two more years of income than it did just 12 years ago.



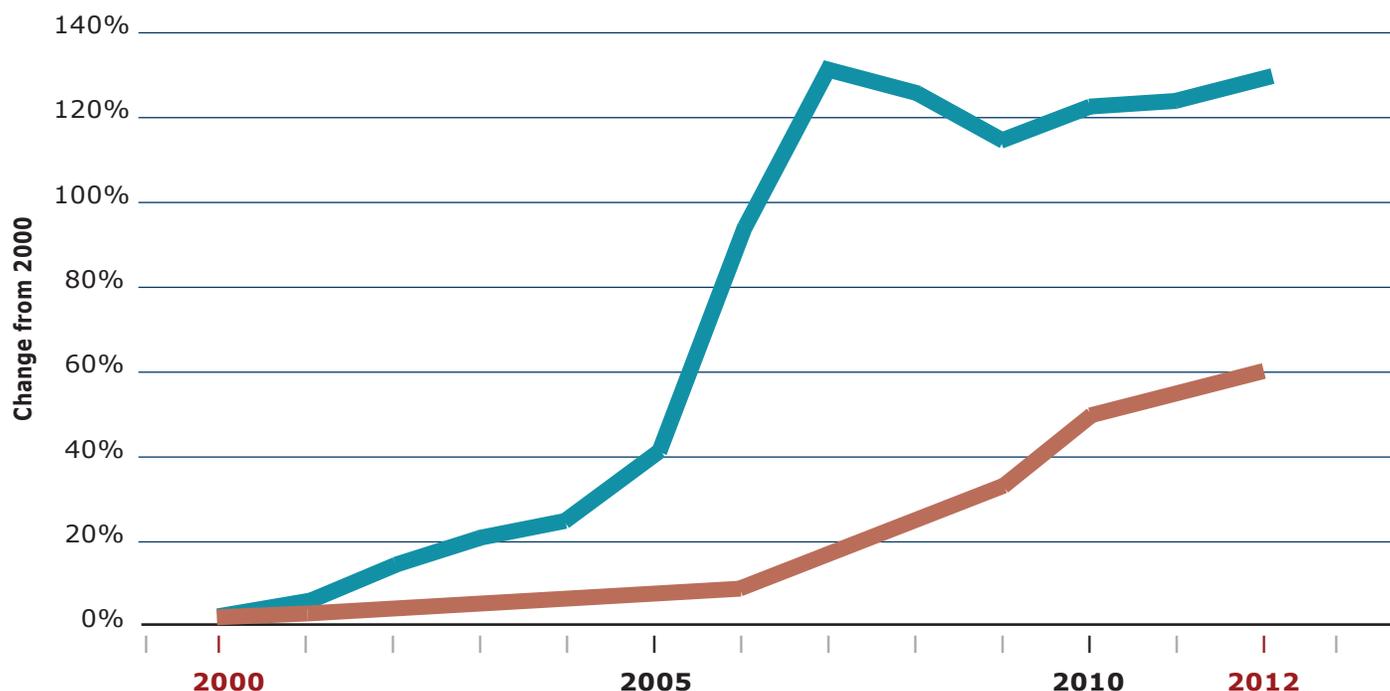
Source: Derived from Statistics Canada, Calgary Real Estate Board, and the City of Calgary.

The huge increase in the average existing resale house price (all types of housing) relative to income illustrates the house-price escalation. Between 2000 and 2012, the average house price rose 129 per cent, more than double the increase in average household income. House prices spiked relative to income in the middle of the period, fell back and have now returned to their record levels relative to income. House prices appear to have plateaued well above their previous ratio to household income, perhaps indicating a fundamental break with the long-term nexus between household income and house prices (Chart 7).

CHART 7

Existing House Prices and Household Incomes

Existing Houses - All Types - 2000-2012 (CMA)



■ Average House Price
■ Average Household Income

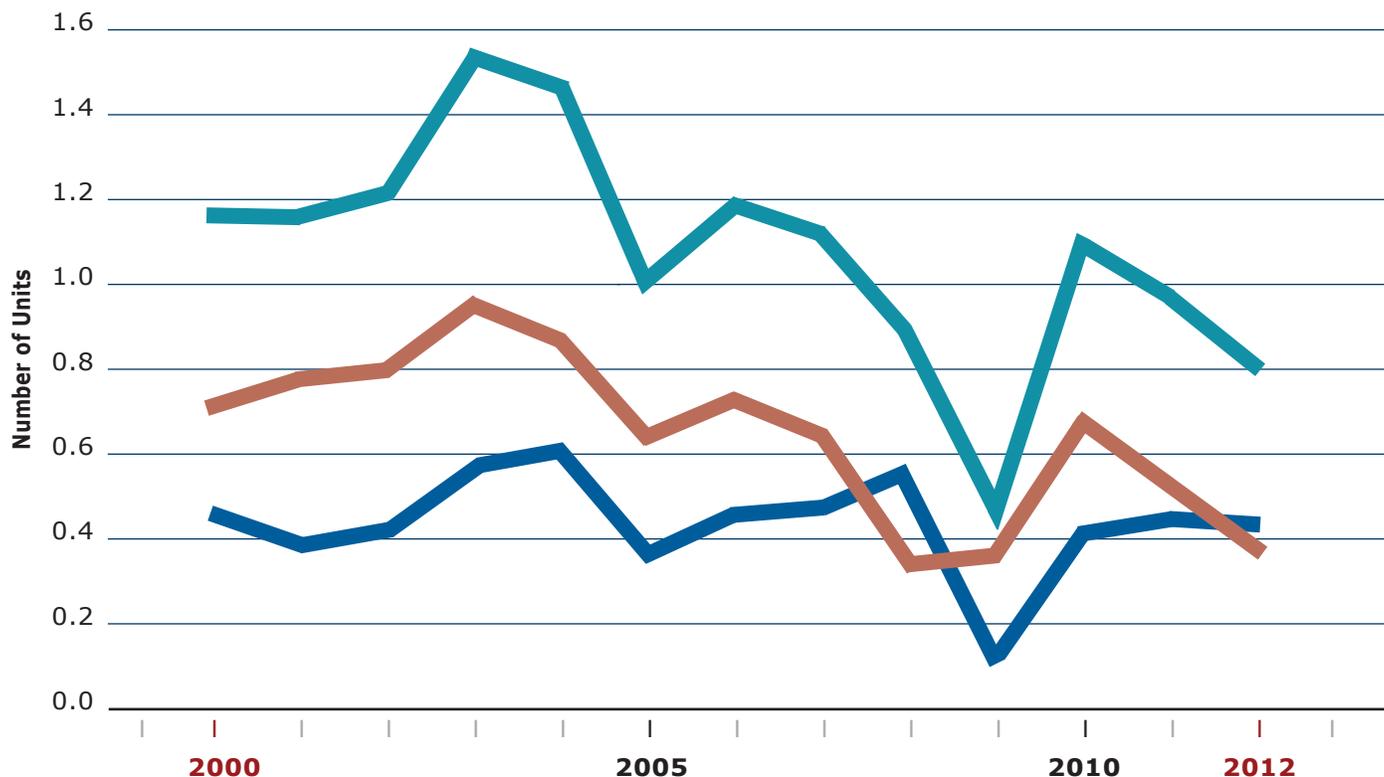
Source: Derived from Statistics Canada, Ross Real Estate, and the City of Calgary.

Since 2003, construction of single-family houses dropped relative to new households. From 2000 to 2005, 0.80 new single-family houses were started for each new household. Between 2005 and 2012, the average dropped by one-third to 0.53. The drop in multi-family housing starts was somewhat more modest, from 0.47 to 0.41 (Chart 8, next page).⁴⁰

CHART 8

New Houses Built per New Household

Calgary - 2000-2012 (CMA)



- New Housing Units/New Household
- New Single-family Units/New Household
- New Multi-family Units/New Household

Source: Derived from Statistics Canada and CMHC.

The price of the average new single-family house has risen far faster than household income. Between 2000 and 2012, the average new single-family house increased in price 157 per cent, more than 2 ½ times the increase in average household income (59 per cent). A price spike occurred similar to that in the existing house market, with some later price retreat. However, prices have begun to rise again, and the plateauing effect indicated in the existing house market also appears in the market for new single-family houses (Chart 9, next page).

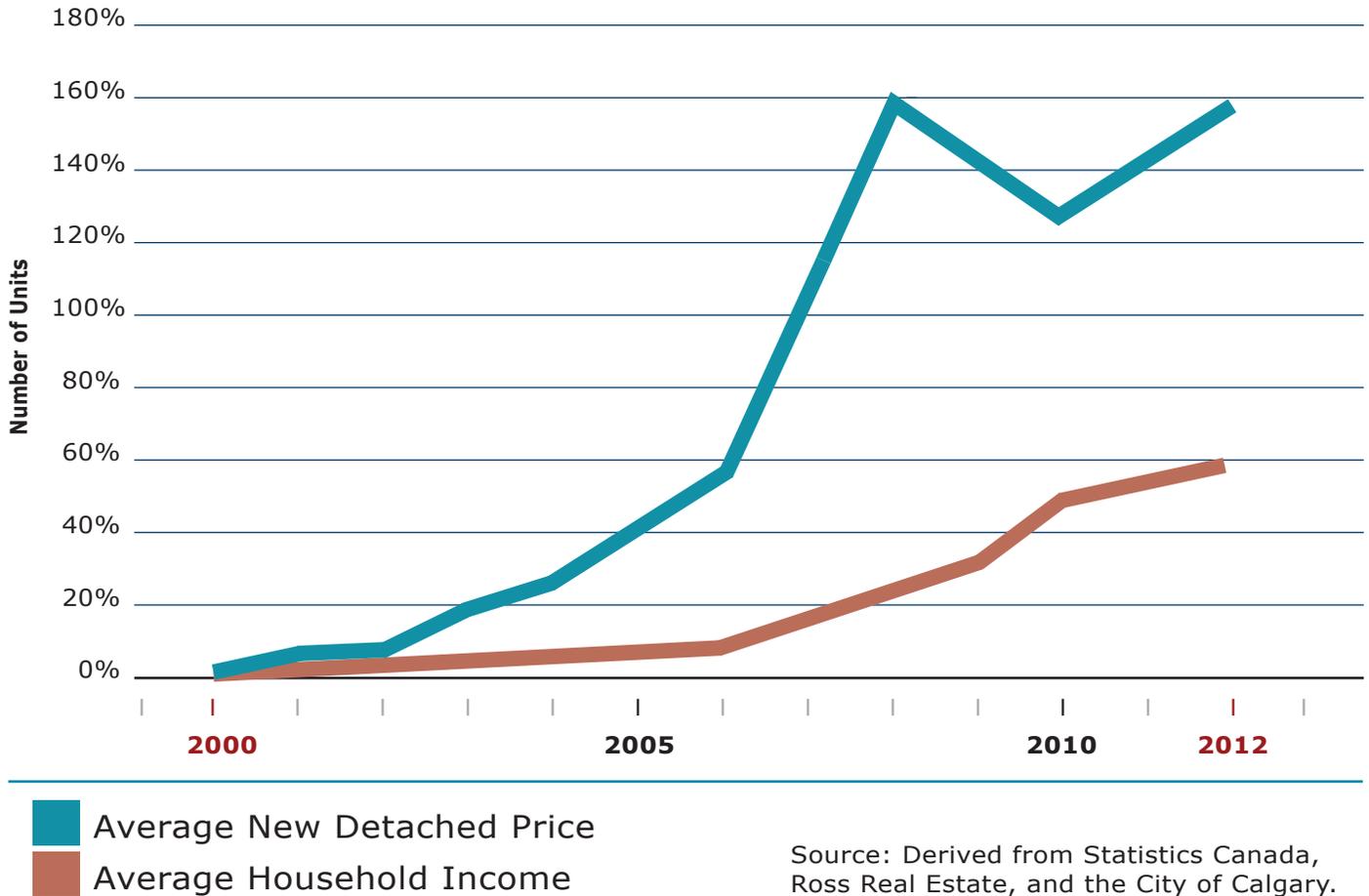
Further, there is a growing gap between existing house prices and new single-family house prices. In 2000, the average new single-family house price was 25 per cent above that of the average existing house price. By 2012, the difference had expanded to 41 per cent, an increase of 65 per cent. The Royal Bank of Canada recently noted that a two-tier housing market has emerged in Vancouver and Toronto, with single-family house prices opening up a much wider gap than ever before in prices relative to other housing.⁴¹ Such a two-tier housing market may also be developing in Calgary.

As noted earlier, the City is interested in housing affordability and conducts studies to test the sufficiency of land supply for development. However, the City’s approach

CHART 9

Existing House Price and Household Income

Existing Houses - All Types - 2000-2012 (CMA)



excludes a crucial economic metric that would ensure that sufficient land is available at a competitive price.

Land-supply reviews should be based not only on ensuring that there is sufficient land for future growth, but also that the land is competitively priced so that housing is affordable. Surveys of land prices based upon their historic, pre-urban containment policy cost per lot relative to income can ascertain this. Calgary’s previous policies accomplished this objective. Those liberal land-use policies, which permitted housing development on competitively priced land, contributed substantially to the rise of a broadly middle-class Canada. The sufficiency of the land supply is not measured in hectareage; rather, it is measured in costs that permit development of housing at its historic price relationship to household income.

If Calgary’s extraordinary house price increases were simply the result of excess household demand over housing supply, then it would be expected that the housing industry would respond by increasing production sufficiently to restore a balance. Price to income ratios would have fallen back to the ratios that prevailed for decades. This occurred, for example, in the Toronto area, where a temporary shortage of

housing relative to demand drove a substantial increase in house prices relative to income in the late 1980s, after which the previous price to income ratio was nearly restored.

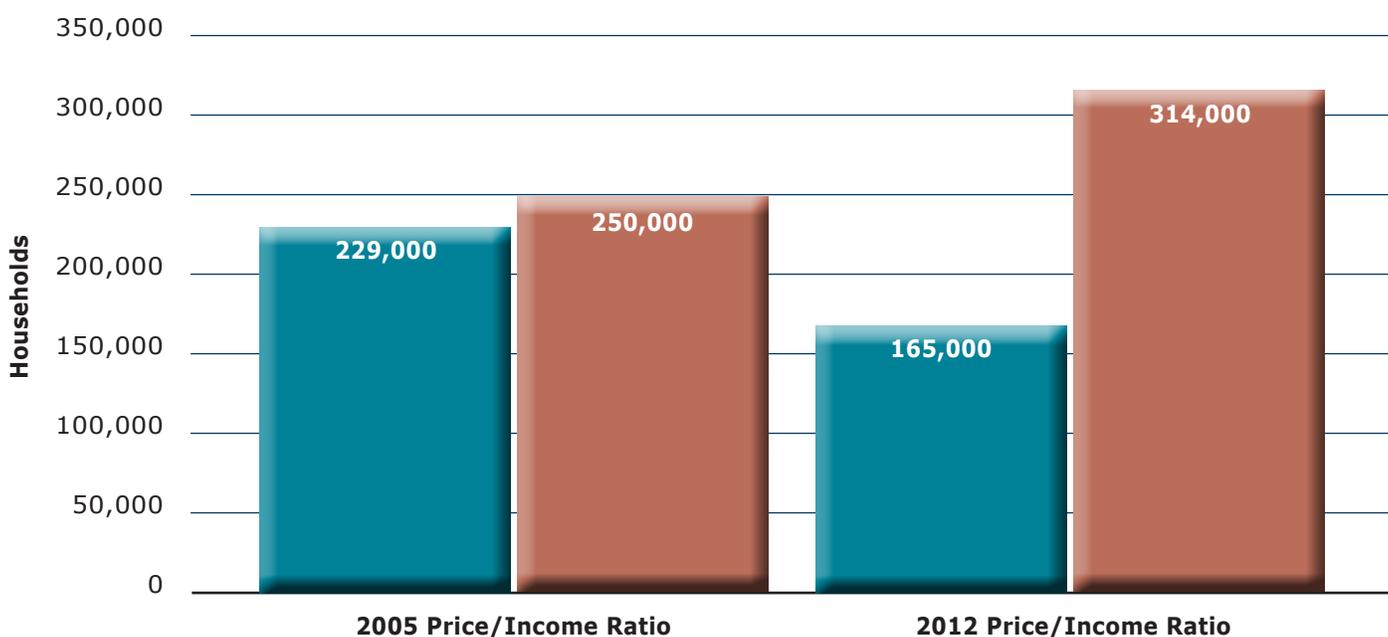
4.2 Consequences of the housing affordability losses

Moderately priced homes are out of reach for most middle-income and lower-income households in the Calgary area. Between 2005 and 2012, the increase in prices relative to income materially reduced the share of households able to qualify for mortgages.⁴²

- Only 35 per cent of Calgary metropolitan area households would have qualified to purchase the average-priced resale house (of all types) in 2012 under CMHC guidelines. This is down from an estimated 48 per cent at the 2005 price to income ratio (Chart 10). As a result, 64,000 fewer of today’s households would qualify for a mortgage on the average house than would at the 2005 price to income ratio. This is more households than reside in Lethbridge and Airdrie combined.
- Only 21 per cent of Calgary metropolitan households would have qualified to purchase the average-priced new house (of all types) in 2012 under CMHC guidelines. This is down from an estimated 38 per cent at the 2005 price to income ratio (Chart 11, next page). As a result, 80,000 fewer of today’s households would qualify for a mortgage on the average new house than at the 2005 price to income ratio. This is more households than are in Alberta’s third-largest city, Red Deer.

