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School of Community + Regional Planning

The University of British Columbia
Vancouver, Canada

Date January 17/96
Current land use patterns in North America are not strictly the result of the operation of a free market or explicit consumer choice. Direct and indirect public policies, operating over many decades have made low density living an appealing alternative for consumers, the providers of housing, and those who support the finance of infrastructure. At the local level, the public sector administers an intricate system of land use regulations which implicitly encourage low density development and provides the essential capital and public infrastructure that is necessary to support new development. At the senior level, long-term government policies favouring homeownership, single-family homes and the automobile have facilitated continued sprawl and a reliance on the automobile. The extent of the aggregate impact of public policies on urban development patterns is significant. The continuing dispersion of growth in most urban areas is creating severe environmental stress, unprecedented traffic congestion, and potentially unsurmountable fiscal pressures. As society confronts the significant social, economic and environmental costs associated with dispersed land uses, there is a growing consensus that public sector policies which continue to subsidize unsustainable patterns of development are no longer affordable. In light of the above, a critical re-evaluation of public policies and practices is imperative by both senior and local governments.
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While I have now reached my destination, the challenge and excitement has been in the journey. I wish to thank my family, friends and co-workers for keeping me on the right path - you know who you are.

I also wish to extend my sincere gratitude to professor Alan Artibise for his patience and guidance throughout the duration of this project and for his direction during my enrollment at the School.

Finally, I wish to thank the wonderful office staff at the School for answering "just one more question," again and again and again.
Along with this sticky question of physical and social form is the erroneous belief that our community's physical form is the result of free choice, the market's wisdom, and the statistical sum of our collective will. In reality, our patterns of growth are as much a result of public policy and subsidies, outdated regulations, environmental forces, technology, and simple inertia as they are a result of the invisible hand of Adam Smith.

CHAPTER ONE

Introduction

1.1 Problem Statement

Proponents of low density living argue that the post-war explosive dispersal of urban activities in North America is a product of market-driven forces (Levinson and Kumar 1994; Gordon, Richardson, Jun 1991; Porter 1991). These researchers contend that the key influences on recent patterns of urbanization have been the inherent North American desire for low density living, reinforced by powerful technological and economic forces tending toward widespread urban dispersal. It is argued that the automobile, the availability of cheap land, rising real incomes, inexpensive construction methods and the single-family subdivision, all operating in the context of a free market, have accommodated explicit consumer choice for low density living. Hence, it is market forces that drive metropolitan development and indicate land use and transportation preferences. Public policies and public institutions are viewed as playing supporting rather than principal roles in influencing urban development patterns.

There is a tendency in the above model to overlook the policy initiatives
and the institutional settings by which patterns of development are established. Urban development, however, does not occur in the absence of a sociopolitical or institutional context (Bourne 1992). Explicit public policies, as well as indirect ones, create the necessary conditions for patterns of development to occur. And, while the public sector plays a significant reinforcing role in shaping landscapes by responding in a wide variety of policy arenas to perceived market demand and prevailing public aspirations, the aspects of culture and ideology that affect market choices initially, "are themselves partly the result of long-term public policies" (Pucher 1988:500). As such, public policy decisions not only guide development choices but also play a key role in first creating and then directing those choices (Wilson 1995; Dittmar 1995; Newman, Kenworthy 1992; Bourne 1992).

This thesis argues that while patterns of urbanization in North America since WW II have, in part, been shaped by technological innovations and a variety of social and economic forces, it is government policy at every level which facilitates, supports and subsidizes the dispersion of urban growth. At the local level, the public sector administers an intricate system of land use regulations which implicitly encourage low density development (Kelbaugh 1992) and provides essential capital and public infrastructure that is necessary to support new development. At the senior level, government policies favouring homeownership, single-family homes (Pucher 1988) and the automobile (Hanson 1992; Lee 1989), have produced "a more dispersed
settlement pattern than would have otherwise evolved" (Hanson 1992:60). These public policies, operating for over four decades in North America, have made low density living an appealing alternative for consumers. At the same time, those same policies have contributed to narrowing the range of alternatives available to most consumers. The result has been a tendency for public policies to reinforce consumer choice for low density living after first presenting low density living as the most rational option to consumers. Thus, theories of urban spatial processes which assume that market forces dominate, fail to consider the narrow range of alternatives available to consumers and the nature of the process by which those alternatives are developed.

The above paradigm encourages the continuation of existing development trends and makes it even more difficult to provide consumers with viable and socially responsible alternatives (Bourne 1992; Pucher 1988). As society confronts the significant social, economic and environmental costs associated with dispersed land uses, there is a growing consensus that public sector policies which continue to subsidize unsustainable patterns of development are no longer affordable.

1.2 Thesis Objectives

The purpose of this thesis is to illustrate the extent to which government policies at all levels have worked together to facilitate, support and subsidize the dispersion of urban growth in North America during the post-war period. It
is not the intent of this thesis to examine any one specific government policy, but rather to look at the aggregate impact of government policies in the areas of transportation, housing, and land-use, which influence urban form. Also, it is not the intent of this analysis to imply that Canadian cities evolved under the same set of circumstances, and to the same end, as American cities; the differences between the two nation's cities have been clearly documented (Golberg, Mercer 1986). The aim of this study is to illustrate, through an analysis of the experience of the past fifty years in North America, that public policies at all levels have played a key role in shaping (and limiting) consumer choice in both countries, albeit in varying degrees. Specifically, the objectives of this thesis are:

1) to identify the key government policies in the areas of transportation, housing, and land-use which have facilitated, supported and subsidized the dispersion of urban growth in North America during the post-war period; and

2) to provide an analysis of how the above policies have worked together over many decades in North America to make low density living an appealing alternative for consumers and the private sector.
1.3 Rationale for study

The rationale for undertaking this study is twofold. First, this thesis challenges the prevalent view that market forces dictate urban spatial form. A broad overview of past (and current) public policies in various areas, placing them in context with one another, will provide an insightful look at the extent of the aggregate impact of public policies on urban development patterns.

Second, changing demographics, limited resources and severe environmental stress are commanding a change to prevailing land use patterns. Society can no longer afford to support public policies that promote unsustainable patterns of development and that are no longer relevant to recent demographic trends. A better understanding of the nature of past public policies, and an assessment of their long-term impacts on urban form, should provide current policy makers with improved basis for future policy decisions. This thesis will augment the existing literature regarding the significant role of public policy initiatives on the evolution of urban form and contribute to the progressive discussion on the environmental, economic and social benefits of alternative land use patterns.

1.4 Approach and Organization

This study is divided into six chapters. Following this introduction, Chapter Two examines the economics of low density development from the perspectives of the developer, the consumer and society as a whole. It is
demonstrated that while the economics favour sprawl from both the developer’s and the consumer’s perspective, sprawled development imposes a variety of negative externalities (uncompensated costs) on society.

Chapter Three identifies and discusses the key public policies over the last fifty years which have favoured the automobile. These include direct government expenditures for the construction, maintenance and operation of highways, as well as gasoline and automobile tax policies that maintain the cost of automobile use and ownership in North America relatively low. Also identified and discussed are the significant social and environmental costs that are implicit in auto use such as water and air pollution, excess noise, destruction of farmland and loss of life and property damage due to vehicle accidents.

Chapter Four discusses the role of federal post-war housing policies on the growth of the suburban lifestyle and economy. Federal housing policies which focussed primarily on ownership and the single-family home, provided the necessary conditions for prevailing patterns of development to occur. As regulators of the banking industry, lenders of public money and direct insurers of mortgages, federal governments became an important part of the financial structure of the North American housing industry. Additionally, special incentives and financial aids to the residential construction industry and the provision of subsidized sewer and water infrastructure to municipalities, facilitated large-scale development on the urban fringe.
Development controls and their impact on local land use are discussed in Chapter Five. While it is recognized that land use regulations, for the most part, provide sound guidelines for development, many have the unintended consequence of encouraging and promoting low density land use. These include the practice of single-use zoning, excessive development standards, rigid environmental policies and municipal practices and policies relating to parking. Additionally, conventional methods of financing infrastructure contribute to scattered development patterns by pushing development out to areas where infrastructure costs are lowest.

Chapter Six concludes that public policies operating over many decades in North America have made low density living an appealing alternative for consumers and providers of housing and supporting infrastructure. It is suggested that a critical re-evaluation of public policies and practices is imperative by both senior and local governments if we are to move towards more sustainable patterns of development. Adopting a system of performance measures as part of every land use policy is proposed as a method of determining the effectiveness of a proposed policy in achieving its stated goals over time.
2.1 Introduction

Emerging demographic patterns in Canada and the United States suggest that there is an increasing demand for smaller housing unit sizes in a wider variety of housing types. While traditional nuclear families were the dominant market segment in the early post-war years, today singles, single-parents, non-family couples and seniors represent significant niche markets. Ironically, while household size in North America has decreased by an average of 25% since 1951, the average floor area of new Canadian and American homes has more than tripled and now exceeds 2,000 sq. ft (UDI 1990) (Figure 1).
FIGURE 1

Average Household Size vs. Average House Size
(North America, 1951 - 1991)

In many communities across Canada and the United States the suburban housing industry has been building increasingly larger homes for smaller households. This has contributed to declining urban densities and sprawl. Despite prevailing demographic trends, however, developers continue to build large single-family homes in the suburbs while largely ignoring the needs of a significant segment of the market.

