Form Without Function:

Suburban Densification Trends in Dartmouth, Nova Scotia

Kirk Brewer | PLAN6000 Independent Project | Supervisor: Dr. Jill Grant | December 9, 2013

Introduction

In recent decades, the suburbs have been debated, mocked, scorned, and declared dead, yet they are still where most Canadians choose to live. Despite criticism, most new residential construction continues to occur on greenfield sites on the suburban fringe (Bunting, Filion, & Priston, 2002; Bunting, 2004). Developing large subdivisions on the urban periphery often spurs increased development activity in surrounding greenfield areas, leading to a loss of agricultural lands and open spaces (Wilson & Song, 2011). The 20th Century saw a monumental migration that led North Americans away from modest central city houses and apartments to progressively larger homes on private properties far removed from downtowns. The conventional post-war model of single-detached homes on large lots arranged along curvilinear streets and cul-de-sacs has reigned supreme in the suburban housing market and reached archetypal status in our collective imagination. Though this popular conception of the suburbs persists, it may not accurately represent emerging trends in settlement patterns or development practice.

Fishman (2005) suggests that we are in the midst of what he terms a "fifth migration," in which large numbers of people will abandon fringe areas and repopulate North America's urban cores. A quick survey of Canada's cities, particularly Toronto and Vancouver, shows that downtowns are indeed becoming centres of development again. While the rapid pace of condominium development in the nation's downtowns points to an increased desire for an urban lifestyle, this does not mean the suburbs will cease to grow. Indeed, they are as popular as ever. We may indeed be witnessing a "fifth migration," but it will likely not signal the demise of suburban growth. The same factors bringing people back downtown — energy costs, changing preferences, and shifting wealth, among others — may result in a restructuring of our ballooning suburbs rather than a rejection of them (Grant, 2013; Nelson, 2013).

Municipalities have increasingly come to acknowledge the problems associated with conventional low-density settlement patterns: sprawl, auto-dependency, and rising service and infrastructure costs. Planning professionals continue to search for ways to restructure the suburban landscape to make it more sustainable. One response is to retrofit the existing built form by repurposing "dead" malls and infilling parking lots near existing transit nodes with active residential and commercial spaces (Talen, 2011). Similarly, Krier (2009) argues that planning should embrace historical development patterns and attempt to duplicate traditional urban quarters where all amenities are easily accessible by walking. While innovative, these

approaches are limited by existing road networks, an established separation of zones, and low-density housing patterns. There may be an increased desire for an urban lifestyle as Fishman suggests, but infilling existing suburbs is a challenging proposition. It requires the co-operation of private residential and commercial stakeholders who may not be eager to see their properties imposed upon by municipal policies.

Current planning theory acknowledges that new greenfield development is inevitable. Increasing residential and commercial density is seen as a way to build more walkable, well-connected, vibrant, and sustainable suburban neighbourhoods (Churchman, 1999; Forsyth, 2003). Planners generally embrace density as a way to produce more sustainable, mixed-use developments, but often face opposition from stakeholders who fear negative consequences from more intense building forms (Garde, 2008). Neo-traditional New Urbanist communities in particular have achieved some success at adapting the suburban format while remaining desirable and marketable (Gordon & Vipond, 2005; Skaburskis, 2006). These types of development promote a mix of housing types, increased population and housing densities, gridded street patterns, and town centre style commercial development, all of which are seen as antithetical to low-density suburban sprawl. While New Urbanism has become a popular response to the suburban built form, it struggles to create the sense of vibrancy and community it promotes (Grant, 2006).