CHART 10

Households Qualifying for Existing Houses Calgary Metropolitan Area (Average Price)



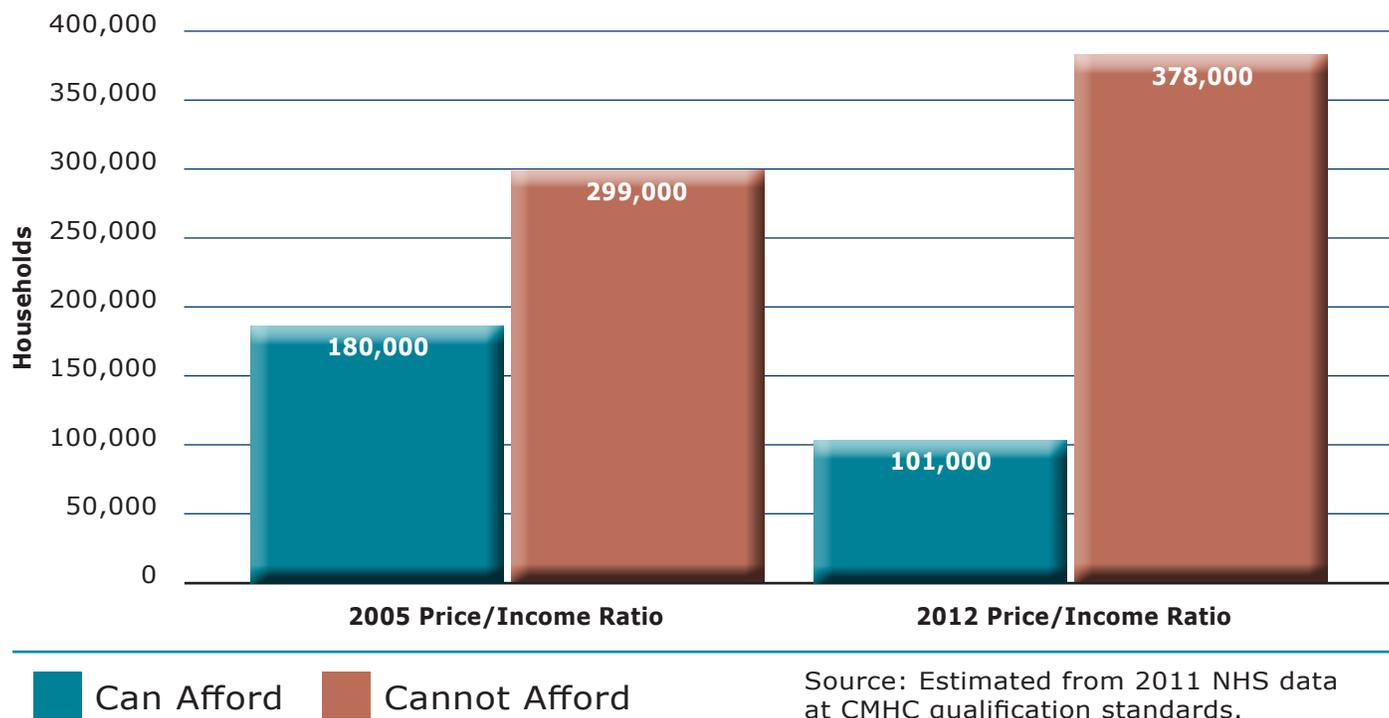
Can Afford Cannot Afford

Source: Estimated from 2011 NHS data at CMHC qualification standards.

CHART 11

Households Qualifying for New Houses

Calgary Metropolitan Area (Average Price)



Calgary’s higher costs relative to income resulted in lower discretionary income and a lower standard of living for households than would have otherwise been the case. For those fortunate enough to qualify for house purchases, the larger mortgages mean larger debts, which contribute to overall concern about household debt levels in Canada (Section 8.2).

4.3 Infrastructure charges

In developing its urban containment policy, the City of Calgary expressed concern about the cost of more-dispersed development. A 2009 report estimated the cost of adding 1.3 million additional residents to the city’s population over 60 years. The City estimated that the cost of this more-dispersed, historic pattern of development would be \$34.5-billion compared with \$23.3-billion under the recommended more-compact approach (Plan It Calgary). Thus, the Plan It Calgary scenario is \$11.2-billion less expensive over the 60-year period. Some of this difference is for municipal utilities, which, ideally, are financed by user fees for both capital and operating expenses rather than by general taxation.

Obligations in the billions of dollars can be daunting at first glance. Yet, a difference of \$11.2-billion is only \$1,000 annually per new household in the newly developing areas.⁴³ Approximately one-quarter of that amount is utility services, which optimally are financed from user fees rather than general taxation.

This additional expense is well within the ability of many households to pay. Those willing to pay should not be denied their choice of housing.

Further, it is not required that any additional costs attributable to serving dispersed development be public obligations. Additional charges should be the responsibility of the new households making such housing choices. Some jurisdictions impose transportation levies on new housing to recover transportation differentials. Indeed, water and wastewater service is most appropriately financed by user fees.

Not permitting dispersed development, however, *reduces* housing choice. Households are denied the choice of spending their money on living in more-dispersed areas. Such a financial choice should belong to the household.

4.4 Factors in the housing affordability losses

Multiple factors may have contributed to the loss of housing affordability in the Calgary area between 2000 and 2012.

Reduction in home building: As was noted above, single-family house construction declined relative to new households. This reduction in new supply relative to demand is likely to have had an upward impact on new-house prices.

Dispute with Rocky View County: There was an annexation dispute between the City of Calgary and Rocky View County in the mid 2000s. This uncertain development environment could have upwardly affected land prices.

Expectation and implementation of restrictive land-use policies: The fact that house prices remain significantly elevated above historic norms indicates that land prices may have risen due to Calgary's more restrictive land-use program during both the development and the implementation of the policies. Such a response would be similar to the stock price increases or decreases that occur as investors react to anticipated earnings performance well before the results are published. It would also be consistent with experiences in other metropolitan areas. For example, recent research by Nathanson and Zwick associated strongly escalating land prices (before the U.S. housing bust) in Las Vegas with a longer-term development constraint (a U.S. government development boundary), leading to speculative activity as developers feared a future land shortage.⁴⁴

The contribution, if any, of higher construction costs per square metre are unclear. According to the City, construction costs did not rise substantially during the period of greatest cost escalation.⁴⁵

Further, it might be expected (wrongly) that the smaller building lots required by the City would lead to lower lot prices. However, the cost of building lots is less a function of lot size and more a function of simple demand, which can be seen when more-liberally regulated market lot prices are compared with those in more constrained markets such as Calgary's.⁴⁶ The reality is that higher new-house prices accompany smaller lots, which is typical under urban containment policy.

5. Mobility and economic growth

Urban containment policy also seeks to change the behaviour of residents by discouraging automobile use and encouraging more use of transit, cycling and walking. Yet, by virtue of their inherently slower travel times and their more limited ability to access much of the area within the metropolitan area, greater use of these modes can lead to reduced economic growth.

5.1 Myth of the jobs-housing balance (urban villages)

Urban containment policy's mobility strategies are based on invalid conceptions of metropolitan areas and the role that mobility plays in their economic performance. Metropolitan areas are unitary labour markets that provide greater opportunities for employees and employers to match skills and job requirements. When governments discourage the quickest mode of travel (in the modern case, the automobile), labour markets can become fragmented and less economically vibrant, which can lead to lower standards of living and greater poverty.

These urban containment policy initiatives have been referred to as the "jobs-housing balance, or "urban villages," which imagine that planners can site residences and employment such that people will travel much shorter distances to work. The fundamental problem with this concept is that people and enterprises will tend to seek the best employee-employer matches that are available. In democratic societies, attempts to divide metropolitan areas (labour markets) into smaller parts through urban design have been largely hopeless.

According to former World Bank principal planner Alain Bertaud,⁴⁷ "This model does not exist in the real world because it contradicts the economic justification of large cities: the efficiency of large labor markets." He continues: "... [T]he urban village model exists only in the mind of urban planners."

Bertaud supports his point by noting that Seoul's satellite communities were intended to be self-contained towns (urban villages) in which most residents both lived and worked. Yet, most of the workers employed in the satellite towns live in other parts of the metropolitan area. At the same time, most residents of the satellite towns work in other parts of the Seoul metropolitan area. He cites Stockholm regulations requiring neighbourhood jobs-housing balances as having no impact on shortening commute distances even when such a balance is achieved.

Research using 2001 British census data indicated that the residents of London-area new towns, also intended to be populated principally by people who work in them, had average work-trip travel distances of more than their towns' diameters.⁴⁸ This means that large numbers of people were travelling to work outside the towns. In London, as in Seoul, the planners can conceptualize the self-contained satellite towns, but it is beyond them to force the behaviours to make them work.

Further, attempts to make (Balkanize) the labour market smaller by restricting mobility can be expected to reduce economic growth.

5.2 Access and economic growth

The economic literature generally associates stronger urban area economic growth and job creation with the ability of workers to access the maximum number of jobs in a short travel time. Access is fundamentally a measure of time. Access can include mobility measures (such as the travel time to work), but it also includes electronic access, which is virtually immediate.

For decades, minimizing access time has been a principle of transport planning. Projects are routinely evaluated, at least in a part, based on the amount of time that they will save users and on the expected economic effects.

Prud'homme and Lee examine the productivity of cities and relate it to the effective size of labour markets. The labour market is defined both in terms of employers and employees and is measured by the number of jobs in the metropolitan area that can either

- (1) Be accessed in a particular period of time (such as 30 minutes) by workers (employee point of view) or;
- (2) Be accessed by the labour force in relation to the work location (enterprise point of view).⁴⁹

Further, research by Cervero indicated a strong relationship between faster journey to work travel speeds and employee productivity:⁵⁰

... [A]verage commute speed—reflecting the provision of transportation infrastructure—most strongly influenced labor productivity in the San Francisco Bay Area, with an elasticity of around 0.10—every 10 percent increase in commuting speed was associated with a one percent increase in worker output, all else being equal.

Hartgen and Fields found similar results for U.S. urban areas,⁵¹ as did this author for international urban areas.⁵² The economic advantages of personal mobility extend to lower-income households (Box 3, next page).

Virtually across the nation, door-to-door work-trip travel times by automobile are considerably shorter than trips by transit (Section 6.1).⁵³ Walking and bicycles are inherently more limited than cars are in their geographical access to employment in metropolitan areas. The automobile maximizes mobility, which leads to greater economic growth throughout the modern metropolitan area.

Calgary residents are likely to have better standards of living if commute times are minimized and if the transportation system permits ready access to employment throughout the metropolitan area regardless of residential location. As noted above, however, it is likely that traffic congestion will deteriorate markedly under Plan It Calgary (Section 6.3).

Mobility for Low-income Households

The role of the automobile in providing mobility for lower-income households is often underestimated.

Research on the mobility opportunities of lower-income households parallels the more general findings above. In research published by the Brookings Institution, Waller and Blumenberg noted the importance of automobile access for lower-income workers.⁵⁴

Even in cities with good transit service, transit travel times, on average, far exceed automobile travel times because of walking to and from stops, waits at stops and for transfers, and frequent vehicle stops along the way. These slower travel speeds are especially difficult for parents who must 'trip chain,' make stops for child care or shop along the commute.

They suggested, "Given the strong connection between cars and employment outcomes, auto ownership programs may be one of the more promising options and one worthy of expansion."

They further suggested: "Those workers fortunate to have access to automobiles can reach many employment opportunities within a reasonable commute time regardless of where they live."

Raphael and Rice find substantial advantages in employment outcomes for people with access to cars as compared with those without cars.⁵⁵

6. Mobility in Calgary

As Bertaud indicates, it is important for residents to be able to travel throughout the metropolitan area for work, shopping and leisure (Section 1). This is not just a matter of convenience; it is also strongly related to economic growth, which is a prerequisite for a higher standard of living and for poverty reduction (Section 5). The City of Calgary seeks to discourage automobile use, while attempting to divert drivers to transit, walking and cycling as pointed out in Plan It Calgary.

6.1 The transit situation

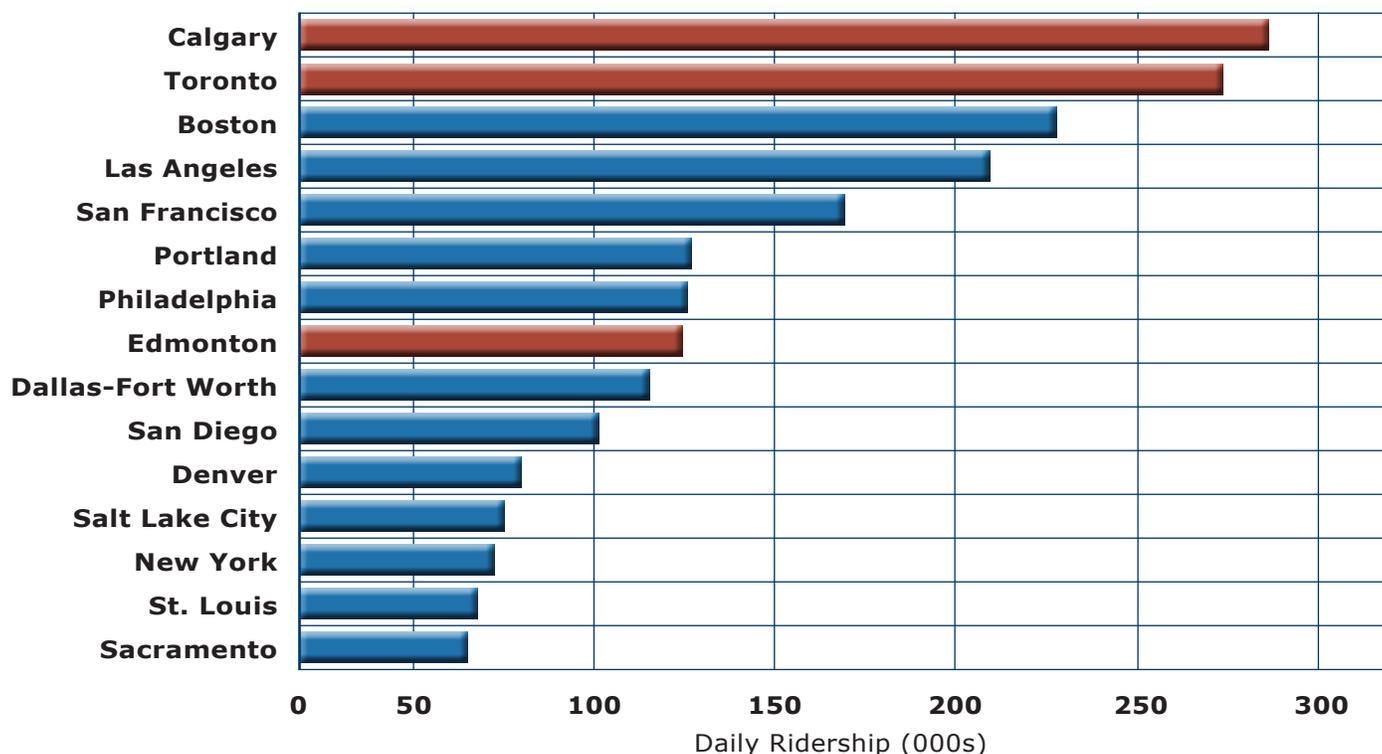
“The Route Ahead,” Calgary Transit’s strategic plan, indicates,⁵⁶ “Investments in transit are amongst the best investments any city can make—they are investments in the environment, reducing congestion, and improving social mobility. Ultimately, they are investments in improving everyone’s quality of life.”

The first two of these objectives require attracting automobile drivers, which requires transit services that are time competitive with the automobile. The third objective requires the provision of a basic transit system principally designed to provide mobility

CHART 12

North America Light Rail Ridership

15 Top Metropolitan Areas



Canada United States

Source: Calculated from Statistics Canada and U.S. Census Bureau data.