2.2 The Building Industry's Perspective

As Tom Sargent notes in "Infill in the Marketplace: Alternatives to Sprawl", "the entire building industry is institutionalized to support sprawl forms of development" (Sargent 1994:3). While developers, financiers and others professionally involved in urban real estate markets are beginning to realize that alternative forms of development can be profitable, there is still a reluctance from the private sector to venture into untested markets. Sargent explains that suburban developers are typically favoured over infill developers by finance companies and national sources of funding because of the fewer risks involved in this type of development. Unlike urban infill developers who must commit considerably more money to a project for a substantially longer period of time, suburban developers are able to respond to changes in the marketplace by phasing their projects (Figure 2). For example, in a suburban setting, a developer will typically build several model homes and use them to market the entire project. Additional homes are built as the models are sold off.

Furthermore, suburban developers generally contend with less
neighbourhood resistance since new development is similar in character to existing development (ie. low density, single-family homes) and a quicker municipal approval process (Sandborn 1995). Suburban developers also will likely not have to deal with any site contamination and various additional requirements that stem from the urban setting (ie. structured parking, code requirements, demolition requirements).

FIGURE 2
Density and Capital Requirements
(Single-Family Home vs. Mid-Rise Apartment)

Developers assume that the market will choose the larger house because it offers consumers the maximum investment for their allowable monthly mortgage (see section 2.3). In addition, most new suburban single-family home construction is largely geared toward the 'trade-up' market. In order to attract this market, developers believe that they must provide prospective buyers with a greater square footage than that of their previous (or traded-up) home. Thus, "the economics from a developer's perspective remain overwhelmingly in favour of sprawl, and may explain why the supply-driven housing production system ignores new markets" (Sargent 1994:4).

2.3 The Consumer's Perspective

Economics also favour sprawl from the consumer's perspective. While it is recognized that there will always be households which choose rental accommodation, homeownership is generally perceived by society as providing greater stability and better security of tenure than renting. For most people, buying a home is an investment. And, since homeownership is generally perceived by society in the popular press to be a 'good' investment, people tend to buy more housing than they need (Dowall 1986).

Table 1 illustrates that (for the reasons mentioned in section 2.2) the cost per square foot of house is considerably less in suburban locations. Thus, a consumer with a household income of $60,000 is able to purchase 500 sq. ft. more house in a suburban location than is possible in an urban location for
the same monthly mortgage (Table 2). While house size is a key consideration, it is acknowledged that many other quality of life issues are involved in the purchase of a home.

Even when transportation (driving) costs are considered, the suburban location is still perceived to be more economically favourable. This is because the costs closely related to the operation and trip-making of an automobile (fuel, oil, maintenance and parking) account for only between 20 percent to 40 percent of all commuting costs (Litman 1991). Incentives such as free parking at the workplace makes driving an attractive alternative for most commuters (Wachs 1981). And, since most people own an automobile, they tend to consider the cost of driving a 'sunk cost' and therefore not relevent, when making a choice about where to live. Nor do consumers have to pay directly for the true cost of roads and highways that are provided by the public sector, or for the environmental impacts of their driving (ie. polluting the air is free) (GVRD 1993; GVRD 1992; City of Vancouver 1990).
### TABLE 1*

**Development Cost Comparison**  
Infill vs. Sprawl

<table>
<thead>
<tr>
<th>Development Costs</th>
<th>Infill</th>
<th>Sprawl</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Per FAR** s.f.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td>$15 - 20+</td>
<td>$8 - $12</td>
</tr>
<tr>
<td>Site Preparation</td>
<td>$5 - 10+</td>
<td>$5 - $10+</td>
</tr>
<tr>
<td>Hard Costs</td>
<td>$60 - 65</td>
<td>$45 - 55</td>
</tr>
<tr>
<td>Parking</td>
<td>$15 - 18</td>
<td>$0</td>
</tr>
<tr>
<td>Soft Costs</td>
<td>$32 - 37</td>
<td>$20 - 26</td>
</tr>
<tr>
<td>Contingency (5%)</td>
<td>$6 - 7</td>
<td>$4 - 5</td>
</tr>
<tr>
<td><strong>SUBTOTAL</strong></td>
<td><strong>$133-157</strong></td>
<td><strong>$82 - 108</strong></td>
</tr>
<tr>
<td>Profit (15%)</td>
<td>$20 - 23</td>
<td>$12 - 16</td>
</tr>
<tr>
<td>Marketing</td>
<td>$10 - 11</td>
<td>$6 - 8</td>
</tr>
<tr>
<td><strong>TOTAL COST</strong></td>
<td><strong>$163 - 191/s.f.</strong></td>
<td><strong>$100 - 132/s.f.</strong></td>
</tr>
</tbody>
</table>

* While costs for Table 1 are for the Bay Area, CA, USA, the relationships are similar for most urban areas.  
**Floor Area Ratio (FAR), square foot (s.f.)


### TABLE 2*

**Consumer Purchasing Power**  
Urban vs. Suburban Location

<table>
<thead>
<tr>
<th>Annual Income: $60,000 ($20,000 down)</th>
<th>Urban Location</th>
<th>Suburban Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Mortgage</td>
<td>$1,200</td>
<td>$1,200</td>
</tr>
<tr>
<td>Dwelling Cost</td>
<td>$179,000 - $210,000</td>
<td>$160,000 - $211,000</td>
</tr>
<tr>
<td>Dwelling Size</td>
<td>1,100 s.f.</td>
<td>1,600 s.f.</td>
</tr>
</tbody>
</table>

* While costs for Table 2 are for the Bay Area, CA, USA, the relationships are similar for most urban areas.  
2.4 Society’s Perspective

Compared with more compact development, sprawled development imposes greater negative externalities on society - that is - uncompensated costs (CMHC 1995; Kelbaugh 1992; Hanson 1991; Litman 1991; Van der Ryn, Calthorpe 1986; RERC 1974). One of the most influential studies on this subject is the Cost of Sprawl, (1974) by the Real Estate Research Corporation. Stated in the most general form, the main finding of this comprehensive study is "for a fixed number of households, sprawl is the most expensive form of residential development in terms of economic costs - particularly for that portion of total costs which is likely to be borne by local governments" (RERC 1974:17). Higher densities, on the other hand, make more efficient use of infrastructure, public services and institutions.

Another study quoted by Todd Litman in "Transportation Efficiency: An Economic Analysis" reveals that municipal servicing costs are less expensive for higher density communities than lower density communities. Table 3 summarizes the various per household municipal costs associated with a range of residential densities (based on a prototypical community of 1,000 units housing 3,260 residents and 1,200 students). The cost of providing municipal services at 4.5 units to the acre is 37 percent less than at one unit per five acres. The extra costs are due to "the extra road, sewage and utility costs not borne by the consumer, resulting from automobile induced sprawl" (Litman 1991:22).

In "Urban Sprawl: Land Use and Economic Costs" Kevin Kosowski refers to a study by the Centre for Urban Studies at Rutgers University in New Jersey.
Kosowski notes:

The study pegged capital costs attributable to sprawl development patterns in New Jersey at $1.3 billion over 20 years for roads, water, sewer and school facilities. Additional operating and maintenance costs of $400 million annually were also linked to sprawl development. Capitalized at current borrowing rates, these annual operating and maintenance costs translate into an additional $7 - $8 billion price tag for sprawl over 20 years.

(Kosowski 1994:5)

TABLE 3

Per Household Municipal Costs Associated with Different Residential Densities

<table>
<thead>
<tr>
<th>Units/Acre</th>
<th>Rural Sprawl</th>
<th>Rural Cluster</th>
<th>Medium Density</th>
<th>High Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>$3,233</td>
<td>$3,199</td>
<td>$2,323</td>
<td>$2,289</td>
</tr>
<tr>
<td>Roads</td>
<td>$110</td>
<td>$55</td>
<td>$38</td>
<td>$26</td>
</tr>
<tr>
<td>Utilities</td>
<td>$709</td>
<td>$355</td>
<td>$260</td>
<td>$240</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>$4,052</strong></td>
<td><strong>$3,069</strong></td>
<td><strong>$2,621</strong></td>
<td><strong>$2,555</strong></td>
</tr>
</tbody>
</table>


The relationship between density and the cost of hard services (water-supply, sanitary sewers and storm drainage) has been explored to a large extent in the literature, with studies dating back to the 1950s (Slack 1993; Clawson 1971). In general, denser developments are considered to be more cost effective for both municipalities and the private sector, while sprawl patterns of development pose a significant burden on society. However, while studies show that the cost of hard
services decreases with increased density, there is very little empirical evidence to support this relationship for soft services (recreation, policing, social services and education) (Slack 1993).

2.5 Summary

While the economics favour sprawl from both the developer's and the consumer's perspective, sprawled development imposes a variety of negative externalities (uncompensated costs) on society. Yet, society continues to support practices and policies that promote unsustainable patterns of development.