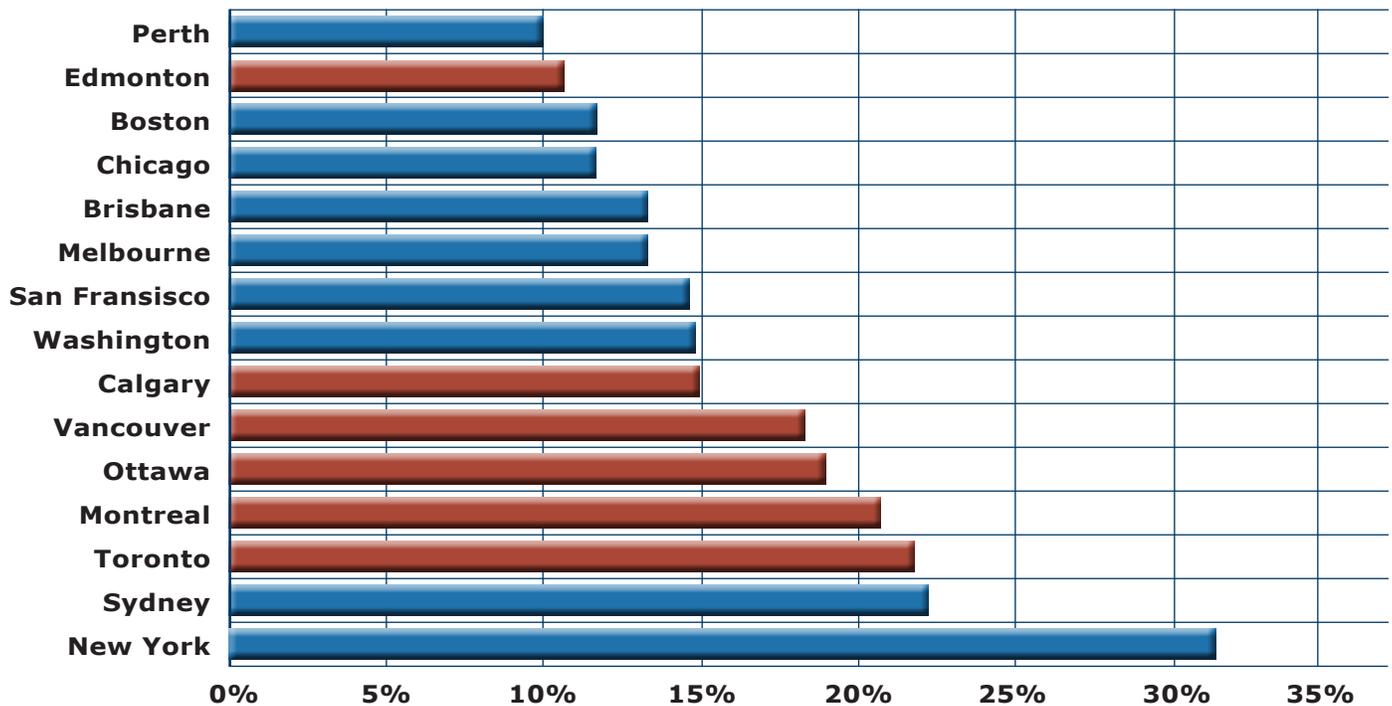
for people without cars. These objectives can conflict (as Calgary Transit indicates). By passenger counts, Calgary Transit’s CTrain carries the largest number of riders of any system in North America, with 285,000 riders per day in 2012⁵⁷ (Chart 12), despite being only 30 years old. Of the 15 best-patronized systems in North America, all are in larger metropolitan areas except for Salt Lake City. In addition, 11 more light rail systems in the United States carry between 5,000 and 46,000 riders daily. Combined, their ridership is approximately the same as that of CTrain.

The Calgary metropolitan area ranks fifth out of the six major metropolitan areas in transit work-trip market share. However, outside the four higher-ranking metropolitan areas (Toronto, Montreal, Ottawa and Vancouver), only New York and Sydney have higher transit work-trip market shares in the New World⁵⁸ (Chart 13).

CHART 13

New World Transit Work-trip Market Shares

Highest - Major Metropolitan Areas



■ Canada ■ Elsewhere

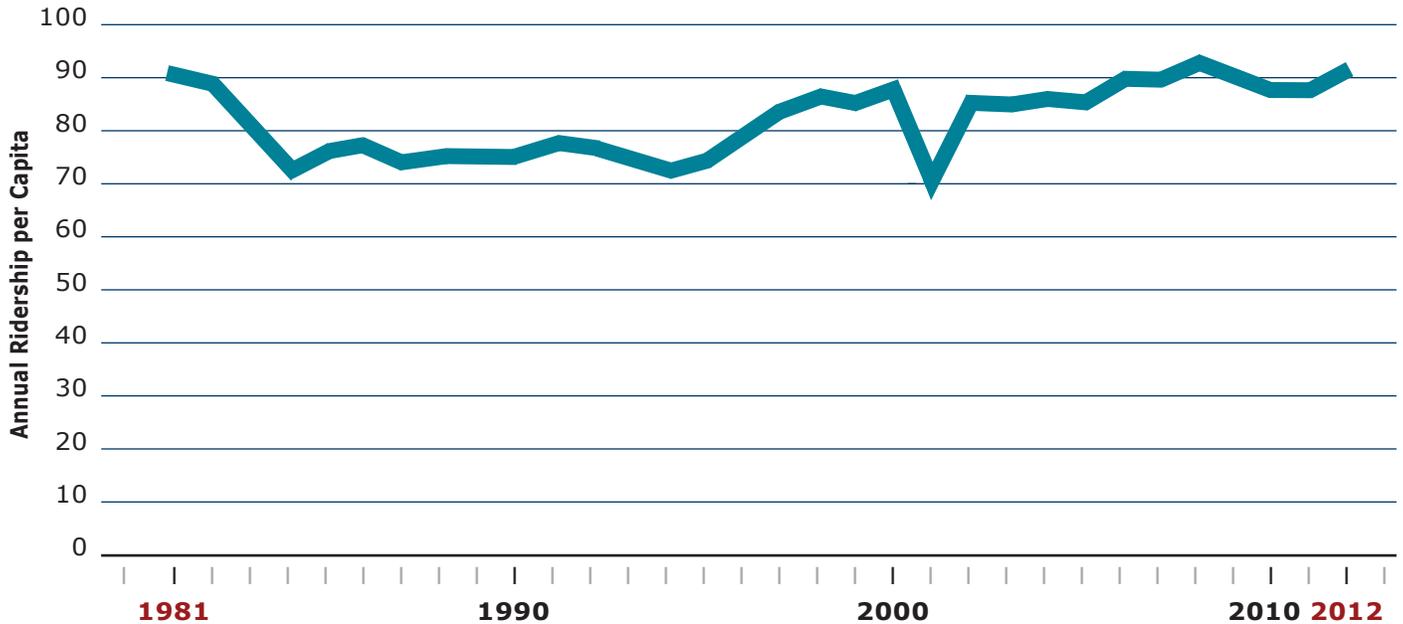
Source: Data from Statistics Canada, Australian Bureau of Statistics and US Census Bureau.

Yet, new light rail ridership has not been sufficient to increase per capita transit ridership in Calgary over the last 30 years. In 1981, when the first light rail line opened, Calgary transit carried 90.2 trips per capita (Chart 14, next page). On at least two occasions in the intervening years, ridership per capita declined and then recovered to the earlier level, with the 2012 ridership per capita at 91.1. Thus, the effect of light rail has been to transfer ridership from the bus system, while population and transit ridership have increased at a similar rate. Questions have been asked about the effectiveness of CTrain in drawing drivers out of cars.⁵⁹ Questions have also been asked regarding the doubling of costs to build the Blue Line’s westerly extension.⁶⁰

CHART 14

Calgary Transit: Ridership per Capita

Annual - 1981-2012



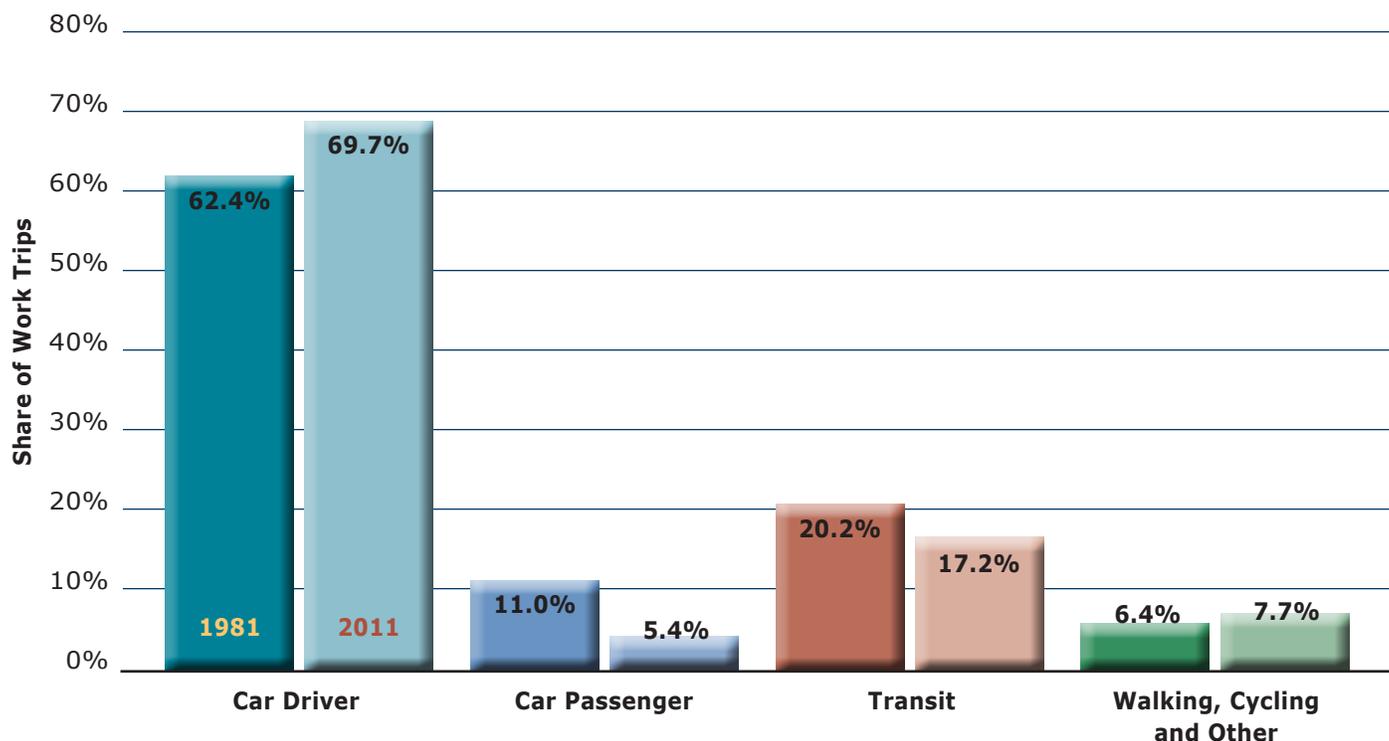
Source: Derived from City of Calgary data.

Similarly, between 1981 (the year CTrain opened) and 2011, information from the City of Calgary and the National Household Survey indicates that automobile drivers in the city increased as a share of commuting from 62.4 per cent to 69.7 per cent. The transit share of commuting declined from 20.2 per cent to 17.2 per cent, and other methods, including walking, increased from 6.4 per cent to 7.7 per cent. The share of automobile passengers declined from 11.0 per cent to 5.4 per cent (Chart 15, next page). It appears that this net loss in automobile passengers was transformed into additional driving and other modes of transport.⁶¹ Between 2006 and 2011, the share of commuters living in the city who drove to work increased 2.1 percentage points. This is more than four times the 0.4 percentage point increase in transit’s market share.⁶² Over the same period, the Calgary metropolitan area increased its share of commuters driving to work more than any other major metropolitan area did.⁶³

In fact, the City of Calgary is at least as reliant on automobiles for its mobility in 2012 as it was three decades ago despite a considerable investment in transit, especially light rail. This is because Calgary Transit is unable to compete for most trips with the automobile (Chart 16, next page), a problem that exists in virtually all metropolitan areas of the Western world.⁶⁴

CHART 15

City of Calgary Work-trip Travel Shares 1981 and 2011



Source: City of Calgary and Statistics Canada.

6.2 Automobile competitiveness and the future of mobility in Calgary

The City has aggressive goals for increasing transit use. The imagineCALGARY objective of increasing ridership per capita by 40 per cent by 2036 could be difficult to achieve. Rather than the stable per capita ridership that has occurred over the last 30 years, a steep increase will be required (Chart 16).

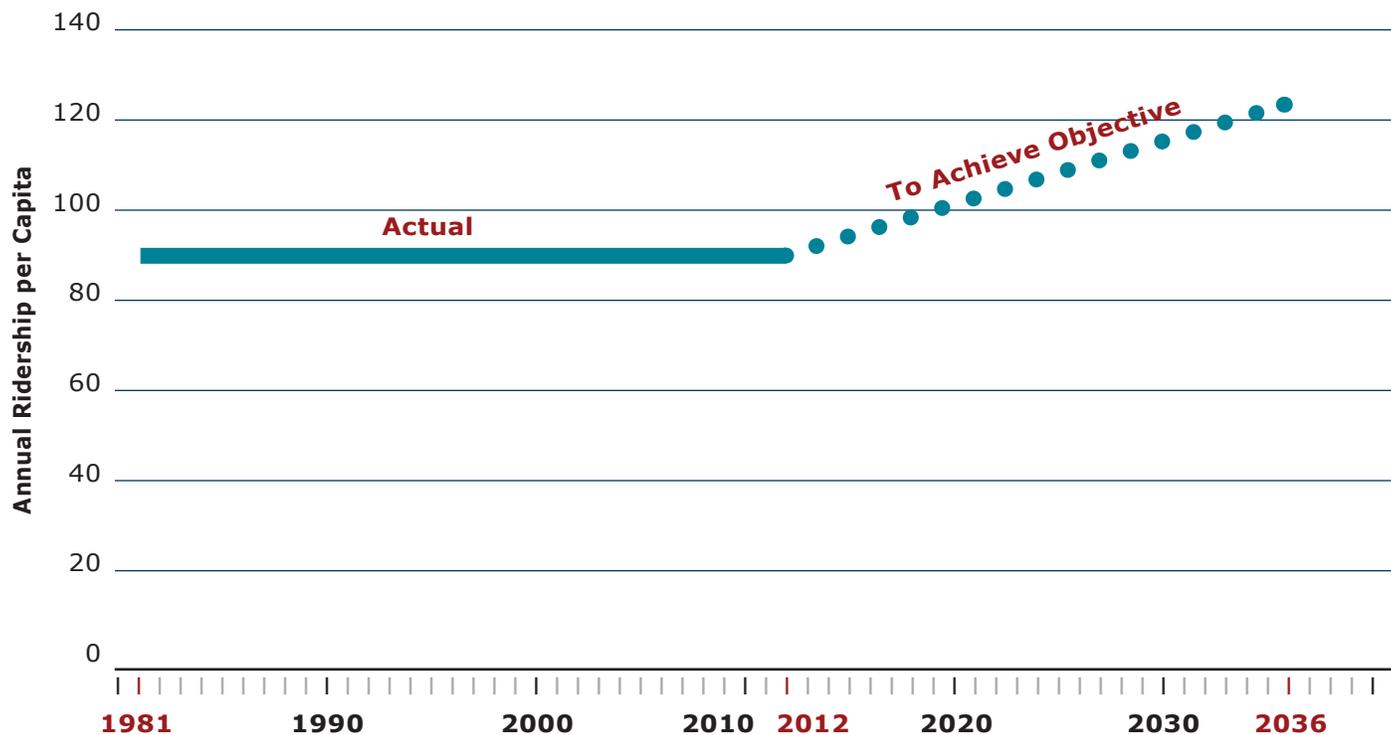
The City hopes to achieve substantially greater population and employment densities in non-downtown centres. It is establishing a priority transit network to make it more convenient to reach these centres from throughout the city. Planners assume that the much higher ridership levels required will be accomplished, at least in part, by attracting large numbers of commuters to non-downtown centres.

This may be overly optimistic. The “simple” and least costly transit ridership increases may have already occurred.⁶⁵ Downtown already has a high transit-market share, because the transit system and the light rail in particular focus on that location with its highest concentration of destinations. This is a rational service design, typical of transit agencies throughout North America and Western Europe, even in light of the continuing dispersion of employment that is occurring in most metropolitan areas. Typically, newer employment centres have neither the concentration of destinations that are critical to large transit

CHART 16

Calgary Transit: Ridership per Capita

1981-2012 Actual and 2012-2036 Objective



Source: City of Calgary.

market shares nor the dense mesh of radially oriented services that provide rapid, no-transfer trips for many riders.⁶⁶

Transit is most effective where destinations are concentrated, which means downtown or the urban core, whether in Calgary, Montréal, Paris or London. Passengers can often walk from their homes to access transit and travel directly to the core, where they exit within walking distance of their destinations (such as in downtown).

The principal strength of transit in the downtown market is that it can provide virtually direct door-to-door, more-automobile competitive travel for many trips. At the same time, the continued dominance of the automobile results from the very suburban urban footprint that typifies virtually all major metropolitan areas in Western Europe and the New World. Recent research found that all major metropolitan areas in Canada are principally suburban, including Calgary (Box 4, next page).

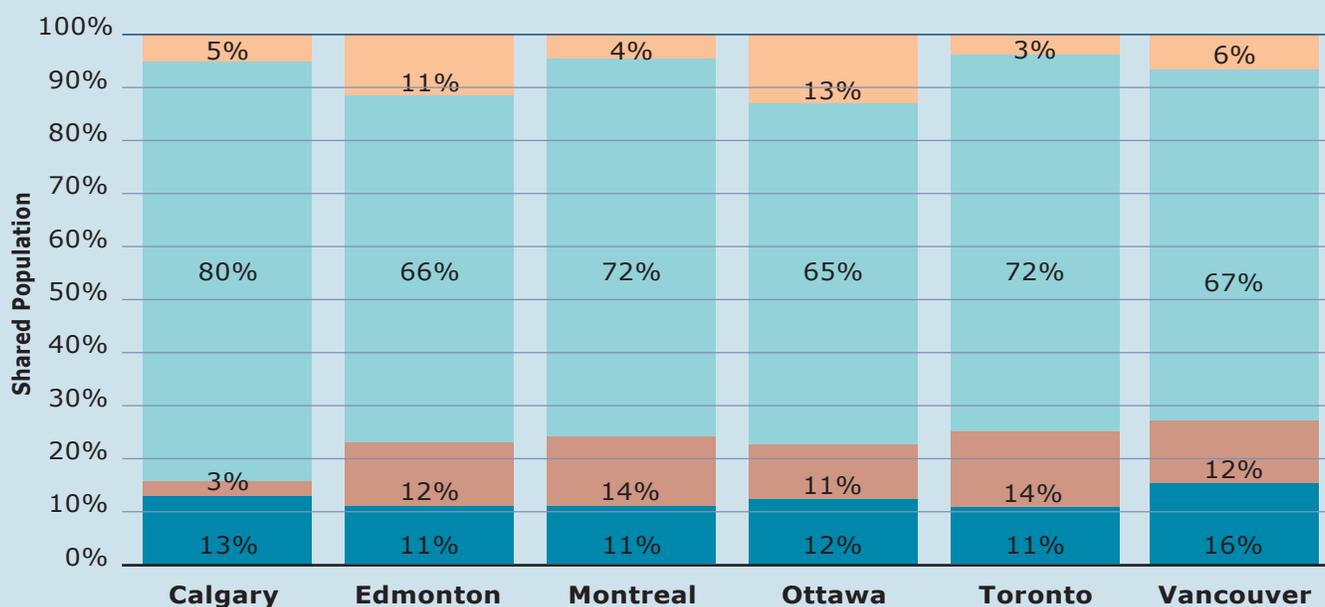
Calgary: Canada's Most Suburban Metropolitan Area?

The Calgary metropolitan area continues to be overwhelmingly suburban and exurban, according to Queen's University research. A team led by Dr. David Gordon examined metropolitan areas using factors such as density and work-trip travel mode, classified census tracts as "active core" (walkable), "transit suburbs," "auto suburbs" and (auto) "exurbs." Calgary was the most suburban and exurban, at 84 per cent of the population, though the differences between the six major metropolitan areas were not great. Even Vancouver, with four decades of urban containment policy, remains overwhelmingly suburban and exurban, at 73 per cent (Chart 17).

CHART 17

Distribution of 2011 Population

Major Census Metropolitan Areas - By Core/Suburban/Exurban



Exurban
 Active Core
 Auto Suburbs
 Transit Suburbs

Source: David Gordon, *et al*, Queen's University.

However, transit cannot effectively compete with the automobile for trips between non-core locations, because it cannot generally provide door-to-door mobility throughout the metropolitan area. Door-to-door mobility is the strength of the automobile. The vast majority of commutes have a destination outside the central business district (CBD). The automobile can also be an effective means of mobility for people working in the core, which is illustrated by the fact that in 2006, more people travelled to the Calgary CBD in the morning peak period by car (48 per cent) than by transit (40 per cent).⁶⁷

The Transport Association of Canada summarizes transit's difficulties outside downtowns and the dense urban cores:⁶⁸ "Outside Central Areas, sustainable travel modes—walking,

cycling, and transit – have been used for only a small portion of daily trips; they appear to remain unattractive or not cost- or time-competitive compared with automobile use.”

In suburban areas, transit is often not accessible by walking from the residence, while travel to destinations other than downtown can require time-consuming transfers. The City intends to improve transit connectivity to non-downtown areas by developing a “connective grid” of service. This is unlikely to materially increase transit ridership or reduce automobile usage, because transfers are still likely to be required for most trips. A 10-minute service, a single transfer and walking time between routes make automobile competitiveness a significant challenge. Indeed, the modelling data developed for the City (below) demonstrate the difficulty of this approach, with transit travel times in 2039 being uncompetitive with automobile times to virtually the same extent as in 2006.

Further, transit gains from increasing residential densities distant from downtown are likely to have little impact on increasing transit ridership or reducing automobile use. Research by Statistics Canada concludes that high densities more remote from the core are not likely to reduce automobile use.

Above 10 kilometres from the city centre, however, the impact of neighbourhood density on automobile use dwindles until it almost vanishes. If the effects of other factors are kept constant, the predicted probability that a person living in a medium- or high-density neighbourhood made all trips by car was not statistically different from that of a person living in a low-density neighbourhood.⁶⁹

Attempting to increase market share outside these central areas yields diminishing returns in passengers per kilometre and in greater expense.

As Calgary Transit indicates, people tend to choose the quickest method of travel available for a trip: “Most travellers will choose the fastest mode when planning their trips.”⁷⁰ Even with the substantial transit improvements implemented in Calgary, travel takes longer by transit. According to City of Calgary figures, in 2006 the average transit trip took more than three times as long to complete, door to door, as the average automobile trip did during peak periods. Over the complete day, the average transit trip took more than four times as long to complete as the average automobile trip. According to a City-commissioned computer-modelling report:

In 2006, the average transit trip time is more than four times longer than the average auto trip time. There are likely a couple of contributing factors: the auto mode may be used for many of the quick trips to the store—bringing down the average length of the auto trip; and transit buses follow routes through communities with frequent stops—increasing transit travel time.⁷¹

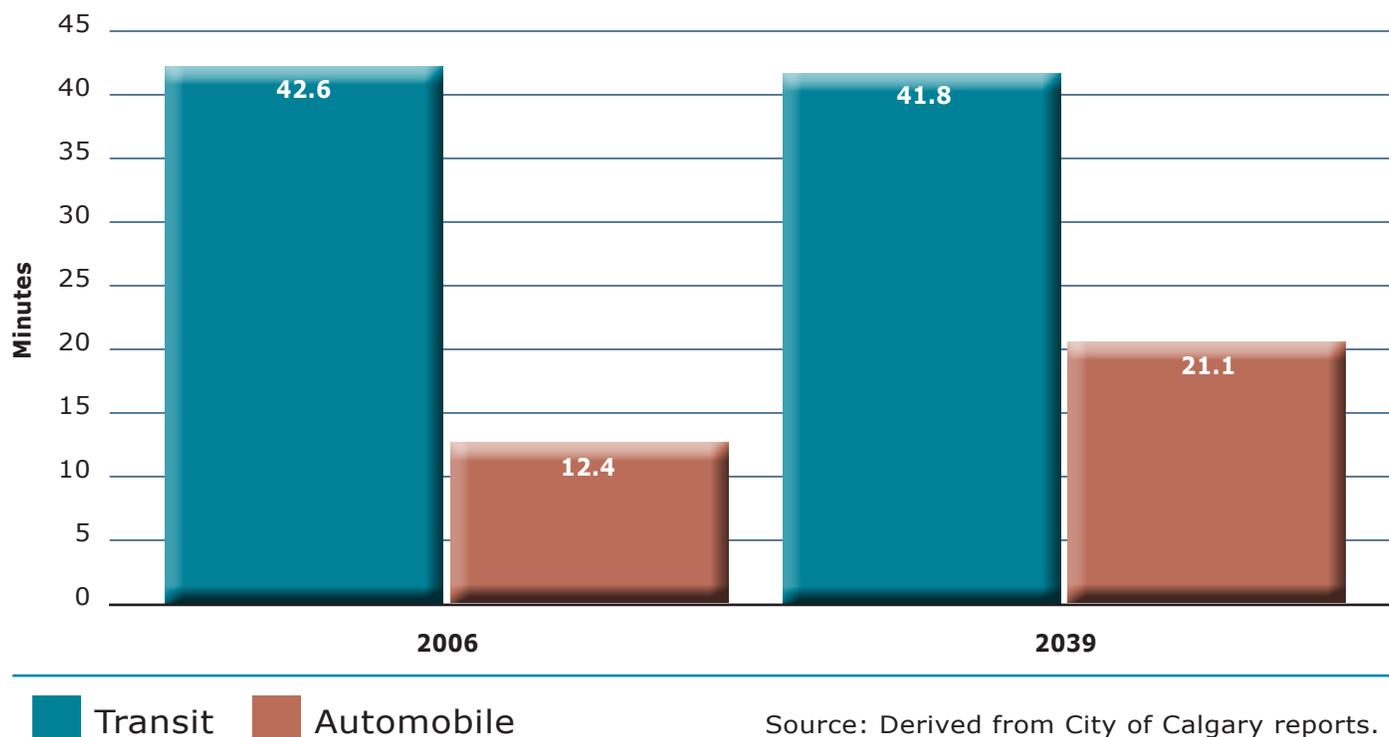
Plan It Calgary would not noticeably improve this. In 2039, the average automobile trip during peak hours will take 12 minutes compared with 42 minutes by transit. There is little change from 2006 (Chart 18, next page).

Its share of travel can broadly judge the usefulness of transit to the average resident in virtually any urban area. In 2006, transit attracted approximately 9 per cent of the trips in the City of Calgary. To increase this would require door-to-door travel differences to be materially reduced or eliminated between cars and transit. The projections commissioned by the City of Calgary forecast no such progress.

CHART 18

Average Trip Time: Car and Transit

Peak Periods - 2006 and 2039



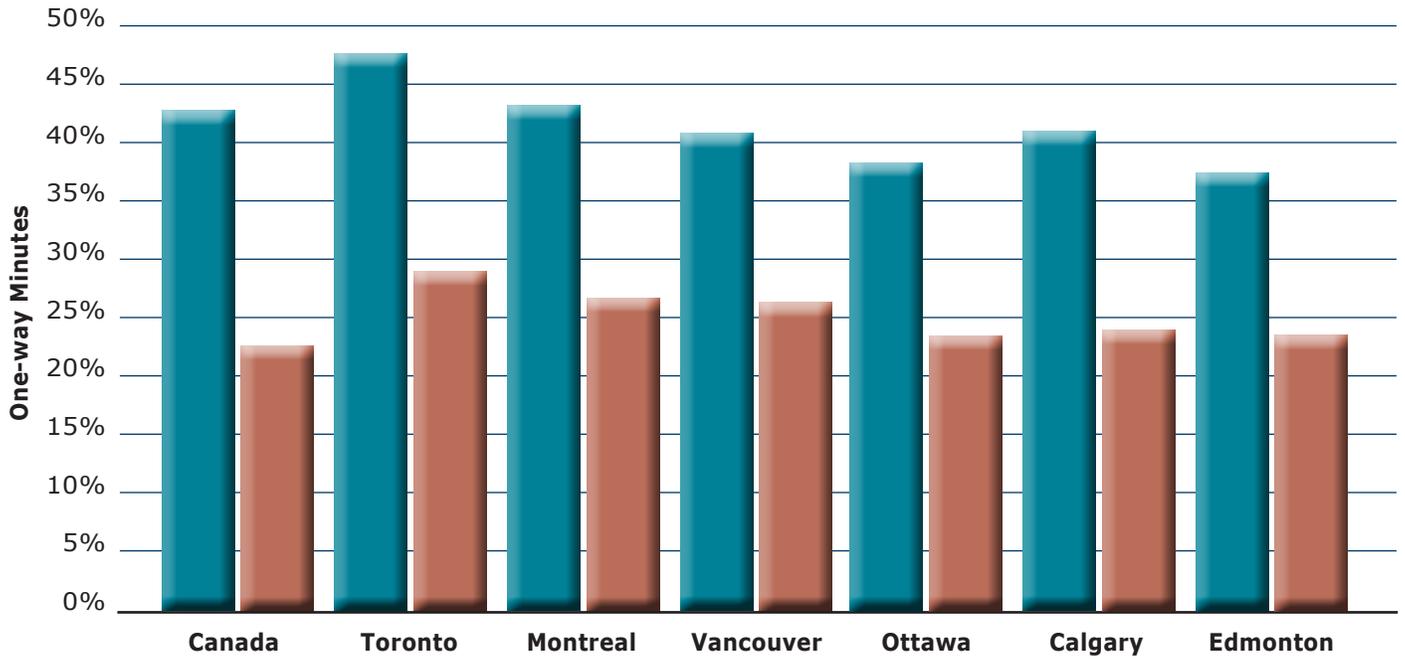
Moreover, contrary to some perceptions, taking transit to work takes more time than going by car. Statistics Canada data indicate that the average Calgary metropolitan area transit commuter had a one-way travel time of 41.4 minutes in 2011. This compares with a 24.3-minute travel time for commuters who drove. Transit travel to work takes longer than driving in all of the major metropolitan areas (Chart 19, next page).

The future is little better, according to City commissioned computer modeling. In 2006, the average transit trip during peak periods was 3.3 times. This would improve to 2.9 times in 2039 and fall back to 3.0 times in 2076, according to the City’s consultant. The 2006 ratio of transit to automobile peak period trip travel time (3.3 times) is projected to drop only modestly to 2.9 times in 2039 and then rise to 3.0 times in 2076. Transit trips all day are expected to change from 4.4 times the average automobile trip time to 3.9 times in 2039 and 3.8 times in 2076. Transit travel times would be virtually as uncompetitive compared to automobiles as they are today (Chart 20, next page).⁷² No material attraction of drivers to transit is likely to occur without materially improving transit’s travel times relative to automobile travel times.

CHART 19

Work-trip Travel Time by Mode

Major Metropolitan Areas - 2011



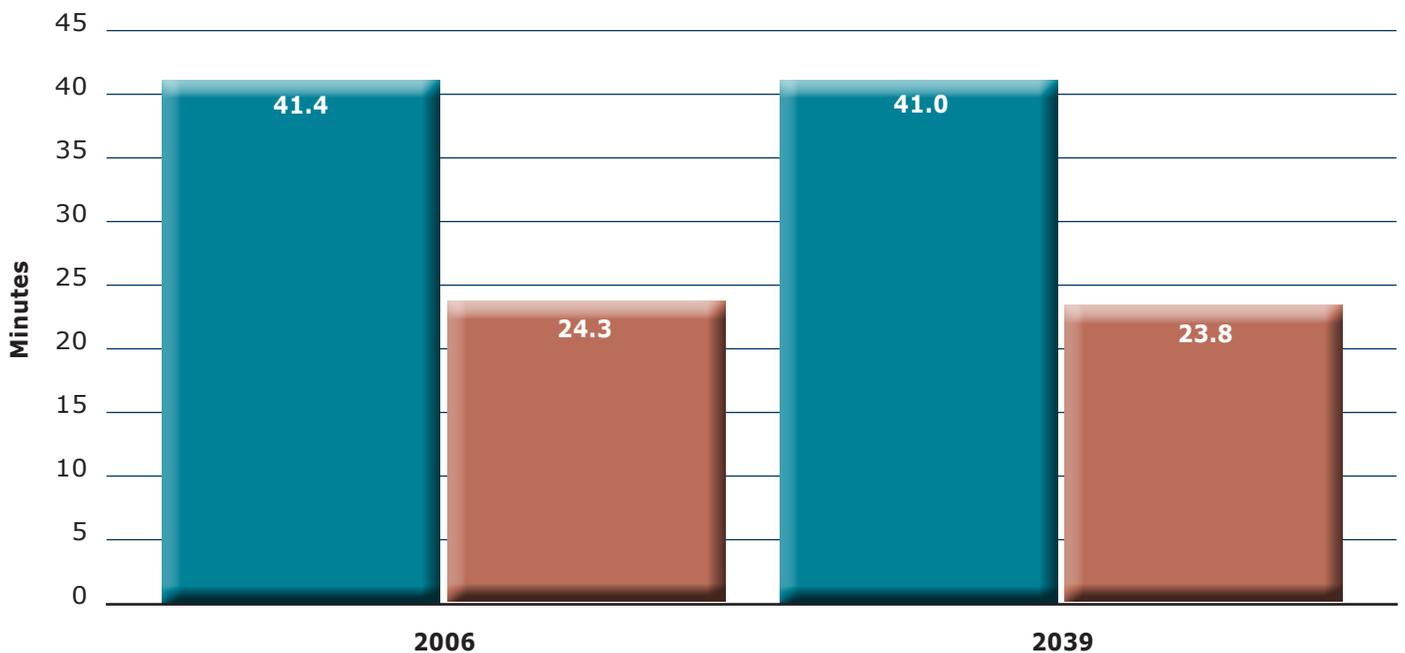
Transit Automobile

Source: Data from Statistics Canada.

CHART 20

Metropolitan Area Commute Times

Car and Transit 2006 and Estimated 2039



Transit Automobile

Source: Estimates based on City of Calgary projections.

Calgary's difficulty in designing an automobile-competitive transit system throughout the city is not unusual. No metropolitan area in the high-income world has seriously considered development of a transit system that would provide service that is competitive with the automobile throughout its urban expanse, not least because it is economically infeasible. Research by Jean-Claude Ziv and this author⁷³ found that genuinely automobile-competitive transit systems would annually consume nearly all the gross domestic product of any major metropolitan area for operations and capital costs.