The dispersion of urban growth in North America, however, is not simply "the result of the operation of an unfettered market acting to enhance economies in commuting, to encourage overall economic efficiency and to accommodate explicit consumer choice" (Bourne 1992:510). Explicit public policies, as well as indirect ones, operating over many decades have made low density living an appealing alternative for both consumers and the providers of housing and supporting infrastructure. And, while recent demographic changes suggest that there is an increasing demand for a wider variety of choices in housing types than what is currently offered by traditional suburban residential design, public policies continue to support and facilitate sprawl patterns of development. The following Chapters describe how the public sectors in both Canada and the United States have played a key role in reinforcing consumer choice for low density living after first presenting low density living as the most rational option.
CHAPTER THREE

Public Policies Favouring the Automobile

3.1 Introduction

The rise of the wide-spread use of the automobile in North America has been facilitated and buttressed throughout North America by public policies. The Greater Vancouver Regional District (1993), Pollution Probe (1991), Hanson (1992), Litman (1991), Topp (1991) and other individuals and organizations have illustrated empirically that automobile use in North America has been systematically subsidized by the public sector in a way that promotes low density land use. Low density land use, in turn, encourages automobile dependent lifestyles. This vicious dynamic process helps to discourage alternate travel modes such as transit and bicycling, further reinforcing a dependence on the automobile.

Public policies which have favoured the automobile include direct government expenditures for the construction, maintenance and operation of highways, as well as gasoline and automobile tax policies that maintain the cost of automobile use and ownership in North America relatively low. And, while
automobile users pay only part of the costs, public policy has not required drivers to bear the significant social and environmental costs that implicitly arise from the use of the automobile. Those costs are in the form of water and air pollution, excess noise, destruction of farmland and loss of life and property damage due to vehicle accidents. The following Chapter discusses the key public policies which have favoured the automobile during the last fifty years.

3.2 Automobile Dependency and Land Use

During the early part of this century, the growth of the city had been influenced mainly by public transportation. Real estate development concentrated around transit lines along which people moved and lived. The fabric of urban areas tended to be comprised of mixed uses in close proximity to one another. Once such patterns of developments were established, they sustained the system of transportation which helped produce them (Leo, 1977).

The introduction of motor transport into the urban environment freed development from the locational constraints of transit lines and radically altered the form of the city by greatly increasing the radius of travel. No longer was development restricted to transit lines but spread easily into the spaces between them. The automobile helped to diffuse the compactness of the city, bringing about a new pattern of urban development. Under the influence of the automobile, densities decreased as employment and housing dispersed across the landscape. The automobile opened up vast new areas for urbanization and made it possible for
people to live much further from their place of work. With the aid of the private automobile and government funded roads and highways, more people were able to substitute longer trips to less expensive housing located in the outskirts of the cities in which they worked for shorter trips and more costly central-city locations.

In the United States, 86 percent of the population growth since 1950 has occurred in suburban areas of large metropolitan regions where the primary mode of travel has been the automobile (Ross 1991). In 1991, the private automobile was used for more than 85 percent of work trips, an increase of 15 percent since 1960 (Ross 1991). Additionally, there has been a substantial increase in the number of American households owning three or more automobiles (Ross 1991). Although Canadian cities have traditionally been more compact and have benefited from higher investments in public transit than American cities (Goldberg, Mercer, 1986), they too have experienced rapid growth in suburban areas since WW II, and are becoming more dependent on the use of the automobile (Fowler 1992; Bourne 1989). In 1990, more than 83% of Canadian households owned a vehicle, and one in four households owned more than one automobile (TAC 1991) (Figure 3). A recent study by Bourne reveals that "the new [Canadian] urban fabric is more decentralized and less densely developed than formerly" (Des Rosiers 1992:14). The number of automobile commuters in the Greater Vancouver Regional District is currently growing at twice the rate of the increase in population (GVRD 1992:2). Today, more than 12 million automobiles travel Canada’s roads - one for nearly every two Canadians (SOE Fact Sheet, No. 93-1, 1993).
FIGURE 3

Owned Vehicles by Province
Canada, 1990
(in thousands)

3.3 Highway/Roadway Policies

Newman and Kenworthy have demonstrated in *Cities and Automobile Dependence* (1989) that there is a strong relationship between road supply and dispersed land use. Their work reveals that North American cities, designed largely with an automobile oriented transportation system, are significantly less dense and have up to four times as much roadway than compact European cities in which automobile use is restricted. While noting that the evidence may be inconclusive, Pucher (1988) suggests that the extensive road system in the United States is due to the intensive support of roadway construction by the American public sector. Similarly, Moore et al (1983) discuss the "massive commitment to motor vehicle transportation" by the Canadian public sector (47).

In *Building Cities That Work* (1992), Fowler illustrates the extent of local public expenditures on highways and roads in North America by compiling data on two kinds of municipal spending: capital expenses and operating expenses. Capital expenses involve expenditures for building new roads and buying land for transportation corridors. Operating expenses are used to maintain the existing system, such as repairing of potholes and clearing streets of dirt and snow. Fowler's message is loud and clear: "North American's were spending billions of dollars to build and maintain city streets..." (33).

While local governments provided most new roads and highways needed to accommodate automobile travel, it was senior government policies which offered the incentives for widespread investment in such infrastructure. In Canada, for
example, provincial grants were Metropolitan Toronto's second most important source of revenue, after the local real property and business tax (Leo, 1977). The provincial contribution to Metro's share of total local revenue increased from 17 percent in 1954 to 21 percent in 1958 (Leo 1982). Subsequent increases continued throughout the 1960's and beyond (Leo 1982). A significant part of this provincial contribution in the 1950's, was a grant to cover half of the cost of building and maintaining roads (Cass, Desjardins, 1956). During the same time, the Province of British Columbia "bore the entire responsibility for highway construction in eight of the ten Lower Mainland area municipalities" (Leo, 1982:20).

The U.S. federal road building program, most notably the Interstate System, provided perhaps the greatest incentive for local governments to commit to the automobile. Federal funds for highway building have often been made available on 90 - 10 matching formulas, whereby the local government need only commit 10 cents to receive 90 cents more for new construction (Meyer, Gomez-Ibanez 1981). The federal government also helped the states to finance primary and secondary urban and rural roads at a 50 - 50 ratio (Leavitt, 1970). Figure 4 shows the infrastructure capital outlays for state and local governments between 1965 to 1989. On a per capita basis, average annual expenditures for highways since 1965 have continuously and significantly surpassed those for transit, sewers and water combined (Netzer 1992).
FIGURE 4

Infrastructure Capital Outlays,
State and Local Governments, U.S.
(1965 - 1989)

Source: Dick Netzer, "Do We Really Need a National Infrastructure Policy?" *Journal of the American Planning Association* 58:2, Spring (1992):141
Senior U.S. government policies created incentives for excessive new construction by often limiting the application of highway-user taxes to highway capital expenditures rather than for maintenance of existing infrastructure and other non-capital transportation related purposes (Netzer 1992; Forkenbrock, 1984; Meyer, Gomez-Ibanez 1981). Subsequently, the nature of U.S. transportation investments were fuelled primarily by methods of financing rather than by consumer transportation needs. For example, the earmarking of federal highway aid for certain types of transportation projects, such as the Interstate Highway System, created further incentive to build these facilities rather than provide an opportunity for local government to invest in a transportation system more appropriate to its needs (Leavitt 1970). In *Superhighway Super Hoax*, Leavitt describes the United States’ massive commitment to the automobile:

In 1957 the highway program received $1 billion in federal funds. From then on through 1965, the amount fluctuated at around $2 billion yearly. In 1966, it jumped to $3 billion, and by 1969, the program received $5 billion...the 1968 Highway Act was able to provide for a total of $21 billion for roads through 1974...In contrast, the 1969 federal mass transit budget was only $175 million for the entire country.

(Leavitt 1970:64)

As illustrated above, the government plays an important role in providing the necessary highway/roadway infrastructure for automobile use. Direct government expenditures for the construction, maintenance and operation of highways and
local roads over the last fifty years has facilitated the growth of the automobile as the dominant mode of transportation. The unprecedented expansion of roads and highways during the post-war period has privileged low density development by making inexpensive land on the urban fringe more accessible.

3.4 Indirect Subsidies

Originally, it was thought that the economic and social benefits offered by automobiles outweighed the costs. As such, the traditional public policy approach relating to the provision of automobile-oriented infrastructure was a 'supply-side' approach. Governments invested heavily in the creation of new highways and roads in an effort to meet increasing demand. Roads and associated infrastructure were perceived by users as 'free goods', and as such, transportation habits and choices bore little relationship to the true cost of a given trip (Best 1992).

Similarly, the public policies that have guided transportation investments of the past decades have concentrated on facilitating personal mobility, paying little attention to the external impacts of driving: the significant environmental and social costs that are implicit in automobile use. These costs are in the form of water and air pollution, excess noise, congestion, destruction of farmland and loss of life and property damage due to vehicle accidents.

While most researchers acknowledge the existence of external costs associated with automobile use, these costs are difficult to measure and even more difficult to convert into monetary terms. The methodologies used to estimate
external costs rely largely on subjective judgements, making them controversial (Hanson, 1992). Notwithstanding, the significant environmental and social impacts of driving have been well documented (Downs, 1993; Hanson 1992; Litman 1991; Leavitt 1970).

3.4.1 Environmental Impacts

Automobiles and their associated infrastructure negatively affect the environment in many ways. The air and water pollution impacts of driving are potentially enormous. Automobiles are a major source of carbon monoxide, nitrogen oxides and volatile organic compounds; three air pollutants that cause damage to human health, deterioration to physical structures, and agricultural losses (Smith 1993; McEachern 1991; Litman 1991). The detrimental effects of automobile emissions are most pronounced in urban centres where automobile use is concentrated. Ironically, it is often people who walk, cycle and use public transportation who have to contend with these immediate effects of automobile use. In addition to contributing to air pollution, emissions are a significant source of water pollution and acid rain (Hanson 1992; Litman 1991). Road salt associated with snow and ice removal, and leaked motor oil wash off road surfaces and further contribute to the pollution of our water resources, with consequent loss in aquatic life and recreation opportunities.