On the other hand, improvements to the basic transit network are likely to provide improved travel benefits to people without access to cars.

Walking and Cycling: The City also seeks to transfer automobile travel demand to walking and cycling. However, walking and cycling are not practical for most because of geographical constraints that make most jobs inaccessible. Further, many transit trips, such as work trips that involve intermediate stops for daycare or shopping, are virtually impossible. Weather and personal travel preferences also prevent many trips. Not surprisingly, walking and cycling continue to account for only a small part of commuting in the Calgary metropolitan area. In 2011, walking and cycling accounted for 5.7 per cent of commuting, which was down from 6.2 per cent in 2006.⁷⁴

Urban Containment's Meagre Results: Moreover, the City's computer modelling consultant concluded that the land-use and transportation network changes envisioned in Plan It Calgary would not achieve the City's long-term objectives to substantially reduce automobile use, increase transit use and increase walking and cycling. He wrote, "Land use and network changes in Calgary may enable and, to a small degree, contribute to travel behaviour changes but are not enough to drive the significant travel behaviour changes related to mode choice that are necessary to achieve the target mode splits in the MDP and CTP."⁷⁵

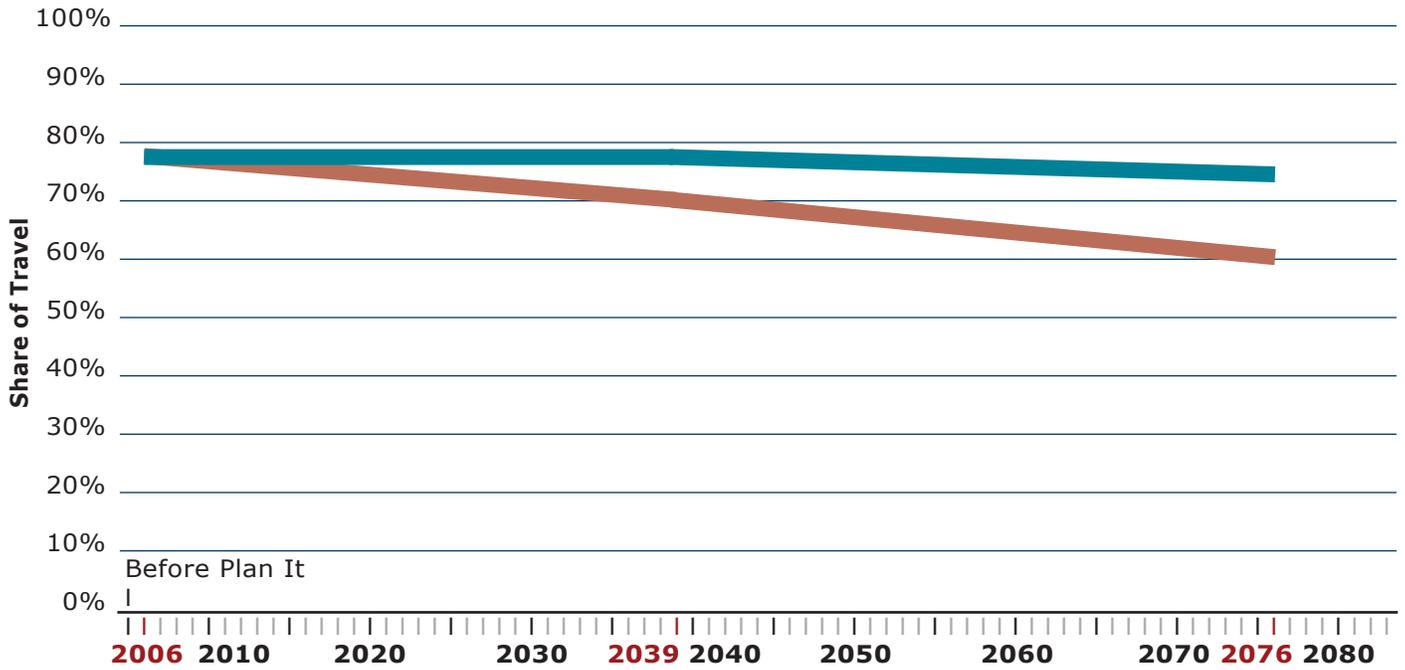
Despite substantial expense, transit improvements, and the forcing of higher densities with unprecedented intensification, the automobile's share of travel in the City of Calgary would remain the same in 2039⁷⁶ as in 2006. Transit's share of travel and that of walking and cycling would also remain the same. In the longer term, to 2076, the automobile share would drop by only 2 per cent, from 77 per cent to 75 per cent. Transit use, walking and cycling (combined) would rise only one percentage point (Charts 21, 22 and 23, next page, following). Thus, the land-use and transportation strategies of Plan It Calgary are projected to have virtually no effect on travel in the city.

Penalizing Automobile Use: To reach the long-term transportation objectives, the consultant adjusted the travel prediction model to impose financial penalties on automobile users to drive more of them to use transit, walking and cycling. In 2076, the model requires penalties amounting to \$1.7-billion annually to produce the desired distribution of travel by automobiles, transit, walking and cycling. The report indicates that the automobile penalties may include "expensive fuel in a post-carbon world" or the imposition of costs to "modify behaviour."⁷⁷ In addition, approximately \$175-million is required in "benefits" for people who ride transit, walk or cycle. No economic analysis of these penalties or benefits is provided.

CHART 21

Calgary: Auto Share of Travel

2006, 2039 and 2076

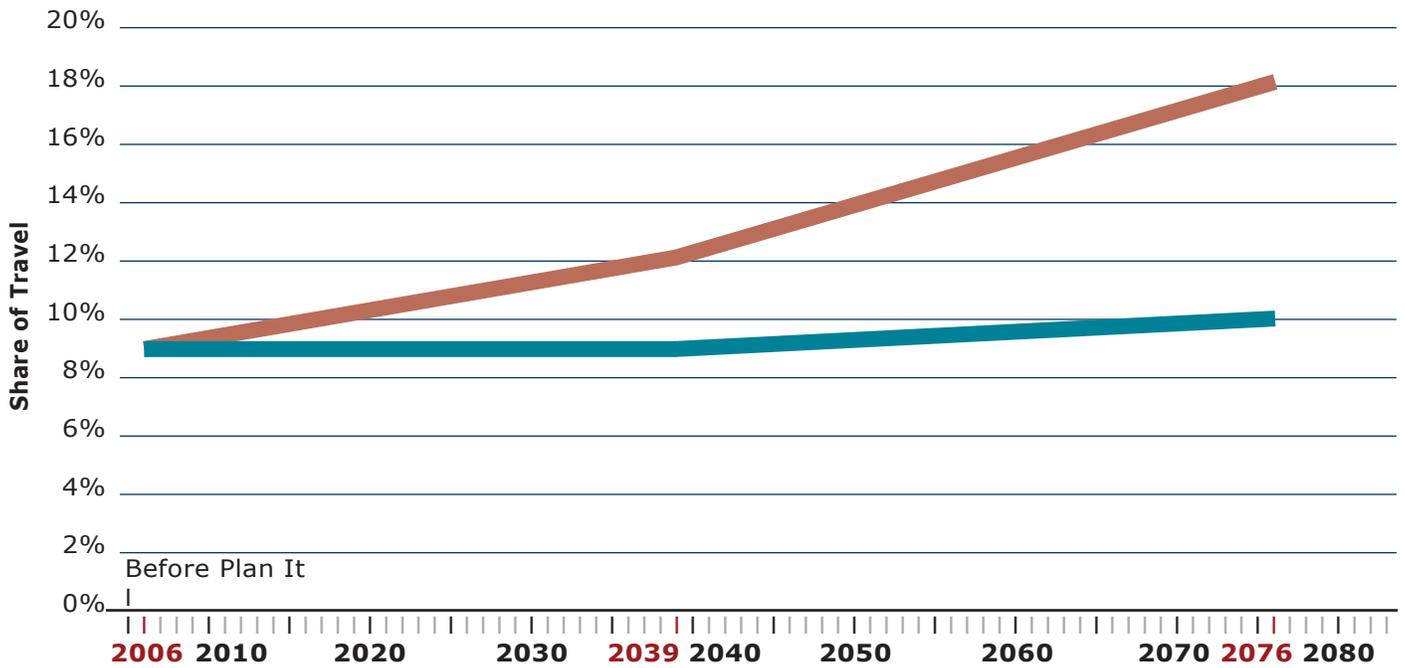


With Plan It With Plan It & Auto Penalties Source: City of Calgary data.

CHART 22

Calgary: Transit Share of Travel

2006, 2039 and 2076

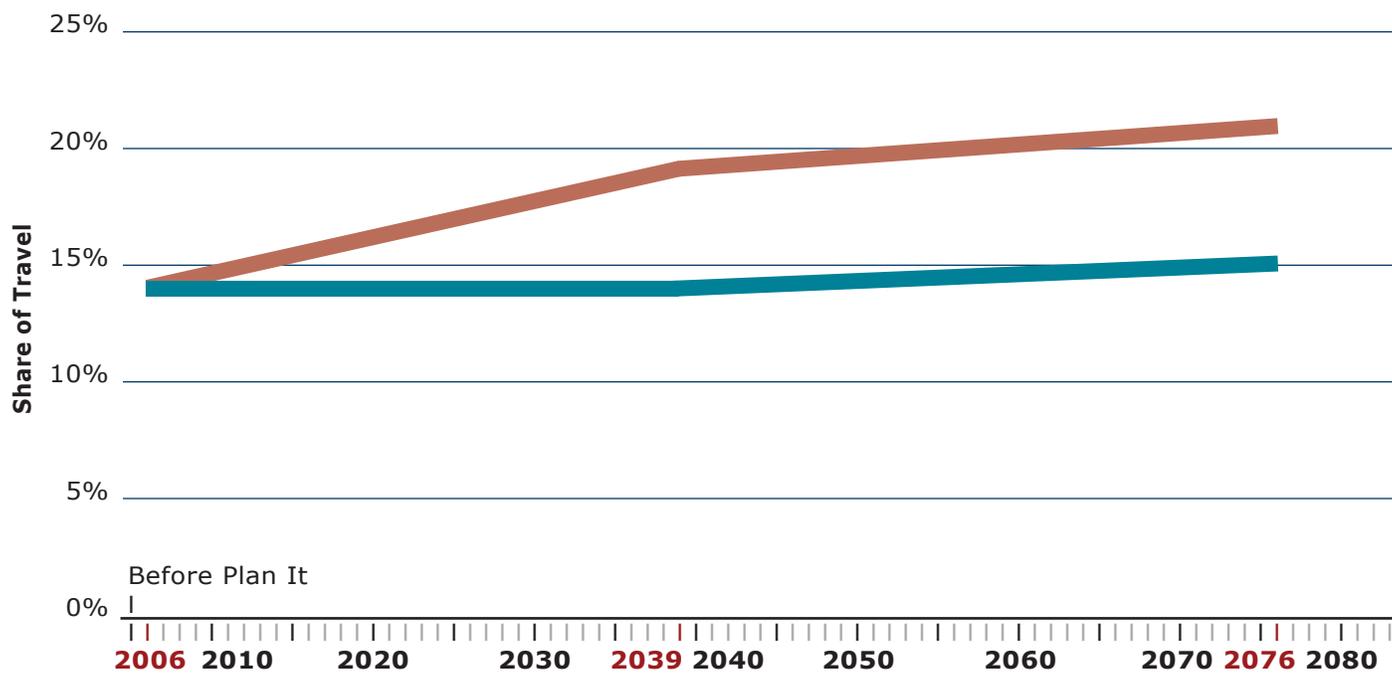


With Plan It With Plan It & Auto Penalties Source: City of Calgary data.

CHART 23

Calgary: Walk and Cycle Share of Travel

2006, 2039 and 2076



■ With Plan It ■ With Plan It & Auto Penalties Source: City of Calgary data.

However, penalties may not result from higher automobile fuel costs. The U.S. Department of Energy projections for the new fuel economy standards, which are proposed to be similar in Canada, indicate that the cost per kilometre of driving the average car, pickup and sport utility vehicle will decline in real terms (2011\$) by 13 per cent between 2015 and 2040 (Chart 25, next page⁷⁸). This could leave the city with only behaviour modification to reach its transportation goals.

6.3 Densification and Traffic Congestion

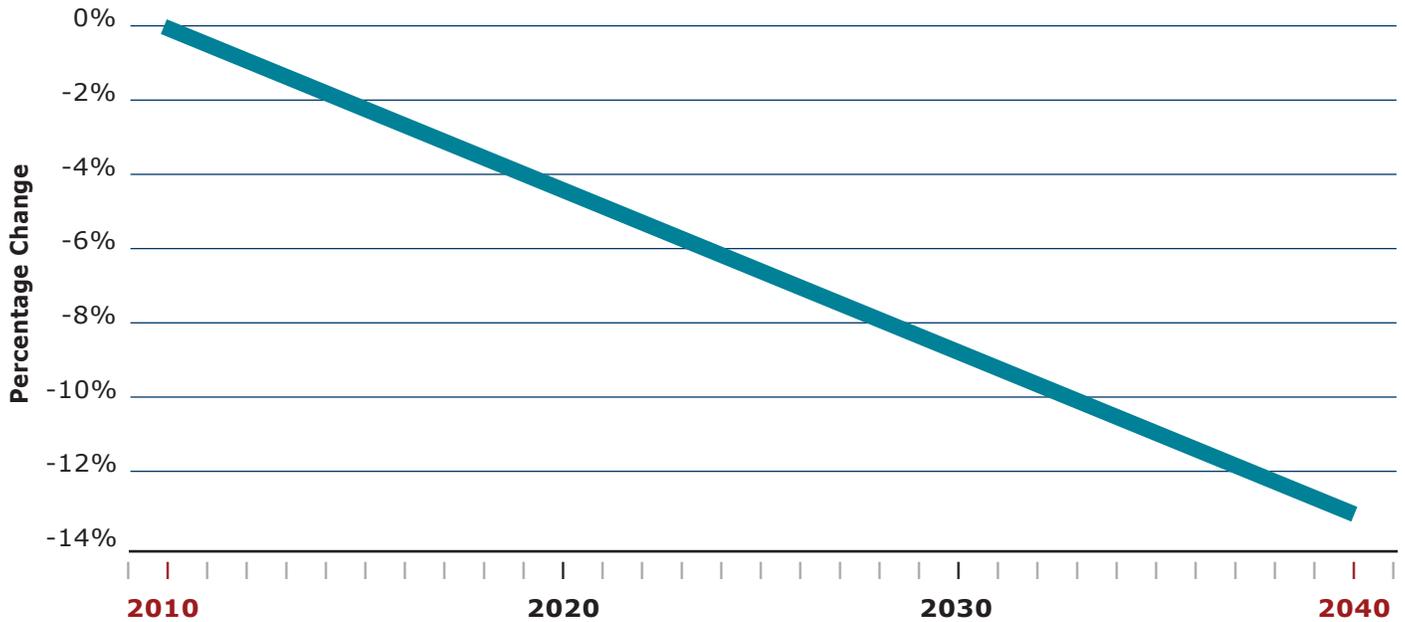
Higher densities, such as those sought by Plan It Calgary, are associated with greater traffic congestion and more-intense local air pollution.

In a widely cited study, Reid Ewing of the University of Utah and Robert Cervero of the University of California, Berkeley, reported only a minimal relationship between higher density and less driving per capita.⁷⁹ In a meta-analysis of nine studies that examined the relationship between higher density and per household or per capita car travel, they found that for each 1 per cent of higher density, there is only 0.04 per cent less vehicle travel per household (or per capita). This means that 10 per cent higher density (10 per cent more people) would result in an *increase* of 9.6 per cent in total driving. In other words, driving increases nearly as much as density.