The infrastructure required by automobiles is conducive to the alteration of ecosystems. Highway construction, paved roadways and parking facilities create
hydrologic changes such as altered drainage patterns, flooding and reduced
percolation (Litman 1991). This may cause soil erosion and landslides to occur
more frequently around roads and bridges. Roads may also interfere with the
movement (migration patterns) of wildlife and reproduction sites of birds by
dividing otherwise undisturbed land. Finally, expanding motor vehicle
infrastructure continues to consume productive farmland at an alarming rate.

In addition to the above concerns related to the auto’s use, equally
significant are the environmental stresses related to the automobile’s manufacture
and disposal. A variety of nonrenewable resources are used in the production of
motor vehicles, including steel, iron, aluminum and copper. The extraction,
smelting and refining of these materials may result in land disturbances, leaching
and the release of various pollutants. Furthermore, an enormous amount of energy
goes into the manufacture of an automobile. It has been estimated that the
amount of energy required to produce an automobile is equivalent to the energy
contained in between 2,000 to 3,100 L of gasoline (or the amount of fuel
consumed by 16,000 to 26,000 km of driving) (Smith 1993).

The disposal of automobiles and their components also gives rise to a variety
of environmental concerns. For example, contaminants in waste motor oil (such as
various metals) may enter the environment through improper disposal methods; old
air conditioners may release chlorofluorocarbons (CFSs) which contribute to
stratospheric ozone depletion and global warming; and the stock piling of old tires
presents the danger of contaminate emitting fires.
Significantly, government policy has not required automobile users to pay the true cost of energy required by the automobile (Litman 1991). Externalities associated with the extraction, processing and distribution of oil and petroleum products contributes to the destruction of natural habitat, air and water pollution, hazardous material generation and the depletion of non-renewable energy resources (Litman 1991). Kelbaugh (1992) states that "probably the least obvious government subsidy is that part of our defense budget used to maintain secure sources of oil" (16).

3.4.2 Social Impacts

While the environmental impacts of driving are potentially enormous, the social impacts are equally substantive. Automobile dependency and associated land use patterns discourage, or greatly lower the quality of alternative travel options in most communities. The reduction in mobility options for non-drivers tends to have the greatest impact on the poor, the elderly, the handicapped and others who are not able to drive. This segment of society, estimated at 25 percent or more of the population (Litman 1991), ultimately bears the major costs of other peoples' mobility. Past efforts to improve transportation equity have focussed mainly on public policies which have promoted universal automobile ownership (Litman 1991). Critics of such policies note that universal automobile ownership is unattainable without large-scale environmental degradation and the destruction of urban areas (Roberts, James 1990). Similarly, direct subsidies to public transit as
an alternative travel mode are superseded by even greater subsidies to automobile use, such as free parking and relatively low fuel costs. Consequently, non-drivers indirectly pay for many of the subsidies necessary to minimize the cost of driving. Furthermore, the nature of automobile technology is such that it imposes grave negative externalities on both people and property. These externalities take the form of accident-related injuries, deaths and property damage.

Significantly, the wide-spread use of the automobile in communities across North America and the resultant land use patterns has prompted an increase in congestion on urban and suburban roads (Downs 1993; Cervero 1988). As discussed earlier in this chapter, the traditional public policy approach toward alleviating congestion has been to invest heavily in the creation of new highways and roads. It is evident, however, that transportation policies that rely on public resources to build our way out of the congestion problem (ie. building capacity for peak demand) represent an inefficient use of public resources (Downs 1993). Creating road capacity for peak travel times (ie. 'rush hour') means spending a relatively large amount of money for the direct benefit of relatively few people. As traffic congestion increases, so do the impacts on society. These impacts are in the form of lost leisure time, increased day-to-day stress and declining worker productivity (Cervero 1991).

In "Urban Travel Behaviour as the Outcome of Public Policy" (1988), Pucher states that "the failure of public policy to internalize those [external] costs through surcharges on automobile use means that roadway construction and auto use have
been implicitly subsidized by the amount of this underpricing..." (515). Had public policy taken into consideration the external costs of transportation investments that are born by society as a whole, it is questionable whether the majority of automobile-related investments over the past decades could have been justified. A full accounting of the direct subsidies the automobile receives, including the environmental and social costs it imposes on society, would provide a clearer understanding of the extent of the public sector's massive commitment to the automobile. The above approach has been recommended by the B.C. Round Table (1994), the Greater Vancouver Regional District (1994), the Canadian Urban Institute (1994) and numerous other bodies that have studied this issue.

3.5 Gasoline and Automobile Tax Policies

Around the world, taxation of both gasoline and automobile ownership have been used as a means of influencing automobile use and drivers' behaviour (Pucher 1988). Canadian and U.S. government policies have encouraged automobile ownership by maintaining the cost of energy in Canada and the U.S. relatively low compared to other counties of the world (Newman, Kenworthy 1989; Pucher 1988; Renner 1988) (Table 4).
TABLE 4

Cost of Gasoline
Least Expensive in North America

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>0.18</td>
<td>0.25</td>
<td>23</td>
<td>45</td>
</tr>
<tr>
<td>Canada</td>
<td>0.19</td>
<td>0.37</td>
<td>41</td>
<td>56</td>
</tr>
<tr>
<td>West Germany</td>
<td>0.46</td>
<td>0.61</td>
<td>138</td>
<td></td>
</tr>
<tr>
<td>Switzerland</td>
<td>0.51</td>
<td>0.68</td>
<td>170</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>0.56</td>
<td>0.81</td>
<td>170</td>
<td>317</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.41</td>
<td>0.66</td>
<td>108</td>
<td>133</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.50</td>
<td>0.80</td>
<td>156</td>
<td>245</td>
</tr>
<tr>
<td>Belgium</td>
<td>0.50</td>
<td>0.69</td>
<td>163</td>
<td>178</td>
</tr>
<tr>
<td>Italy</td>
<td>0.59</td>
<td>0.99</td>
<td>245</td>
<td>285</td>
</tr>
<tr>
<td>Austria</td>
<td>0.48</td>
<td>0.75</td>
<td>117</td>
<td>150</td>
</tr>
<tr>
<td>Great Britain</td>
<td>0.32</td>
<td>0.63</td>
<td>100</td>
<td>178</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.50</td>
<td>0.99</td>
<td>178</td>
<td>355</td>
</tr>
</tbody>
</table>

*in 1988 U.S. dollars

It is evident from Figure 5 that such price differences are the result of deliberate taxation policies, and not from variances in the real cost of petroleum. Price has a direct effect on gasoline consumption, which in turn, influences development patterns. A persuasive study of international fuel prices by Shackson (1979) has shown that "in countries having expensive fuel, annual consumption per registered vehicle was much lower than consumption in countries having cheaper fuel" (Wachs 1981:244). Furthermore, Newman and Kenworthy (1989) have demonstrated that countries with lower rates of fuel consumption, in general, tend to have higher densities than countries where consumption rates are greater. In effect, North American gasoline tax policies have skewed consumer choice towards higher commute distances and lower priced suburban housing.
Inexpensive fuel has been a major contributor to the decreasing proportion of income per capita allocated to transportation in North America between the end of WW II and the oil crisis of 1973-1974 (Wachs 1981). Between 1955 and 1970, the average real price of gasoline in the U.S. fell by 13 percent, and the price per thousand gallons of gasoline had decreased from 6.6 percent of U.S. median income to 3.6 percent (Altshuler 1979:124). Similarly, for the Province of Ontario in Canada between 1960 and 1975 transport expenditures as a fraction of
household income decreased by roughly .5% annually, and between 1953 and 1975 the percentage of family income necessary to purchase 700 gallons of gasoline fell from 6.7% to 3.7% (Moore et al 1983). Declining transportation costs have resulted in more dispersed urban development and prompted the adoption of a low density residential life-style in North America.

Despite a history of a low relative rate of taxation on gasoline in Canada and the United States, public policies to increase tax rates have yet to be initiated as a means to curtail automobile use. This is due to the widespread view that the demand for gasoline is insensitive to higher prices. Higher prices, thus, might not encourage a reduction in the demand for automobile travel but rather only impose a monetary hardship on low-income households. As a result, even small price increases in the gasoline tax have proven to be politically unfeasible.

The above view, however, has been challenged by a number of researchers and economists (Meyer, Gomez-Ibanez 1981; Wachs 1981; Altshuler 1979). While evidence suggests that gasoline consumption is affected only moderately by price changes in the short run (say, one to five years), over the longer term consumers have more opportunities to avoid higher fuel prices by taking the new prices into account when making their decisions about where to live. This suggests that any financial problems caused by high energy prices will diminish over time (Meyer, Gomez-Ibanez 1981). Furthermore, comparisons among countries which have long had higher gasoline prices as a matter of public policy, and the United States which has historically had lower gasoline prices, indicate
that over the long run higher fuel prices do in fact influence transportation choices (Newman, Kenworthy 1992; Pucher 1988).

Similarly, diverse world-wide tax rates for new automobiles have influenced automobile ownership in varying degrees (Pucher 1988). In the U.S., where automobile ownership has systematically been the highest in the world, the average sales tax for a new medium sized automobile is only five percent (Pucher 1988). This contrasts with 33 percent in France, 47 percent in the Netherlands and up to 186 percent in Denmark (Pucher 1988), where levels of automobile ownership have traditionally been lower. Thus, government policies have made automobile ownership in the above countries more expensive than in North America by deliberately imposing higher taxes on new automobiles. Along with higher rates of gasoline taxation, this has been a contributing factor towards curtailing automobile use and ownership in these countries.

3.6 Summary

Long-term public investments in infrastructure for the automobile have produced a strong dependency relation. While one might argue that user charges have financed the cost of highways and that automobile users are not subsidized in the aggregate (Meyer, Gomez-Ibanez 1981), recent studies have revealed that user charges do not cover all government expenditures on roads (Hanson 1992; Litman 1991; Pucher 1988). This underpricing of automobile use through public subsidies results in transportation costs to be perceived by drivers as lower than they would
be without subsidies. This, in turn, entices automobile users to drive more (farther and/or longer) than they would if they had to pay the full costs of automobile use, resulting in the over-use of roadways and other automobile-related infrastructure. At the same time, over-use of automobile-related infrastructure precipitates improvements in the system, such as building more highways. More highways generate additional traffic to fill them up (Lee 1989). The ultimate conclusion is "the over-provision of [automobile-related] transportation infrastructure relative to what it would be if user fees existed to capture more or all of the direct cost..." (Hanson 1992;62).

Another effect of underpriced driving has been the decline of alternative modes of transportation. As land use patterns and social habits adjust to reflect the subsidies associated with automobile use, non-automotive forms of transport become less viable and consequently receive less capital investment. Proponents of low density living will translate this to mean that the market has decided on the automobile as the best answer to urban transportation. In doing so, they fail to consider both the limited range of choice available to consumers and the process by which highways came to dominate transportation in the first place. For most people, the automobile has become the only feasible alternative.
4.1 Introduction

During the period between 1945 and 1965, when post-war patterns of development were most decisively shaped, the federal governments of both Canada and the United States established a variety of policies which fuelled the growth of the suburban lifestyle and economy. Federal programs for housing and municipal assistance in the development of sewage and water infrastructure prompted the rise of planning as a fixture of local government (Hanchett, 1994). Newly created planning departments not only provided municipalities with the means to service land for growth, but also satisfied the federal government's requirement for planning documents demonstrating local need as a prerequisite for federal funding. Access to such funding was often conditional upon the acceptance of design regulations such as minimum street widths and lot sizes in new developments - regulations which often encouraged low density development (Southworth, Ben-Joseph 1995; Hanchett, 1994; Moore et al 1983). The provision of inexpensive and readily available credit facilitated the growth of the residential construction industry which enabled builders to provide suburban single-
family homes on a large scale (Checkoway 1980). Finally, the provision of loan guarantees allowed financial institutions to participate in the residential housing market like never before.

The nature of post-war federal policies were such that they attracted certain types of players to the decision making process. The collective decisions of financial institutions, builders and others professionally concerned with urban real estate markets, influenced, facilitated and supported by public policies, provided the necessary conditions for prevailing patterns of development to occur.

4.2 Focus on New Ownership Housing

Out of the depression of the 1930's, and the severe housing shortages of the late 1940's, was born the system of government aid for housing. It was believed that by diverting capital flow into the housing market and the urban infrastructure supporting it, governments could "prevent a return to severe depression conditions" (Fowler 1992). Thus, both in the Canada and the United States, federal housing programmes functioned as an economic lever to stimulate the national economy by channelling capital into homebuilding. A primary focus of these housing programs was on encouraging and facilitating homeownership, often to the exclusion of other types of housing programs.

Federal governments became an important part of the financial structure of the North American housing industry. As regulators of the banking industry, lenders of public money and direct insurers of mortgages, federal governments
encouraged more people to go into debt to purchase their own homes by lowering carrying charges through long-term indebtedness. By the 1960’s, "residential debt represented the largest single component of the financial structure of both Canada and the United States (Fowler 1992). Governments made mortgage money readily available by guaranteeing loans and thus minimizing the risk for large-scale investors in the housing industry.

In Canada, the federal government undertook two initiatives in the mid-1940’s that significantly influenced the Canadian housing industry over the next ten years: the National Housing Act (NHA) was passed in 1944 and the Central (now "Canada") Mortgage and Housing Corporation (CMHC) was established in 1946 to administer the NHA (CMHC 1989). CMHC continued the principle of joint lending that was established by the Dominion Housing Act of 1935 whereby approved lenders and CMHC together made loans of up to 80 percent of lending value available for new ownership housing. These loans were shared 75 percent/25 percent by the lenders and CHMC, respectively, with an interest rate subsidy built into CHMC’s share.

(CMHC 1989:11)

In 1954, amendments to the NHA introduced the CHMC ‘loan-insurance’ system. This gave CMHC the mandate to insure the mortgage loans made by approved lenders thereby guaranteeing repayment should owners default. For the first time, it was now possible for chartered banks to invest their funds in housing, providing an even greater source of funds for mortgage loans.

Similarly, the U.S. Housing Act of 1934 also provided a twin system of insurance for the home financing market. First, the Federal Savings and Loan
Insurance Corporation (FSLIC) insured saver-depositors against bank failure (Mitchell 1985). This took the risk out of depositing money into commercial banks and attracted funds to mortgage lending institutions. Second, the Federal Housing Administration (FHA) insured lending institutions against the default of borrowers by guaranteeing long-term mortgage rates (Mitchell 1985). This encouraged the participation of commercial banks in mortgage financing and helped homebuyers borrow on less stringent mortgage terms: lower down payment, lower contract terms and lower interest rates.

4.3 Focus on New Construction of Single-Family Homes

North American government policies to encourage homeownership have prompted low density suburban development by emphasizing new construction of single-family homes. Special incentives and financial aids to the residential construction industry facilitated a growth in the number of large builders who took advantage of mass production and prefabrication methods to realize rapid construction and higher housing production. Thus, large-scale, single-family developments became a dominant characteristic of the suburban landscape.

Canada's housing industry in the mid-1940s was characterized as "an industry in its infancy" (CHMC 1989:18), composed mainly of a large number of small-scale homebuilders. At the time, concern was expressed over the efficiency of the homebuilding industry to meet the challenges of providing affordable single-family homes to meet both the housing backlog created by the depression and the
requirements of post-war growth. Senior government was critical of the homebuilding industry for not attaining "the technological maturity of other branches of the construction industry that planned and built modern skyscrapers and erected buildings" (CHMC 1989:19). It was believed that the high cost of housing was the result of high construction costs due to an outdated 'hammer-and-nails' industry. Government policies, therefore, aimed to encourage a mass-production housing industry with an emphasis on efficient production methods.

With the help of government policies, the post-war decade saw a rapid rise in the number and expansion in the size of homebuilding firms in Canada (CMHC 1989). While smaller builders still dominated the homebuilding industry, large (100 or more houses/year) and medium (25 to 99 houses/year) became important producers of NHA-financed homes by the mid-1950s (Table 5).

TABLE 5
Single-Family Homebuilders by Size of NHA Operations, Canada, 1955

<table>
<thead>
<tr>
<th>Number of Units Completed Under the NHA in 1955</th>
<th>Number of Builders (Percent)</th>
<th>Number of Units Completed (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-6 units</td>
<td>42</td>
<td>6</td>
</tr>
<tr>
<td>7-24 units</td>
<td>36</td>
<td>22</td>
</tr>
<tr>
<td>25-99 units</td>
<td>17</td>
<td>33</td>
</tr>
<tr>
<td>100 or more units</td>
<td>5</td>
<td>39</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Large firms accounted for 39 percent of the total production of NHA-financed homes in 1955, with the average large builder building 171 homes. During the decade of the 1960's, the average large builder built between 170 to 225 NHA financed homes per year. During the first four years of the 1970s, the market share of large NHA builders exceeded 40 percent.

Production of single-family homes in Canada expanded rapidly in the early post-war years. More than three out of four homes built in the late 1940s were single-family homes (CMHC 1989:6). Figure 6 shows that, with only the exception of the late 1960s, single-family homes dominated housing starts between 1946 and 1986. In 1990, despite the fact that nearly half of all households consisted of one or two people, single-family houses accounted for 53.4% of all dwellings on which construction began (Government of Canada 1991).
Figures 7 and 8 show the percentage of NHA and conventional loans issued between 1952 and 1970 for both single- and multi-family dwellings, respectively. NHA loans overwhelmingly supported the construction of single-family homes up to about 1963, even while conventional loans tended to favour multiple-family dwellings during the same time.
FIGURE 7

Single-Family Dwellings
Conventional and NHA Loans
(1952-1970)


FIGURE 8

Multiple Family Dwellings
Conventional and NHA Loans
(1952 - 1970)

As in Canada, the availability of inexpensive financing and the home mortgage insurance directly influenced the growth of the construction industry in the United States during the post-war period and created the most ambitious suburbanization plan in the history of the Country (Southworth, Ben-Joseph 1995). These incentives prompted a significant increase in both the number of large builders and the number of single-family houses built by them. In "Large Builders, Federal Housing Programs, and Postwar Suburbanization", Checkoway (1980) documents the many advantages afforded to large builders by senior government:

He [the large builder] applied government financial aids and housing research to his work. Government research laboratories cooperated with large builders to make advances in materials and equipment, in land development and site planning, and in faster and less costly methods.