CHART 24

U.S.: Change in Cost per Kilometer

Light-duty Vehicles - 2010-2040

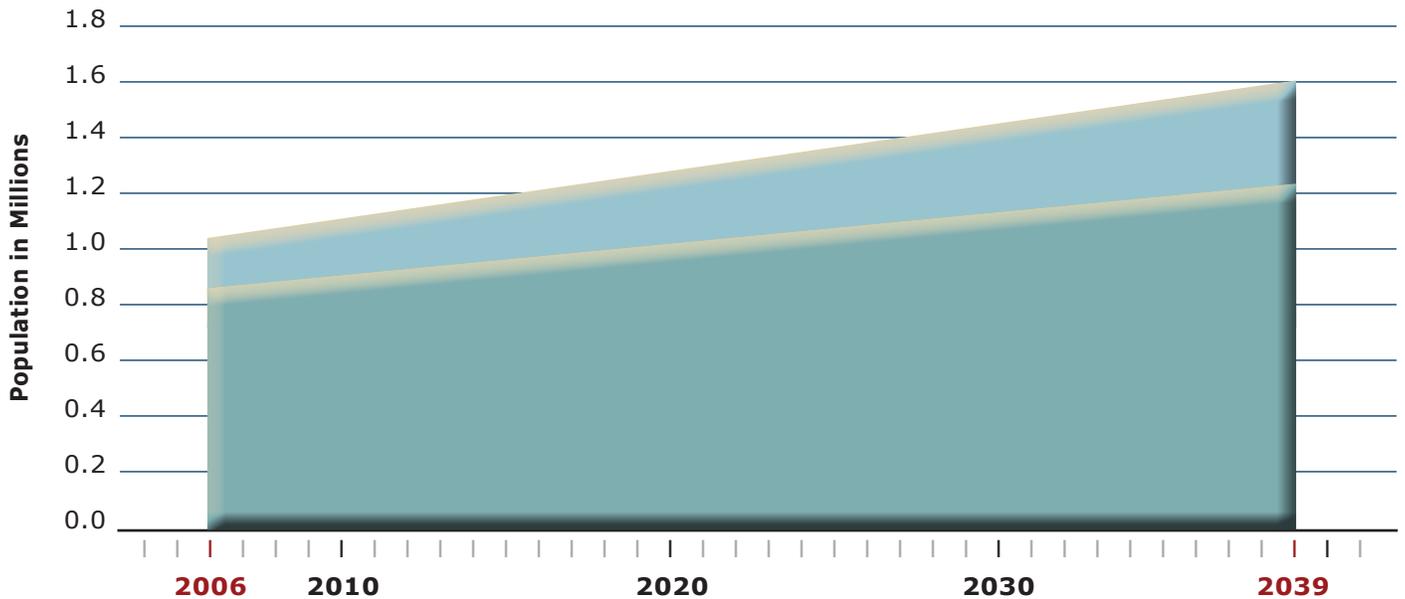


Source: U.S. Department of Energy. Canadian projections for similar fuel efficiency standards not yet available.

CHART 25

City of Calgary Projected Growth

Population - 2006-2039



- Suburban
- Fully Developed Area ("Developed Area")

Source: City of Calgary data.

The relationship between higher densities and greater traffic congestion is obvious. As a defined area increases its number of households, traffic volumes must increase unless both the existing residents and the new residents drive far fewer miles on average than those who previously lived in the area. Alternatively, if the existing residents continue to drive the same distances, increased traffic volumes could be avoided only if the new residents do not drive. Because there is more traffic in the same geographic area, there is likely to be more traffic congestion. Roadway travel will slow down as a result, and GHG emissions will increase.

The Rand Corporation and others documented the relationship between higher densities and greater traffic congestion.⁸⁰

Densification in the City of Calgary: The nature and density of the City of Calgary's projected growth indicate the potential to materially increase traffic congestion.

The City plans call for significant densification. The goal is to accommodate 50 per cent of the population growth within the area of existing older development. Yet, over the past five years, 97 per cent of the city's population growth has been outside the existing development. The City forecasts that 94 per cent of the population growth will be outside of existing development over the next five years.⁸¹

Yet, projections prepared for the Calgary Metropolitan Plan anticipated that from 2019 to 2039, more than 50 per cent of the city's growth will be in the fully developed areas rather than on suburban (greenfield) sites (Chart 25, previous page). Similarly, the projections call for a substantial increase in multi-family dwellings by 2039. This would be a radical departure from current trends. The modelling report notes that construction of single-family houses in the city's fully developed areas serves "... to replace existing housing stock without increasing population. To achieve increased population levels in the Developed Areas, construction of multifamily units is required. *The level of intensification required by the MDP therefore implies a significant increase in multifamily housing.*" (Emphasis in the original.)

This might not occur without City programs to encourage or even force urban deconstruction and replacement with development more consistent with the planning vision. This, as noted in Section 3.3, is occurring in Portland.

Such a change in housing preference could be difficult. The urban planning literature sometimes implies that higher-density, multi-family housing can be readily substituted among households that prefer single-family housing.⁸² However, housing preferences vary significantly between households. Restricting housing choice, such as by discouraging detached housing, can make a metropolitan area less attractive for people from other parts of the nation or world.

Further, greater intensification would materially change the character of neighbourhoods, especially in the fully developed area. This type of intensification resulted in serious neighbourhood and community opposition in cities such as Sydney and Melbourne, where multi-story and even high-rise buildings are being imposed on areas that principally have single-family dwellings.

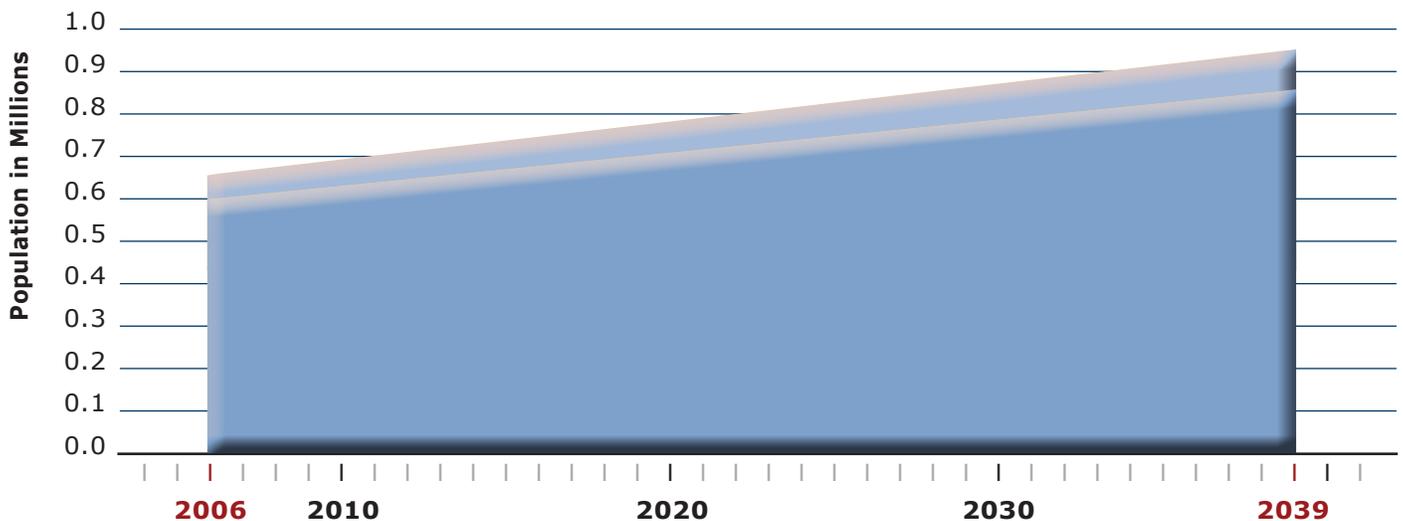
6.4 Decentralization of Employment

A large share of new employment is expected to occur in the fully developed area of the city. From 2006 to 2039, nearly 85 per cent of employment growth is projected to be in this area (Chart 26). Most of this growth (67 per cent of the total) is projected to be *outside* downtown (Chart 27) in areas that generally cannot be effectively served by automobile-competitive transit.

CHART 26

City of Calgary Projected Growth

Employment - 2006-2039



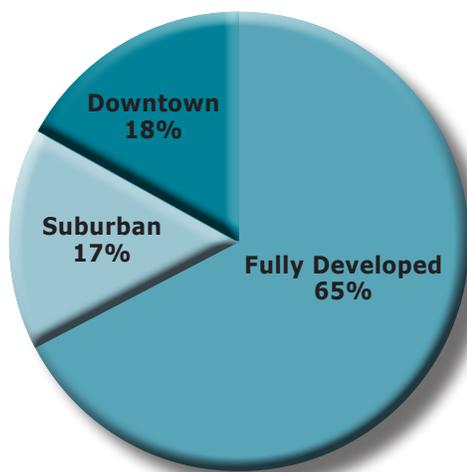
- Suburban
- Fully Developed Area ("Developed Area")

Source: City of Calgary data.

CHART 27

Share of Employment Growth

City of Calgary - 2006-2039



Source: Derived from City of Calgary data.

The new suburban areas are likely to add more than 200,000 new resident workers (from a 400,000 increase in population). Most will have to travel to the fully developed area for employment, since little more than 50,000 jobs are planned for the suburban areas. Most people will not take transit, because they are unlikely to work downtown, as most of the new jobs will not be downtown. The net effect will likely be many tens of thousands of new workers commuting to fully developed Calgary, principally to jobs that are unreachable by automobile-competitive transit (above). This will probably increase automobile use, intensify traffic congestion and increase GHG emissions compared with a more-dispersed job and residence pattern.

7. Sustainability

A principle justification of urban containment policy is environmental sustainability. Yet, as the discussion below indicates, the sustainability strategies of urban containment policy produce little benefit, and at exorbitant cost.

7.1 Greenhouse Gas Emissions

Urban containment, which is largely favoured in urban planning, generally endorses higher densities, opposes detached housing and seeks to transfer travel demand from cars to transit. It is a long-standing policy that stretches back to at least the *British Town and Country Planning Act, 1947*. Going forward, it encompasses later initiatives, especially those in the 1970s in Vancouver, Sydney and Portland.

In recent years, these initiatives have been strengthened by the concern for reducing GHG emissions. The general thinking was that GHG emissions could be substantially reduced by substituting higher-density housing for detached housing and by discouraging automobile use.

Urban Containment: An Ineffective Strategy for Reducing GHG Emissions: The expectation that urban containment policy would contribute substantially to reducing GHG emissions has proven to be disappointing. Comprehensive studies indicate that not only is the potential reduction minimal, it is also prohibitively expensive. Based on their research of urban containment (smart growth) policies in the United Kingdom, Echenique, Hargreaves, Mitchell and Namdeo concluded:⁸³

Smart growth⁸⁴ principles should not unquestioningly promote increasing levels of compaction on the basis of reducing energy consumption without also considering its potential negative consequences. In many cases, the potential socioeconomic consequences of less housing choice, crowding, and congestion may outweigh its very modest CO₂ reduction benefits.

The most important reviews in the United States have also indicated that the GHG emissions reductions under urban containment policies are generally small and much less than the gains from improved fuel economy.⁸⁵

Limitations of Strategies to Reduce Driving: Urban containment policy generally seeks to reduce automobile travel, which, as noted above, is an ineffective strategy for reducing GHG emissions. Even the apparent gains can be illusory. There is an assumption of a virtual one-to-one relationship between kilometres of automobile travel and GHG emissions. In fact, as travel speeds slow and congestion increases, fuel economy suffers. The reduction in GHG emissions can be significantly less than the reduction in driving. This substantially reduces the potential for GHG emission reductions from strategies to reduce vehicle travel.

Transport Canada research indicates that the greater fuel consumption in congested traffic can result in GHG emissions that are more than 70 per cent higher per kilometre than emissions in free-flow traffic.⁸⁶ Thus, strategies that rely on reducing travel can have a much less significant effect on GHG emission reduction than planned because of the greater congestion that occurs in higher-density areas (Section 7.1).

Urban containment policy is an ineffective and unnecessary strategy for reducing GHG emissions.

The Economic Metric: Even worse, urban containment strategies produce only modest results at exorbitant costs. The most common metric for GHG emissions reduction is the cost per metric tonne. There are various cost-effectiveness estimates for reducing GHG emissions:

McKinsey & Company estimated that GHG emissions sufficient to achieve the Intergovernmental Panel on Climate Change (IPCC) recommended reduction rates to 2030 could be achieved at an average cost of minus \$9 per tonne, with a range of minus \$250 to plus \$116.⁸⁷ McKinsey & Company estimated that 35 per cent of the reductions were possible for less than \$0, 40 per cent from \$0 to \$29 and 10 per cent from \$29 to \$58.⁸⁸

GHG emissions can be reduced by the purchase of carbon credits, with each credit reducing GHG emissions by one tonne. Consumers can purchase carbon credits to offset the GHG emissions from air travel. The cost per tonne of GHG emissions reduction is approximately \$13.⁸⁹

Indications are that the above costs may be higher than necessary. The EPA and the California Air Resources Board programs are expected to reduce GHG emissions at a cost of *less than zero*. Two Obama administration regulatory actions were adopted to improve light-vehicle fuel efficiency between 2017 and 2025. Under each of these regulations, the EPA estimates that the cost per GHG emission tonne removed would be approximately minus \$200 by 2040 and minus \$300 by 2050.⁹⁰

In the United States, McKinsey & Company and the Conference Board found that sufficient GHG emission reductions can be achieved without reducing driving or living in denser housing.⁹¹ In other words, urban containment policy is *unnecessary*. The reductions projected in automobile GHG emissions (below) illustrate this.

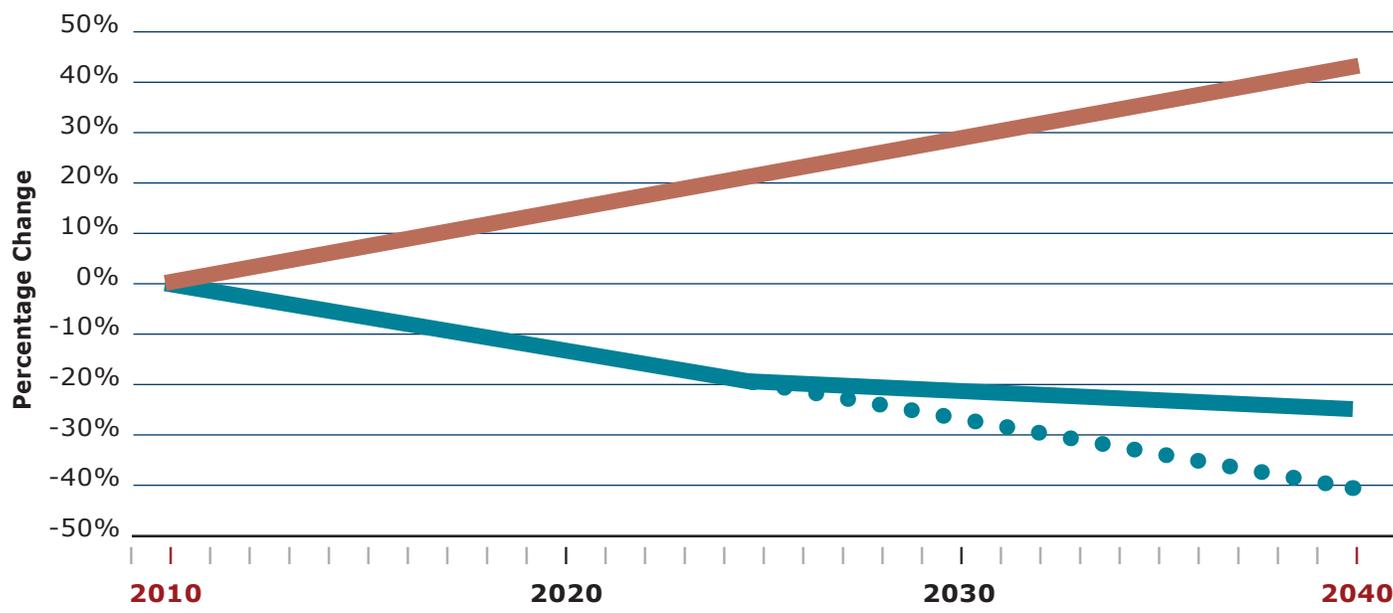
The cost of urban containment policies is far higher than these metrics. The cost of reducing GHG emissions through transit alternatives is estimated at \$1,000 per tonne,⁹² and the additional housing costs incurred to reduce GHG emissions are estimated at nearly \$20,000 per tonne in the United States.⁹³ Obviously, such exorbitant expenditures are not only unnecessary but could also seriously hinder economic growth and increase poverty. Regional planning agencies virtually never subject their urban containment strategies to the IPCC maximum cost metric. Inevitably, the result is economic disruption, especially to households where the standard of living is reduced by the resulting higher costs of housing. Thus, urban containment policy is not only ineffective and unnecessary, but also inappropriate by virtue of its economic damage.

Making Personal Mobility Sustainable: Meanwhile, new government regulations are projected to reduce GHG emissions even more, even as driving continues to increase. Environment Canada forecasts a reduction in total GHG emissions from the light-vehicle fleet of 16 per cent between 2010 and 2025.⁹⁴ Longer-term projections for similar U.S. regulations yield huge GHG emissions reductions from automobiles, even as driving continues to increase substantially (Chart 28, next page). Other sources calculate even greater savings based upon more-conservative driving volumes.⁹⁵ These gains are to be cost-free. The

CHART 28

U.S.: Driving and GHG Emissions

From Light-duty Vehicles - 2010-2040



Driving GHG Emissions Additional Improvements

Source: U.S. Department of Energy. Canadian projections for similar fuel efficiency standards not yet available.

vehicle operating-cost savings will exceed the additional cost of the Environment Canada regulations.⁹⁶

Moreover, these projections assume no regulatory standards changes beyond 2025, and as a result, the gains in GHG emissions will begin to increase at a lower rate by 2027. Yet, it seems likely that technological advances could result in a continuation of the fuel economy and GHG emissions reduction trend, which is indicated by the “Additional Improvements” line in Chart 28.

An example of a technological improvement that could materially improve automobile emissions is the automated car, also known as the self-driving car. One study suggested that fuel economy could increase from 13 per cent to 25 per cent. These improvements are in addition to the already projected GHG emissions reductions.⁹⁷

Further regulations are likely, and there is considerable potential for other technological advances to improve automobile fuel efficiency beyond current estimations. A New York University research report indicates the potential progress: “The advent of a new generation of automobiles—cars that do not harm the physical environment—represents a major turning point in urban mobility.”⁹⁸ Door-to-door automobile transportation, which plays such a large role in job creation and economic growth, is due for huge improvements in its environmental footprint.