(Checkoway 1980:25)

Checkoway further illustrates how FHA policy diverted mortgage money overwhelmingly into new single-family suburban housing:

In 1949 Congress increased the amount that could be insured under the FHA home mortgage programme to $6 billion. In 1950 Congress increased the FHA mortgage insurance authorization by $2.25 billion, amended FHA sales housing programmes to provide incentives for production of three and four bedroom houses, liberalized FHA terms on loans for manufactured houses and large-scale residential construction, established a new FHA programme for homes in suburban and outlying areas, and reduced the low-rent public housing authorization 75,000 units for the year. In 1951 Congress increased the FHA mortgage insurance authorization by $1.5 billion, authorized loans to facilitate the production of prefabricated houses and major components for new houses, ... and further reduced the public
housing authorization to 50,000 units for the year. In 1953 Congress increased the FHA mortgage insurance authorization by $1.5 billion, liberalized FHA terms on loans for new owner-occupied homes and in suburban areas, and further reduced the public housing authorization to 35,000 units for the year and subsequent years. The Housing act of 1954 increased all FHA mortgage insurance authorizations by another $1.5 billion, liberalized the amounts and terms of FHA sales housing mortgages, and established another FHA mortgage insurance programme for single-family dwellings in suburban and outlying areas."

(Checkoway 1980:31-32)

Between 1950 and 1970, two-thirds of all new housing units in the U.S. were located primarily outside the central cities, the overwhelming majority of which were single-family homes (Tobin, 1976). In 1965, over 68 percent of all new housing units in metropolitan areas were single-family homes, of which 61 percent were located outside the central city (Tobin 1976). In the early 1970s, single-family dwelling units made up about 55 percent of total units being built. By 1987, the percentage reached 70.6 (Fowler 1992:55).

Single-family homeownership in the United States has been further assisted by significant homeowner tax benefits that began in the early 1940s, when personal income tax rates were raised to help pay for WWII (Aaron 1972). Homewoners were now able to deduct interest payments on a mortgage and local property taxes from personal income for federal tax purposes. Not only did these incentives encourage taxpayers to buy rather than rent housing, but they also stimulated additional housing consumption by enabling homeowners to buy larger lots and houses than would otherwise be desired or practical.
4.4 Municipal Infrastructure Assistance And Servicing Standards

Since the mass production of houses required large tracts of land, senior government policies made inexpensive land on the urban fringe available for large-scale development through subsidized sewer and water infrastructure (Figure 9). This has been cited as a major influence on urban growth both in Canada and the United States (Bourne 1992; Pucher 1988; Council on Environmental Quality 1976). In "The Impacts on Land Use of CMHC Municipal Infrastructure Assistance, 1961 to 1980" (1984), Bircham and Bon describe the magnitude of Canadian federal infrastructure assistance to municipalities:

Between 1961 and 1980, three municipal infrastructure assistance programs loaned over two billion dollars and granted an additional $750 million for the construction of municipal sewage and water projects to alleviate pollution and promote residential construction

(Bircham, Bon 1984:1)

In summary, CMHC municipal infrastructure assistance was substantial. CMHC loans subsidized about one-third of municipal capital expenditures on sewerage, and water and grants paid directly for almost one-tenth of such expenditures.

(Bircham, Bon 1984:39)

The study further reports that CMHC favoured the allocation of funds to projects servicing new development in new or predominantly new areas rather than servicing for infill or redevelopment. And, in the absence of local land-use planning or controls, "CMHC infrastructure programs tended to finance scattered urban settlement, and excessive urban development on rural resources" (Bircham and Bon 1984:92).
Similar to CMHC's practices in Canada, the FHA established 'minimum requirements and desirable standards' for new development in the United States as a measure to secure its investments against risk. Access to federal funding was conditional upon the acceptance of design regulations which often encourage low density development - standards that were also the foundation for local government subdivision regulations. In "Street Standards and the Shaping of Suburbia" (1995), Southworth and Ben-Joseph illustrate how FHA minimum
standards and design regulations set the standard for post-war development. The FHA preferred curvilinear street patterns, cul-de-sacs and courts over the traditional grid system, and prescribed development standards that were excessively above those found in existing neighbourhoods.

4.5 Summary

By diverting capital flow into the housing market and the urban infrastructure supporting it, federal policies attracted certain types of players to the decision making process. The collective decisions of financial institutions, builders and others professionally concerned with urban real estate markets, influenced, facilitated and supported by public policies, provided the necessary conditions for prevailing patterns of development to occur.

The NHA in Canada and the FHA in the United States fostered a secure economic foundation for the construction of thousands of new single-family homes on inexpensive, underdeveloped land at the periphery of metropolitan areas. And, in light of growing inner-city disinvestment (also as a matter of policy), low density living presented itself as the most logical choice to consumers.
5.1 Introduction

Land use regulations in North America reflect evolving community attitudes regarding the use of land and the rights of individual property owners versus the protection of the community as a whole. It is important to note that the key difference between Canada and the United States is that Americans have property rights entrenched in the Constitution, while substantial debate over this in Canada has meant that constitutionally property rights are not legally guaranteed as a right, according to most lawyers. In both Canada and the United States land use, zoning and building codes are designed and administered with little co-ordination and often contradictory outcomes. While land use regulations for the most part provide sound guidelines for development, many implicitly encourage low density development.

Local government policies relating to zoning typically limit locations for higher density housing and require relatively large minimum lot sizes for single-family housing (Kelbaugh 1992). Such policies, coupled with stringent
development standards and parking requirements discourage the efficient use of land. Scattered development patterns are further encouraged by conventional methods of financing infrastructure that do not reflect the real cost of providing services to new development.

While local government policies have the greatest impact upon the direction and rate of urban growth (Clawson 1971), senior governments also exercise a number of important responsibilities that affect urban development patterns. In addition to the general federal post-war policies relating to housing and transportation described in earlier Chapters, federal governments impose environmental restrictions on development through a variety of statutes and ordinances. Since such policies are administered by various disparate agencies and may apply directly to specific tracts of land or may be localized to specific areas, they often do not represent the best interests of the region as a whole.

5.2 Zoning and Development Standards

Zoning is a powerful planning tool available to local governments to regulate development through the prescription of land uses, densities and building heights. The traditional approach in planning over the last fifty years, has been to separate incompatible land uses in order to avoid haphazard land development patterns and the negative externalities they create. Such a concept was derived from the common practice in many industrialized cities of locating housing next to dirty and noisy factories and other noxious uses. This continues even though many urban
centres across North America have replaced heavy industry with cleaner, more high technology manufacturing. As neotraditionalist planners agree, most local zoning still separates housing from jobs (Calthorpe 1993). In fact, the notion of single-use zoning "has been carried to such an extreme that even different types and densities of housing are kept strictly within their own discrete districts" (Kelbaugh 1992:50).

The separation of districts and land uses resulting from the zoning process encourages patterns of development that are wasteful and expensive to maintain. Huge costs and land requirements are imposed on municipalities as the duplication of infrastructure is required to service both the home and the workplace (Calthorpe 1993; Kelbaugh 1992). And, since single uses such as shopping centres, office parks and residential clusters tend to be inaccessible from each other except by automobile, a significant amount of municipal land is reserved to facilitate the automobile - land that could be used to generate much needed tax dollars, preserved as open space, or used for environmentally friendly activities such as urban farming.

Similarly, new development must often follow strict development standards or subdivision ordinances that relate to minimum street width and right of way, minimum lot sizes and minimum house sizes. They were adopted from national standards developed during the post-war period to improve the safety, efficiency, health and privacy of communities. Today, critics would argue that development standards have "evolved into a rigid, over-engineered approach" that result in
developments "that often are unresponsive to their users and their geographic contexts (Southworth and Ben-Joseph 1995). Extraordinary wide side-yard setbacks and streets, or large tracts of open space consumes land at an enormous rate and represents an inefficient use of land resources.

Table 5 compares the efficiencies of different housing forms. An acre of land used for single-family dwellings houses 6 households at 7,260 sq. ft. of land per household. A townhouse development on the same acre of land would house three times as many households than the single-family development. An apartment development would provide an even more efficient use of the same land parcel, housing fifty-five households.

Increased densities, in turn, would facilitate a more efficient use of the existing open space since side set-back requirements and other land-extensive standards relating to land development are reduced (of course, airspace is also better utilized). Similarly, typical coverage, frontage and set-back requirements of subdivisions tend to "reduce the buildable portion of a lot to a fraction of its actual size, making development of small parcels unlikely" (Campoli 1994:14) and leaving substandard lots underdeveloped simply because they cannot satisfy the zoning requirement. Such standards may push development out to the urban fringe where it is often easier for a developer to meet zoning requirements and consumers are willing to subsidize the longer commute with increased housing affordability. Although more and more communities are beginning to realize the benefits offered by innovative neo-traditional and transit-oriented development
guidelines, out-dated zoning and unrealistic development standards continue to support low density land uses in many urban centres across North America.