Housing GHGs: The often-asserted premise is that dense housing is associated with reduced GHG emissions. Much of the research, however, excludes common GHG emissions (from elevators, common area lighting, space heating, air conditioning, vertical pumping of water, etc.) in large multi-unit buildings, usually because data is not available. Research in Sydney found that townhouses and detached housing produced fewer GHG emissions per capita than did higher-density housing when common GHG emissions are included.⁹⁹ Moreover, housing sustainability research is more often than not based on static rather than dynamic analysis, thus ignoring future forecasted improvements.¹⁰⁰

Improvements have been made in reducing greenhouse gas emissions from lower-density housing. According to the Canadian Home Builders' Association, the residential sector has experienced a 5 per cent net reduction in GHG emissions since 1990, while overall GHG emissions have risen 18 per cent. This improvement in housing GHG emissions is despite a substantial increase in housing units and an increase in average new-house size.¹⁰¹

Rational Sustainability Policy: Sustainability policy needs to be economically rational. All policies that intend to address sustainability should be subjected to a rigorous cost metric to avoid exorbitant public expenditures that can result in a lower standard of living and greater poverty (and which can reduce public support for GHG emissions reductions programs). Fortunately, there are alternatives for achieving far greater reductions in GHG emissions at costs within the IPCC maximum, such as the improved automobile fuel economy noted above. McKinsey & Company and The Conference Board found in the United States, where driving per capita is greater and large urban area densities are lower, that sufficient GHG emission reductions can be made without reducing driving or living in denser housing.¹⁰²

CHART 29

Agriculture Land Taken Out of Production

From Peak Land - Equal to Land in Maritimes



Source: <http://diymaps.net/userimages/569308.gif>

7.2 Agriculture

There are concerns that expanding urbanization is reducing agricultural land and that it could threaten food security.

In fact, Canadian agriculture is quite healthy. As is indicated in "Urban Policy: A Time for a Paradigm Shift,"¹⁰³ the reduction in Canadian farmland far exceeds the total urbanization in the four centuries of European settlement. The agricultural land taken out of production is greater than the total land area (Chart 29) of the Maritime provinces (New Brunswick, Nova Scotia and Prince Edward Island).¹⁰⁴ Yet, agricultural productivity has improved substantially. Gross output increased 161 per cent between 1961 and 2005 at the same time as total agricultural land was decreasing. This increase in gross output was considerably greater than that of the United States' over the same period.¹⁰⁵

Moreover, urban land areas are very small compared with agricultural lands. The total urban land area is approximately 3 per cent of the combined agricultural and urban land area. Recently released Statistics Canada data indicate that between 2000 and 2011, nearly 4.5 times as much agricultural land was *returned to its natural state* in Canada than was converted into urban land.¹⁰⁶ This newly converted urban land provided space for the addition of nearly 3.5 million urban residents.

In Canada, as in Europe and the United States, agricultural subsidy programs provide incentives to farm *more* land than is required to meet consumer demand. New York University professor Shlomo Angel has shown that, around the world, there are *adequate reserves of cultivatable land sufficient to feed the planet in perpetuity*.¹⁰⁷

8. Broader economic effects

Not surprisingly, reducing discretionary income is expected to have a negative impact on metropolitan economies and the national economy.

8.1 Impact on Metropolitan Economies

Housing costs are important to the competitiveness of metropolitan economies. A metropolitan area with inordinately higher house prices relative to income will have a competitive disadvantage with other metropolitan areas, other things being equal. Fewer people are likely to move to the area, and businesses may leave or not relocate to the area because household incomes are often not high enough to compensate for the higher housing costs. There is a growing body of literature documenting the competitive disadvantages of urban containment policy.

An econometric analysis concluded that there is an association between the more-restrictive housing supply limitations from more-strict land-use regulation in the Randstadt (Amsterdam-Rotterdam-The Hague) and slower economic growth.¹⁰⁸

U.S. Federal Reserve Board economist Raven Saks found that employment growth is 20 per cent less than expected in U.S. metropolitan areas with stronger land-use policies.¹⁰⁹

After the collapse of the housing market, the U.S. Congress commissioned a report on the causes of the financial crisis. A U.S. Financial Crisis Inquiry Commission minority report identified four possible causes of the U.S. housing bubble. One of the hypotheses involved strong land-use restrictions. The report stated:

Land use restrictions. In some areas, local zoning rules and other land use restrictions, as well as natural barriers to building, made it hard to build new houses to meet increased demand resulting from population growth. When supply is constrained and demand increases, prices go up.¹¹⁰

Urban containment policy has also been associated with higher commercial development costs¹¹¹ and higher retail prices.¹¹²

Obviously, any such broad economic consequences would reduce discretionary incomes, undermine the standard of living and lead to greater poverty (other things being equal).

8.2 Impact on the National Economy

There is concern that a housing bubble may be developing in Canada. This is an ominous prospect in view of the disastrous effect of the U.S. housing bubble on its economy. Between 2004 and 2012, house prices relative to income increased more than they did in the United States, Australia or New Zealand. The increase was more than 50 per cent relative to household income. However, the effect on household budgets has been masked to some degree by low interest rates.

This seems likely to be only temporary. RBC Global Asset Management chief economist Eric Lascelles said, "Of course, rock-bottom interest rates won't last forever, and the key change on the horizon is higher borrowing costs via the Bank of Canada."¹¹³

Higher interest rates could result in substantial increases in mortgage payments. Younger households are likely to have greater financial constraints, with many facing substantial student loan debt. This will make home purchases more difficult. The seemingly inevitable prospect of higher mortgage interest rates is an imperative for housing affordability.

8.3 Canada: Following Australia and New Zealand?

As noted above, housing markets in Australia and New Zealand generally had house price to income ratios of 3.0 or less before the implementation of urban containment policies. These policies were adopted virtually across both nations by the 1990s. Among 39 markets rated in the “10th Annual Demographia Housing Affordability Survey,” 25 now have median multiples of 5.1 or higher, while the other 14 are from 4.1 to 5.0. The situation is similar in New Zealand, where six markets have median multiples of 5.1 or higher, and only two are between 4.1 and 5.0. In Australia and New Zealand, housing affordability has seriously declined in virtually all markets, from the smallest to the largest. The highest median multiples are in the largest metropolitan areas, Sydney (9.0), Melbourne (8.4) and Auckland (8.0). Vancouver already exceeds these median multiples, at 10.3. Other major markets in Canada including Toronto (6.2), Montreal (4.7), Calgary (4.3), Edmonton (3.9) and Ottawa (3.8) are less affordable than before urban containment policy.¹¹⁴ Other than Vancouver, urban containment policies were adopted later in Canada than in Australia and New Zealand. Experience in those countries suggests that house-price escalation in Canada could be even greater in the years to come.

8.4 Limits of Bank of Canada Monetary Policy

The escalating house prices have caught the attention of the Bank of Canada,¹¹⁵ among others. More recently, most of the largest banks had credit rating downgrades by international credit rating agencies, at least in part out of concern for their inordinately large exposure to large levels of mortgage debt.

The concern has spread to the Organisation for Economic Co-operation and Development (OECD), which has noted that housing in Canada is overvalued, yet prices are still rising (as in Norway, New Zealand and to a lesser extent, Sweden): “Economies in this category are most vulnerable to the risk of a price correction—especially if borrowing costs were to rise or income growth were to slow.”¹¹⁶

Former federal Minister of Finance Jim Flaherty noted that the Bank of Canada is unlikely to be able to raise interest rates to slow house-price escalation and that a housing bubble could “destabilize the economy.” The Bank of Canada has a monetary policy objective of keeping “inflation near 2 per cent.”¹¹⁷

Yet, house prices are not rising because of normal market forces, because normal market forces do not operate in urban containment markets. The higher house prices relative to income are principally the result of provincial and metropolitan urban containment policy.

Housing costs, the largest expenditure item of household budgets, and a significant driver of inflation, are beyond the policy purview of the Bank of Canada. The land-use policies of provinces and metropolitan areas are the principal determinant of house-price escalation beyond historic norms.¹¹⁸

9. Putting people first for a more prosperous Calgary Area

The City of Calgary has embraced strong urban containment policies, which were endorsed by the other municipalities that ratified the Calgary Metropolitan Plan. At the same time, house prices have risen strongly relative to household income, having decoupled from their historic relationship. This is consistent with the experience of major metropolitan areas that have implemented strong urban containment policies.

The higher house prices have reduced the discretionary income of Calgary area households, and most significantly households in poverty. A lower standard of living and greater poverty is the result.

There is a larger threat, however. Calgary's house prices have escalated in an unprecedented manner and have remained elevated well above the historic market ratio. The experience of metropolitan areas with longer urban containment policy histories indicates the potential for far more serious house-price escalation in the future.

Yet, as noted in Section 7.1, urban containment policy is incapable of producing material sustainability results, including cost-effective GHG emissions reductions.

There is a need to shift urban policies to not only restore housing affordability, but also to prevent more-serious house-cost escalation. This would require reordering the priorities in the Calgary area to put the interests of people first. People are more important than the mode of travel or the urban form.

Recommendations

There is a need for policies that allow the building of houses and neighbourhoods that are affordable for the households that have been driven out of the home-ownership market.

If house prices continue to increase at a greater rate than incomes in the Calgary area, the standard of living could decline further and real poverty could increase. Restoring housing affordability, especially for middle-income and lower-middle-income households, will require the development of single-family houses on less expensive lots in more-modest neighbourhoods than are possible under today's City of Calgary policies.

The City of Calgary should become more open to development that could restore and maintain housing affordability. At the same time, there is an important role for the other municipalities in the Calgary area. From a public policy perspective, the important issue is to restore and maintain the standard of living regardless of where new housing is built by reinstating a competitive market for land. Other urban policies are secondary. Urban containment cannot be justified on GHG emissions concerns because its costs relative to other strategies are exorbitant (Section 7.1).

The following recommendations are offered:

The municipal jurisdictions of the Calgary area (the City of Calgary and all others) should:

- Focus primarily on improving the standard of living and eradicating poverty by establishing housing affordability standards and monitoring house prices relative to these standards.
- Ensure that a competitive supply of land is available for immediate development at year 2000 and before price ratios. (Jurisdictions such as Rocky View County, Foothills #31 and Wheatland County, which are not signatories to the Calgary Metropolitan Plan, are particularly well positioned to take the quickest action to provide housing affordability to households.)
- Adopt transportation policies that maximize mobility throughout the Calgary area. These strategies should seek to minimize commute travel times throughout the metropolitan area regardless of the mode of travel.
- Implement infrastructure finance options that could improve housing affordability, such as bonding, user fees and special housing districts. These could include strategies such as:
 - Bonding for Fees and Levies: Municipalities could issue bonds to finance levies and fees, with the principal and interest paid by the residents of new housing.¹¹⁹ This would improve housing affordability by reducing initial sale prices, which is also likely to lead to more-modest existing house price increases.¹²⁰
 - User Fees: All capital and operating expenses of publicly owned utilities (such as water and wastewater) should be recovered and financed through user fees.
 - Special Housing Districts: Jurisdictions could permit the establishment of special housing districts or utility districts that could offer self-contained public services and utilities (Section 4.5) that follow models in Texas, Colorado, California and

New Zealand.¹²¹ This would remove the burden of providing services for such new developments from the City of Calgary, while permitting restoration of the lower-cost new-home market. At the same time, developers and home builders would have an incentive to minimize the cost of such infrastructure in order to attract buyers. This could require revisions to Alberta law.

- The Calgary Metropolitan Plan should be revised in order to achieve consistency with the above recommendations for Calgary area jurisdictions.

The City of Calgary should:

- Revise its urban planning policies so that they focus principally on improving the standard of living and reducing poverty by restoring historic housing affordability.
- Revise its land supply analysis to require a sufficient supply of *affordable* land. This requires that sufficient land is available for immediate development at prices consistent with historic norms (2000 and before).
- The Province of Alberta should provide an annual report on housing affordability in each of the CMAs, census agglomerations and larger municipalities, using a price to income ratio (such as the median multiple). This would be consistent with the province's interest in economic growth and the standard of living of its citizens.

Urban policies that improve the standard of living and reduce poverty by restoring housing affordability should attract support from all political perspectives. There is nothing more fundamental in public policy than facilitating higher standards of living for people and eradicating poverty.

Appendix A

Summary of economic research: Urban Containment and House Prices

A principal purpose of urban containment policy is to stop the expansion of urban areas (referred to as “urban sprawl,” see Box 1). This is accomplished by prohibiting development outside urban growth boundaries¹²² or by other restrictions that confine new development to much smaller areas than before.

A.1 The Association between Urban Containment and Higher Housing Costs

Economic principle holds that, other things being equal, scarcity in the supply of a product tends to influence its price upwardly. This is true of land for urban development. Policies that severely restrict the availability of land are associated with higher and rising house prices.

This results in significant rationing of land, which like the rationing of any good or service, leads to artificially high land prices, which increase house prices. Economists Richard Green and Stephen Malpezzi summarize the issue: “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.”¹²³

Urban containment policy is also strongly associated with higher costs of living, principally due to the resulting higher housing costs relative to income. The economic literature documents the close association between urban containment policies and higher relative house prices.

Housing constitutes the largest share of household budgets. House price differentials are significant among Canada’s major metropolitan areas and are a principal element in cost of living differences.

A.2 Economic Research

A limited sampling of the research that indicates a connection between urban containment and higher house prices follows.

According to Brookings Institution economist Anthony Downs, the housing affordability problem occurs because of the failure to maintain a “competitive land supply.” Downs notes that increased urban growth boundaries can convey monopolistic pricing power on sellers of land if sufficient supply is not available, which, all things being equal, is likely to raise the price of land and the housing that is built on it.¹²⁴

If a locality limits to certain sites the land that can be developed within a given

period, it confers a preferred market position on those sites. ... If the limitation is stringent enough, it may also confer a monopolistic power on the owners of those sites, permitting them to raise land prices substantially.

In any policy that seeks to control or direct growth, it is important for jurisdictions to ensure that there is a sufficient supply of competitively priced land so that its policies do not decrease housing affordability. This point was made in a Brookings Institution policy analysis by a team led by urban containment advocate Arthur C. Nelson of the University of Utah, who associated higher house prices in California with such policies. He wrote, "... **[T]he housing price effects of growth management policies depend heavily on how they are designed and implemented.** If the policies serve to restrict land supplies, then housing price increases are expected." (Emphasis in original.)

Based on their research on the association between urban containment policy and house prices, Quigley and Raphael (University of California, Berkeley) noted:

Indeed, many cities complicate and add costs to the process of building new housing. Perhaps the most extreme barriers to new housing come in the form of explicit growth controls. Municipal growth control measures may take the form of moratoria on new developments, urban growth boundaries beyond which development is severely curtailed, or open space requirements intended to preserve undeveloped land.¹²⁵

Economic research also identifies slower than expected economic growth in metropolitan areas with urban containment policy (Section 8.1).

World Bank economist Steven Mayo indicated, "[H]ouse prices in ... cities with stricter regulatory policies rose 30 to 60 per cent relative to less restrictively regulated cities over a 15-year period."¹²⁶

Richard Green of the University of Wisconsin, along with Steven Malpezzi and Stephen Mayo, performed an econometric analysis of 44 U.S. metropolitan areas and found that heavily regulated metropolitan areas "always" had constrained housing supplies (which lead to higher prices).¹²⁷

Glaeser, Gottlieb and Gyourko characterized their research as indicating that markets with stronger land-use regulation experienced larger house-price increases during the housing bubble.¹²⁸ They said, "...[O]ne of the policy implications ... is that in some regions more restrictive building environments exacerbated the bubble in housing prices."

Other strategies of urban containment policy have similar effects. Infill requirements limit the amount of housing that can be developed on or beyond the urban fringe, creating upward pressure on prices. Building moratoria limit the amount of housing that can be built, similarly leading to higher house prices than would otherwise be expected.

Regrettably, the housing affordability consequences were rarely, if ever, considered by government agencies as they imposed urban containment policy.

As in Auckland, urban containment has been associated with huge differences in the price of equivalent and adjacent land. In Portland,¹²⁹ there exist virtually "across the road" differences in raw land costs of at least 10 times. There are even greater disparities in the London, U.K., area.¹³⁰ In a normal market, the price differentials would be minimal.

Dartmouth University professor William Fischel cites studies in the United Kingdom and Korea that associate stronger land-use policy with housing affordability losses.¹³¹

Greater Attraction to Property Investors (also referred to as “speculators”): As urban containment policy drives up house prices, additional property investors are drawn in by the prospect of quick and substantial profits. These market participants are pejoratively called “speculators” or “flippers.” These buyers further increase demand relative to supply. The house-cost escalation typical of urban containment policy thus feeds on itself by attracting this additional speculative demand, raising house prices even more. As a result, housing markets with urban containment tend to have more-volatile price fluctuations.¹³² The role of additional investors was substantial in driving up house prices in the U.S. housing bubble.¹³³

A.3 Urban Containment Policy and Housing Affordability: The Experience

California has experienced the most significant house-price escalation in the United States. As late as 1970, California house prices were within the 3.0 median multiple standard, indicating a ratio of house prices to income similar to that of the rest of the nation. However, at about that time, significant housing regulation was taken on in many parts of California, and house prices relative to income began to rise substantially above those in the rest of the nation.