TABLE 6
The Efficiencies of Different Housing Forms

<table>
<thead>
<tr>
<th>Housing Form</th>
<th>Single-Family Dwelling</th>
<th>Town Housing</th>
<th>Apartments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units per acre</td>
<td>6</td>
<td>18</td>
<td>55</td>
</tr>
<tr>
<td>Typical unit size in gross s.f.</td>
<td>2,400</td>
<td>1,600</td>
<td>1,200</td>
</tr>
<tr>
<td>Built out size per acre</td>
<td>14,400 s.f.</td>
<td>28,800 s.f.</td>
<td>66,000 s.f.</td>
</tr>
<tr>
<td>Floor space ratio</td>
<td>.33</td>
<td>.66</td>
<td>1.52</td>
</tr>
<tr>
<td>Average persons per dwelling</td>
<td>3.3</td>
<td>2.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Building area per person</td>
<td>727 s.f.</td>
<td>720 s.f.</td>
<td>667 s.f.</td>
</tr>
<tr>
<td>Land used per person</td>
<td>2,200 s.f.</td>
<td>1,089 s.f.</td>
<td>440 s.f.</td>
</tr>
<tr>
<td>Land used per household</td>
<td>7,260 s.f.</td>
<td>2,420 s.f.</td>
<td>792 s.f.</td>
</tr>
</tbody>
</table>


5.3 Parking

Urban form and travel choices can be clearly traced to public policy decisions (Willson 1995; Hanson 1992; Pucher 1988; Wachs 1981). The
practices and policies of local government relating to parking over the last five decades have encouraged and facilitated automobile use and sprawl.

The widespread provision of free or subsidized parking space contributes to the excessive use of the automobile. Municipal governments often permit curbside parking at a low price, or even for free, and subsidize publically owned lots. A recent publication on land-use patterns by the Urban Development Institute notes that "by assuming that people will drive to and from all activities, the need for large streets and parking lots is a self-fulfilling prophecy" (UDI 1994:86).

Additionally, municipal governments typically use zoning bylaws to mandate developers to provide more parking spaces than they would otherwise choose or is necessary (Shoup 1995; Frankena 1982). Since excessive parking requirements burden new development most in areas where density and land costs are highest, developers will seek inexpensive land in out-lying areas for larger projects where surface parking could be provided at a much lower cost than that of a more central location. Thus, such policies not only succeed in pushing development out to low-density areas, but they also contribute to low density land use by reserving a large amount of land resource to the storage and operation of the automobile. One case study from Oakland, California showed how, as a result of the excessive local parking requirements, the number of dwelling units per acre in new developments fell by 30 percent (Smith 1964). This was due to developers building fewer but larger homes, since adding a dwelling unit required another parking space, but enlarging a dwelling unit did not.
While low density residential developments devote significant land area to the automobile, it is suburban office and retail developments which "bring the amount of space devoted to the cars to comic proportions" (Fowler 1992:10). North American zoning codes typically require between 3.0 and 5.0 parking spaces per 1,000 gross square feet of office building area (Willson 1995). In a typical suburban office project, parking lots average 350 square feet per space (including aisles and driveways) (Cervero 1991). There is an average of 1,400 square feet of parking provided for every 1,000 square feet of building space: this translates to 40 percent more land used for surface parking than the footprint of a one story office building (Cervero 1991). A typical suburban shopping development will consist of a colossal forty acres of parking surrounding a mere 130,000 square feet, or two acres, of retail development (Fowler 1992).

Willson (1995) has demonstrated in "Suburban Parking Requirements" that suburban office parking is oversupplied by a factor of almost two (Figure 10). He further argues that

when parking supply exceeds demand, it tends to be treated like a costless good. Market prices cannot be sustained; and because parking is free to the motorist, solo driving is encouraged. The resulting increase in automobile use consumes more energy and increases traffic congestion and air pollution. At the same time, high minimum parking requirements lower density and land values, helping to establish an urban form and transportation system oriented to automobile use.

(Willson 1995:34)
The above noted consequences of excessive minimum parking policies are visually expressed by Figure 11. Clearly, the effects of municipal parking requirements on urban form are self-reinforcing and lead to automobile-oriented urban design.

FIGURE 10
Parking Requirements, Supply and Utilization

5.4 Development Cost Charges

While senior government grants to local governments have been decreasing over the years and tax increases are difficult to impose on local residents, local governments have had to find alternative ways to finance the expansion of infrastructure as part of accommodating new growth. As such, development cost charges (DCCs) are increasingly being used to pay for 'hard services' such as roads, water supply, sewage treatment and park acquisition. In some jurisdictions, DCCs have also been expanded to cover costs for 'soft services' such as
replacement housing, hospitals, libraries and daycare facilities.

Depending on the nature and application of DCCs, they can contribute significantly to low density development patterns in several ways. For example, an uneven distribution of DCCs across a metropolitan area encourages new development to occur in the municipality with the lowest rates (UDI 1994; Frank, Rhodes 1987). Taking into consideration all costs, a developer is willing to pay a certain price for land. If the price offered to landowners is not enough, landowners will hold land off the market until land prices increase. Depending on market conditions, the developer may then consider building in a neighbouring community where DCCs are lower. This is likely to occur in a falling real estate market. In a rising market, consumers are willing to pay all flow-through costs at a premium.

Development Cost Charges that are levied on a per unit or lot basis, as is common in many local jurisdictions, also discourage compact development patterns. Under such a system, developers will typically seek to maximize floor areas since there is no incentive to build smaller units, or "opt to build housing for the higher end of the single-family market (large homes on large lots) where fees can be absorbed more easily as a proportion of sales price" (HUD 1991:2-11). Thus, a developer pays lower fees if a low density development is constructed (Table 6). On the other hand, DCCs charged on a square footage basis (based on size of unit) would allow developers greater flexibility in how the allowable floor area is distributed. For example, a greater diversity of housing forms will likely result in a typical subdivision, rather than fewer but larger homes.
TABLE 7
Development Cost Charges (DCCs)
Per Unit vs. Per Square Footage Charge

<table>
<thead>
<tr>
<th>Implications For 160 acre development</th>
<th>4 Units Per Acre</th>
<th>12 Units Per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit yield</td>
<td>640</td>
<td>1,920 (300% higher)</td>
</tr>
<tr>
<td>DCCs at $10,000 per unit</td>
<td>$6.4 million</td>
<td>$19.2 million (300% higher)</td>
</tr>
<tr>
<td>DCCs at $4.80 per square foot of building</td>
<td>$7.68 million</td>
<td>$9.2 million (120% higher)</td>
</tr>
</tbody>
</table>


Furthermore, since DCCs do not promote efficiency in the use of infrastructure, there is no incentive for developers to build close to existing services. The current structure of DCCs is such that "it does not vary locally according to the real cost of providing infrastructure at different locations for different types of development" (Wakeford 1990:201). It has been suggested that DCCs should instead reflect the marginal costs of providing services to new development (ie. varying rates with the distance from the centre of service provision) (Wakeford 1990:200).

Finally, it has been suggested that DCCs compel municipalities to overinvest in the provision of services by imposing more elaborate and more land extensive development standards than would otherwise have been possible or desirable under traditional financing mechanisms (UDI 1994). The engineering and planning
standards that new development must follow differ from the servicing of older communities in a number of ways. For example, older neighbourhoods typically have narrower street, intersections with a tighter turning radius, less extensive landscaping requirements and other physical features that contribute to more compact communities.

While new development should 'pay its fair share', it appears that the current piecemeal approach of administering DCCs is contributing to scattered development and the inefficient use of infrastructure. Future infrastructure investments must be based on financing methods that can direct positive land use patterns.

5.5 Environmental Regulations

Protection of the environment has become a growing concern in North America and worldwide. Governments at all levels impose environmental restrictions on development through various statutes and ordinances. Sometimes, however, efforts to protect the environment have the unintended consequence of encouraging and promoting low-density land use (HUD 1991; Nelson, 1988).

Some form of exclusive agricultural zoning in order to protect farm land from conversion into other uses has been adopted in several provinces and states (Lyon 1983). Large-lot (ie. up to 40 acres) for rural residential purposes coupled with an array of government programs designed to encourage farming activity have been criticized for promoting wasteful land-use patterns. Such public policies have the
unanticipated consequences of encouraging hobby farming or part-time farming in fringe areas while displacing more intense development to the edges of agricultural zones (Thompson 1981).

An Environmental Impact Review (EIR) has become an important and required step in the development process. However, the most common change required of developers as a result of EIRs is to reduce densities (Carr, Duensing 1983). This requirement is based on the assumption that lower densities would cause fewer unfavourable environmental impacts since less development will occur. While this may be the case for a particular development site, over the long term the entire region may suffer negative environmental impacts "as development that was not allowed on the site may simply occur on other, perhaps less appropriate and less regulated sites in the same market area" (Carr, Duensing 1983:17). In turn, the effect of spreading out development at very low densities is automobile dependency and the resultant air pollution and waste of land for roads and parking lots (Sandborn 1995). Figure 12 illustrates the environmental benefits of higher density development. In Site Planning and Community Design for Great Neighbourhoods, (1993) Jarvis notes that

when clustering is permitted, homes are designed on small homesites and on that portion of the land parcel that can be developed with the least disturbance. At the same time, developers realize significant savings because shorter roads and utility extensions are required to serve clustered homes. By scaling the roads appropriately, developers control or eliminate through traffic, creating a safe and comfortable environment for residential development.

(Jarvis 1993:15)
Furthermore, a recent study by Canada Mortgage and Housing Corporation (1995) concluded that compact development featuring higher residential densities, a mix of housing types and land uses is more cost effective over the longe-term for the public sector as well as for the private sector. The National Association of Homebuilders estimated that compact development can reduce the cost of development and public facilities by as much as 60-70 percent (NAH 1986).

Similarly, statutes aimed at regulating wetlands and preserving endangered species generally do not take land use issues into account (HUD 1991). In the United States wetlands regulations have been criticized for not differentiating between "critical" and "ecologically low-value wetlands" (HUD 1991). Such a distinction might permit the development of a low-value wetlands for the purpose of maintaining compact regional development patterns. Additionally, when environmental protection agencies restrict development thought to be damaging to the survival of a species, "surroundable buildable land becomes more scarce and, therefore more expensive" pushing development out to less expensive sites (HUD 1991:23). Thus, environmental agencies that are single-issue oriented, or simply reactive to specific development proposals, tend to hinder the development of sound land use policies that would otherwise benefit the environmental well being of the region as a whole.
FIGURE 12

The Environmental Benefits of Higher Density Development

5.6 Contaminated Sites Legislation

In light of the significant economic restructuring that has been occurring over the last four decades, urban centres across North America are facing a major challenge in dealing with no longer utilized industrial sites. Starting in the 1950s, when industries began to move out of central cities, abandoned properties and empty lots have since replaced once important industrial activity. Today, it is estimated that thousands of acres of inactive and derelict industrial lands lie in what have become prime downtown real estate locations. As such, it has been recognized that the successful reuse of these lands provides both an important opportunity to revitalize cities and help to reduce the demand for outward development (Black 1994; FPT 1994). Along with old buildings and rail facilities, however, industries relocating to the suburbs, all too often, leave behind 'contaminated land'. In an effort to promote and facilitate the clean up of these sites, special federal legislation was passed in the United States in 1980 (Black 1994), and more recently in Canada. In addition, several states and provinces have passed their own laws, further complicating an already complex process. The Vancouver-based Urban Development Institute (UDI) has played a major role in assessing British Columbia's recent legislation on Contaminated Sites: Bill 26. As outlined in a letter to the Ministry of Environment (Oct. 20, 1994), UDI's concerns regarding the Province's contaminated sites legislation are similar to those voiced by American critics of such legislation.

Present policies governing the remediation of sites, impedes reuse in two
ways. First, the standards for cleanup are so vigorous that in most cases the costs of cleaning up known contamination exceed the value of the site for the most productive reuse possible (Black 1994). Second, landowners, businesses, lenders and even municipalities can be held liable for the entire cost of cleaning up sites regardless of who did the contaminating (Salvesen 1993). This imposes significant risks for everyone involved in the re-development process and discourages new investment in such sites. Further, while some municipalities would like to have developers clean up contaminated sites, other municipalities prohibit the movement of soil through their jurisdiction. Instead, new industrial development is forced to locate in low- or non-risk suburban or rural areas while centrally located 'brown field' ('contaminated') sites remain vacant or underutilized. New industrial development in the urban fringe, in turn, requires new investments in infrastructure.

Experience in the United States over the last 15 years has shown that existing policies governing contaminated sites have not worked (Black 1994). While various federal agencies are spending billions of tax dollars to encourage the revitalization of depressed inner city areas, federal policies are discouraging those who otherwise might invest in such areas. The redevelopment of former central city industrial lands offers significant opportunities for cities to create compact new communities or to complete existing communities. Clearly a re-assessment of the legislation in this area is necessary to achieve desirable results.
5.7 Summary

Development standards were originally crafted to improve the safety, efficiency, health and privacy of communities. Yet, "what began as visionary design with valid motivations has evolved into a rigid, over-engineered approach" (Southworth, Ben-Joseph 1995:78). Ironically, while development today is subject to more zoning, design, parking and environmental regulations than ever before, an analysis of recent patterns of development would suggest that our communities are facing increasing challenges relating to their social, environmental and economic well-being.

Additionally, current senior government policies regarding the use of former industrial sites have stiffened attempts at redevelopment of such sites, encouraging developers to build on pristine land at the urban fringe. Low density land use is further exasperated by the uncoordinated approach of administering DCCs at the local level. It appears that new approaches to land-use management are required if we are to make sustainable patterns of development a reality.
CHAPTER SIX

Conclusion

6.1 Policy Implications and Directions for Future Research

This paper argues that current land use patterns in North America are not strictly the result of the operation of a free market or explicit consumer choice, but direct outcomes of past public policies and investment decisions. At the senior level, long-term government policies favouring homeownership, single-family homes and the automobile have facilitated continued sprawl and a reliance on automobiles. At the same time, local governments provide the essential capital and public infrastructure that is necessary to support new development. The continuation of prevailing land use patterns is further entrenched by an intricate system of land use regulations that "have become deeply embedded in engineering and design practice, as well as in the legal and even financial structures that support development" (Southworth, Ben-Joseph 1995:78). Such public policies operating over many decades in North America have made low density living an appealing alternative for consumers and the providers of housing and supporting infrastructure.
For nearly five decades public policies have been steering us down the highway of sprawl. For nearly five decades society has responded accordingly. Developers built sprawl; consumers bought sprawl; financial institutions financed sprawl; planners planned for sprawl; engineers designed sprawl; and politicians campaigned on sprawl. Our society has been institutionalized to support sprawl forms of development to the point where alternative urban forms are viewed as 'unmarketable', 'unprofitable', 'technically impossible', 'politically unfeasible', and simply 'not a good household investment'.

The current land use system is based on a paradigm that no longer works. There are new paradigms to explore such as urban villages, complete communities, transit-oriented design and other proclaimed sustainable forms of urban development. However, society must first change the thinking behind the current land use system which influence prevailing patterns of urban development.

Even though more and more developers are beginning to realize that alternative forms of development can be profitable, many are still reluctant to venture into untested markets. Regulatory barriers, onerous municipal requirements and strict lending practices based on outdated perceptions, all perpetuate current patterns of development. Incentives to consumers in a variety of forms reinforce consumer choice for low density living after first presenting low density living as the most rational option. Public policy can play an important role in helping to break the above pattern by removing barriers and creating strong incentives for the private sector to provide a better range of alternatives for
consumers. This would result in more sustainable land use decisions over time. Concurrently, policy makers must remove the subsidies offered to low density development through various policies in the areas of transportation, housing and land use, which influence urban form. This could be done by employing pricing mechanisms that capture the true costs of such development.

While more communities throughout North America are beginning to apply pricing policies to the use of the automobile, on the whole, this has been a slow initiative to date. There has been even less progress in such approaches to land use planning. It would be useful for communities to develop an agenda for pricing mechanisms which could be applied to new development based on criteria that meets regional land use goals. For example, municipal permits fees (ie. rezoning, development, building, demolition), parking standards, and development cost charges could be determined based on the relative location, density, and form of a proposed housing development, and its proximity to public transportation, services and jobs. This would encourage infill over low-density development. Under this approach, a developer would have to consider the social and environmental costs as part of the total cost of their development. Since developers would then pass on these cost to consumers, they would have to take the added costs into account when making their decisions about where to live. Concurrently, pricing mechanisms could be applied to existing development for public services to capture the subsidies inherent in low density living. It is recognized that while this is a politically challenging approach to land use planning, the potential benefits of this
approach suggest that further research on this matter needs to be undertaken.

Additionally, an interdisciplinary approach to land use planning is required. Urban designers, planners and engineers can explore co-ordinated approaches to develop new zoning, development and parking standards that better reflect the social, environmental and economic realities of today. There is an opportunity for all levels of government to work together to ensure a better co-ordination of policies, especially those relating to the environment, and transportation and infrastructure investments. Further, senior governments have a challenge to work with financial institutions in the creation of lending programs for unconventional forms of developments that meet sustainable land use criteria and regional land use objectives. A re-assessment of legislation relating to contaminated sites is critical by senior governments if urban redevelopment initiatives on former industrial sites are to become a reality. Finally, local governments have an obligation to work with all stakeholders involved in the land use system in the preparation of financing methods for infrastructure investments that will result in positive land use patterns. Overall, planners are well positioned to assist in bringing these groups together and in forming a research agenda to focus key policies.

Much could be gained from adopting a system of ‘performance measures’ as part of every public policy. Performance measures, based on both subjective and objective criteria, would aid policy makers in determining the effectiveness of a proposed policy in achieving its stated goals over time. For example, suppose the goal of a proposed policy may be to achieve community benefits such as improved
quality of life, reduced traffic congestion, lower taxes for infrastructure and improved environmental quality. In the absence of a system of performance measures, how can we determine the effectiveness of the proposed policy in achieving its stated goals over time? How will we know if we are at least heading in the right direction? While the positive effects of employing performance measures on a regular basis in the private sector have been well documented, they are conspicuously underutilized as a means of determining policy effectiveness in the realm of public policy. Clearly, more research in this area is required.

To achieve the desired paradigm shift in the land-use system serious consideration must be given to governance structures that "preserve substantial local authority - but within a framework that compels local governments to act responsibly to meet area-wide needs" (Downs, 1993:10). In such a framework, local governments would not only be responsible for preparing comprehensive plans for their own future development, but they would also have to meet certain criteria prescribed by a regional governing body. Such criteria should be developed with the input of all affected local jurisdictions and "would enforce a wider social responsibility" throughout a region (Downs 1993:10). The Greater Vancouver Regional District's "Livable Region Strategy" presents such an approach to strategic planning (GVRD 1993).

In conclusion, the actions (and inactions) of the public sector should not be underestimated. The extent of the impact in the aggregate of public policies on urban development patterns is significant. The continuing dispersion of growth in
most urban areas is creating severe environmental stress, unprecedented traffic congestion, and potentially unsurmountable fiscal pressures. Currently, there is a growing consensus that public sector policies which continue to subsidize unsustainable patterns of development are no longer affordable or socially acceptable. In light of the above, a critical re-evaluation of public policies and practices is imperative by both senior and local governments. A balanced approach to land use planning that results in positive land use directives should be a common goal of all stakeholders in the community.


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