Some urban planning analysts expressed concern about California’s planning-related increases in house prices in the late 1970s and early 1980s, such as Bernard Frieden of the Massachusetts Institute of Technology (MIT).¹³⁴ In a study focusing on the experience in the San Francisco Bay Area, David Dowall of the University of California, Berkeley, noted, in 1984, “[N]ow the costs of this policy are also becoming clear: wherever stringent land-use controls have come up against burgeoning demand for housing, land and home prices have skyrocketed.”¹³⁵

Fischel found that by 1990, California house prices had escalated well ahead of the nation’s. He discovered that the higher prices could not be explained by higher construction cost increases, demand, the quality of life, amenities, the property tax reform initiative (Proposition 13), land supply or water issues. He associated the higher prices with the expansion of land-use restrictions.¹³⁶

Appendix B

Measuring Housing Affordability

Housing costs represent the largest share of household budgets, which makes housing affordability an important economic and public policy issue.

Various methods for measuring housing affordability are available. One of the most frequently used is the median multiple, the median existing house price divided by the median household income. This measure is widely used, including by the World Bank, the United Nations and the Organisation for International Co-operation and Development. Median multiple housing affordability categories are now often used (see table below).¹³⁷

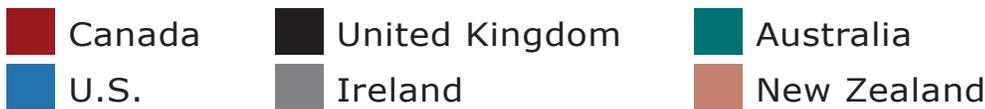
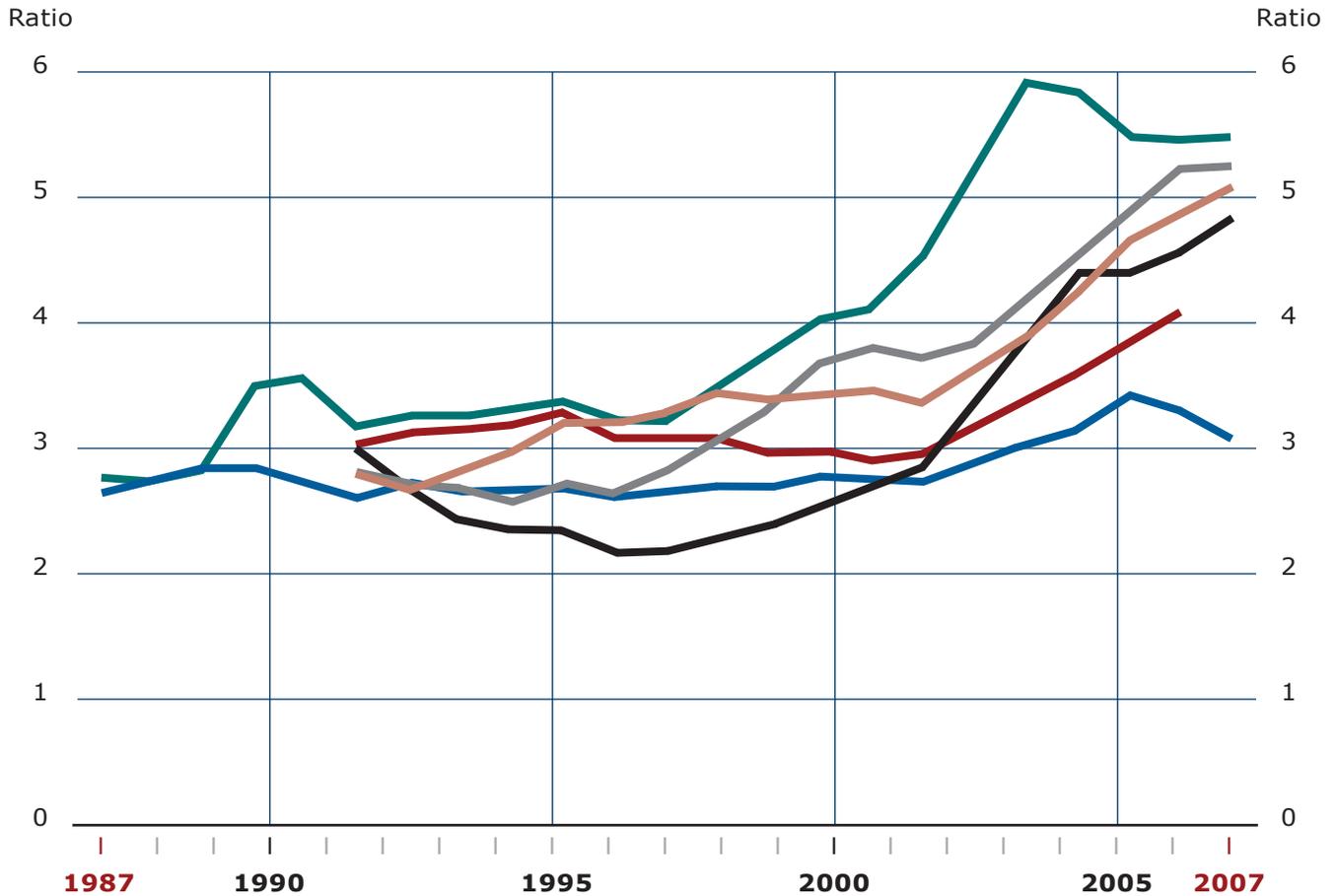
Housing Affordability Rating Categories	
Rating	Median Multiple
Severely Unaffordable	5.1 & Over
Seriously Unaffordable	4.1 to 5.0
Moderately Unaffordable	3.1 to 4.0
Affordable	3.0 & Under

There has been a historic relationship between house prices and household incomes. Generally, a median multiple range of 2.0 to 3.0 was typical in the metropolitan areas of Canada, Australia, New Zealand, the United States, Ireland and the United Kingdom for most of the period since World War II. Chart 30, next page, from the Reserve Bank of Australia, that nation’s central bank, indicates that housing affordability was at or below a price to income ratio of 3.0 into the late 1980s and early 1990s in each nation.

Housing affordability was the rule across the nation as late as the middle 2000s. In 2004, Calgary’s median multiple was 3.0. Ottawa’s median multiple was 2.9, and Montréal had a median multiple of 3.1. In 2005, Edmonton’s median multiple was 2.8. Since then, substantial house-price escalation has occurred, contributing to concerns raised by the federal government, the Bank of Canada, the OECD and international credit rating agencies (Section 8.2).

CHART 30

House Price to Income Ratios*



* Various combinations of median and mean measures of house prices and incomes uses depending on availability.

Sources: ABS; BIS; Bureau of Economic Analysis; Central Statistics Office Ireland; Communications and Local Government (UK); National Statistics website; OECD; REIA; Reserve Bank of New Zealand; Statistics Canada; Statistics New Zealand; Thomson Financial.

Chart Source: Reserve Bank of Australia.

Appendix C

City of Calgary Research and Portland Housing Affordability

In developing Plan It Calgary, the City commissioned research on the effect of urban containment policy on housing affordability.¹³⁸ The paper largely dismissed the role of urban containment in increasing house prices, yet acknowledged the potential: “Cities that attempt to moderate outward growth may put a gentle upward pressure on the market value of land and homes, but it is the increased desirability (the so called “amenity value”) of the city that is pre-eminent.”

This value judgment that “amenity value” is more important than housing affordability, and thus the standard of living, is a matter of contention. The underlying assumption of this paper, “Housing Affordability and the Standard of Living in the Calgary Area,” is that improving the standard of living and eradicating poverty are a higher order public objective than any “amenity value” of the City’s.

The City-commissioned paper cited research indicating that there was no unusual deterioration in Portland’s housing affordability despite the metropolitan area’s renowned urban containment policy. The research cited related to house price increases through 2000.¹³⁹

The City commissioned paper also went to considerable lengths to quote 2000 research relating superior urban outcomes to Portland relative to Atlanta (Nelson, 2000), which does not have an urban containment program. In additional (not cited) 2001 research, this author countered points in the Nelson 2000 research.¹⁴⁰

However, house-price increases in Portland have been large relative to incomes since 2000. Portland is internationally renowned for its early and continuing urban containment policies, which have been broadly suggested by the urban planning community for application in other places. Portland’s policies include an urban growth boundary, which largely prohibits urban development beyond it.

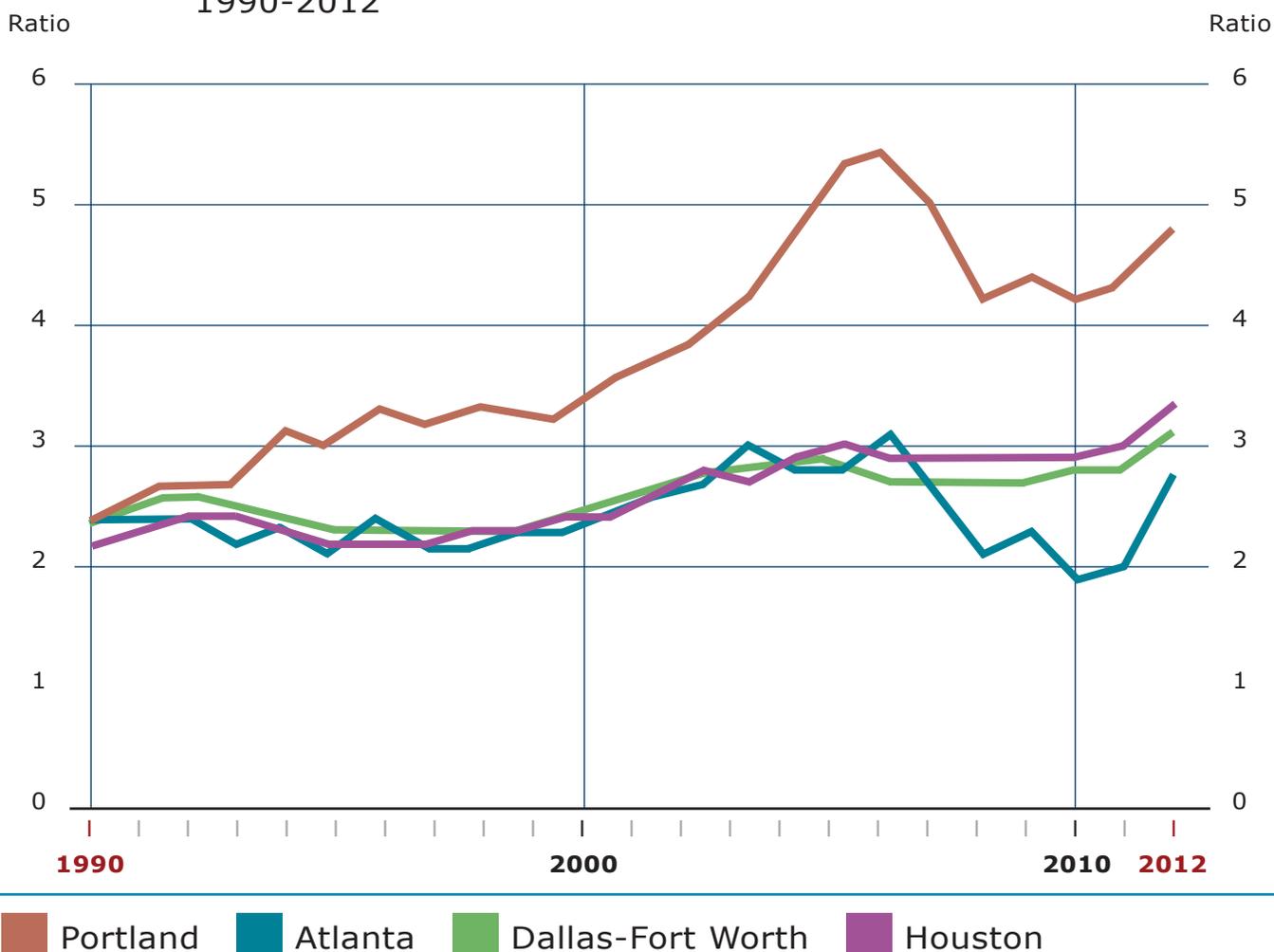
Until the mid 1990s, Portland was one of the most affordable major metropolitan markets in the United States. The median multiple remained approximately at the 3.0 standard until most of the land within the urban growth boundary was consumed. From the 1950s through the 1980s, Portland had an average rank of 12th most affordable out of the 52 metropolitan areas that now have a population of 1,000,000 or more (using the median multiple).¹⁴¹ Portland’s affordability ranking deteriorated to 41st in the 2000s and 44th between 2010 and 2013.¹⁴²

The deterioration is illustrated by comparing housing affordability in the Portland metropolitan area with three of the fastest-growing major metropolitan areas in the high-income world: Atlanta, Dallas-Fort Worth and Houston. These areas have more-liberal land-use regulation than Portland does, and they have not implemented any urban containment policies.

From 1990 to 2012, the Portland metropolitan area¹⁴³ grew by 50 per cent. This is stronger than the national major metropolitan area average of 30 per cent. However, Portland’s growth trailed that of Atlanta (77 per cent), Dallas-Fort Worth (67 per cent) and Houston (65 per cent). Further, net domestic migration to Atlanta, Dallas-Fort Worth and Houston was much stronger than migration to Portland. These factors indicate stronger underlying demand for owned housing than in Portland (Figure 31).

The four metropolitan areas had similar housing affordability (median multiples) in 1990, with Portland, Atlanta and Dallas-Fort Worth at 2.4 and Houston at 2.2. Despite the more modest underlying demand, house prices relative to income rose much more in Portland. By 2012, Portland’s median house prices relative to household income ranged from nearly 50 per cent to 75 per cent more than in Atlanta, Dallas-Fort Worth and Houston (Figure 31). Unlike urban containment markets where severe house-price escalation was concentrated in the United States, the liberal housing markets of Atlanta, Dallas-Fort Worth and Houston experienced little change in house prices during the U.S. housing bubble.¹⁴⁴

CHART 31 Housing Affordability: Portland in Context
1990-2012



Sources: Demographia International Housing Affordability Surveys and Harvard’s Joint Centre for Housing Studies

Thus, Portland's urban containment regulatory regime has been associated with substantial overall housing price increases relative to income.¹⁴⁵ Portland's median multiple rose from the national standard of 3.0 in 1995 to 4.8 in 2013,¹⁴⁶ an increase of 60 per cent since 1995. In the mid 1990s, Portland had strengthened the stringency of its urban containment boundary and competitively priced land for urban expansion was largely exhausted.¹⁴⁷

Portland's median multiple peaked at 5.4 in 2007 at the height of the U.S. housing bubble. It subsequently dropped to a minimum of 4.2 before beginning the more recent rise to 4.8. (As shown in Section 4.3, the housing affordability losses for lower-income households have been even more severe in Portland.)

It is also likely that Portland's housing affordability losses have been moderated by the less stringent regulatory environment in the portion of the metropolitan area located in the state of Washington (principally Clark County, where the city of Vancouver is located). Traditional new housing continues to be developed in this part of the metropolitan area, which is without the severe restrictions that exist in the Oregon portion of the metropolitan area. This may be part of the reason that the share of population growth in the Washington section of the metropolitan area has been greater since 1990 than before.

Section 3 and Appendix A summarize additional research on housing affordability.

Endnotes

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15. Suburban detached or other ground-oriented housing proliferates throughout North America, Japan and Western Europe, especially in post-World War II developments. In a few major metropolitan areas (such as Madrid), post-war suburban areas are dominated by multi-family housing.
16. These data refer to Census District 6, which includes the City of Calgary as well as all areas (and municipal jurisdictions) extending to the outer boundaries of Rocky View County, Mountain View County and Foothills #31 Municipal District. The Calgary area has various geographical definitions such as the Calgary metropolitan area, the Calgary Regional Partnership and the Calgary Economic Region, which may include the areas noted above, additional areas, or smaller areas. This report uses the general term "Calgary area" and other terms such as "Calgary metropolitan area" where more specificity is appropriate.
17. Referred to in City documentation as the "developed area." Developing areas outside of this are suburbs. According to the City, "A community is considered to be part of the Developed Areas when initial development and build-out is complete, and future development occurs through redevelopment and intensification." See the City of Calgary. (2012). "Developed Areas: Growth & Change 2010." Available online at <http://www.calgary.ca/PDA/LUPP/Documents/Publications/developed-areas-growth-2010.pdf?noredirect=1>.
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Further Reading

December 2013

Housing Affordability and the Standard of Living in Regina

By Wendell Cox

<http://www.fcpp.org/posts/housing-affordability-and-the-standard-of-living-in-regina>

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Housing Affordability and the Standard of Living in Saskatoon

By Wendell Cox

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May 2012

Improving the Competitiveness of Metropolitan Areas

By Wendell Cox

http://www.fcpp.org/files/1/PS135_Transit_MY15F3.pdf

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