The Cornell development in the Toronto suburb of Markham, Ontario, is one of the most-studied New Urbanist projects in North America and is often hailed as the development model to replicate (Gordon & Vipond, 2005; Sands, 2009; Skaburskis, 2006). The community was planned in the 1990s according to New Urbanist principles promoted by Leon Krier and Andres Duany, and was supported by both municipal council and policy. However, Langlois (2010) points out that Markham's development is not solely the result of planning policy. Rather, much of its New Urbanist development occurred during a period of unprecedented population growth, a boom in housing construction, low mortgage rates, and a general dissatisfaction with long commutes and the sprawling development pattern that was occurring in the Greater Toronto Area. While Markham may present a compelling case study, its growth is the result of a convergence of many unique factors that in many ways make it an anomaly rather than a model that can be easily emulated. Indeed, Moore (2013) questions whether classifying New Urbanism as a one-size-fits-all "best practice" limits design innovation for municipalities facing different

circumstances. Reproducing an established building practice without respecting local context may result in increased density without the benefits that are meant to follow.

New Urbanist principles have been embraced in community design theory, and municipal policies across Canada increasingly promote mixed-use, walkable development patterns (Grant & Bohdanow, 2008; Jepsen & Edwards, 2010). However, studies suggest that planning theory and policies do not necessarily lead to particular development practice (Garde, 2008; Grant, 2009; Langlois, 2010). Planning is often dependent on larger market forces. Despite planning goals, changes in the built form alone may not lead people to alter their shopping and driving behaviours. The idea of quaint shops and cafes in a town centre is appealing to many, but consumer trends continue to favour power centre shopping destinations that are easily accessible by car (Grant & Perrott, 2011). There appears to be a growing demand for an urban lifestyle, but in many cases homebuyers still prefer privacy and personal property over density.

Canada's largest cities receive the bulk of research attention because they are rapidly evolving and offer a wealth of data. While trends in large cities may act as a barometer for emerging national trends, economic and demographic conditions in mid-sized cities often do not conform to the patterns established in literature. Research on suburban development in mid-sized cities is limited (Bunting, 2004; Cuthbert & Anderson, 2002; Millward, 2002), and generally focuses on historical trends without surveying current conditions. Economic dynamics in smaller municipalities often differ from those in fast-growing cities, and may not be as conducive to changes in policy and development practice (Bunting et al., 2007). It is necessary to study mid-sized Canadian cities to fully understand suburban development practices across a wide range of conditions.

This study focuses primarily on neighbourhoods developed since the 1990s within the Dartmouth suburb of Halifax Regional Municipality (HRM), Nova Scotia. Dartmouth was chosen as a study area because, as a former city in its own right, it has an established development history, a well-defined core, and primarily suburban growth over a long period. HRM covers a large geographic area and features a wide range of suburban development. Trends in the Dartmouth area are not meant to be representative of the entire region, but rather offer a compelling case study of emerging development trends and the challenges to increasing suburban density in a mid-sized city.

Methods

This project uses a mixed-methods approach to examine policy and development trends in Dartmouth, Nova Scotia over several decades. A policy document review of HRM's Regional Plan, Dartmouth's Land Use Bylaw, and Secondary Planning Strategies was conducted to evaluate the planning structure that governs suburban development.

Interview data informs the study findings. In the summer of 2011, a research assistant with Dalhousie University's *Trends in the Suburbs Project* conducted twenty-five semi-structured interviews with stakeholders involved in developing new areas throughout Halifax Regional Municipality. In total, six municipal councillors, four developers, and sixteen planners were interviewed on a range of policy and development-related topics. These interview responses offered valuable insight into current trends, opinions, and challenges that shape the way suburbs are developed in HRM. In particular, this study relies on questions directed toward respondent views on suburban density, the challenges in increasing density, and whether HRM policy encourages density in new suburbs.

Density can be defined using various measures, which sometimes makes accurate neighbourhood comparisons difficult. Research suggests that net and gross dwelling unit density per acre is a commonly employed calculation method that produces meaningful and comparable results (Campoli & MacLean, 2007; Forsyth, 2003). During the summer of 2013, parcel data from the Nova Scotia Civic Address Database and the HRM Geographic Information Systems and Services Group was analyzed using ArcMap software to calculate lot sizes and dwelling unit density in several Dartmouth neighbourhoods[1]. Study area boundaries conform to each neighbourhood's master plan. Where these plans were not available, boundaries align with major roads that generally relate to the era in which development occurred. In each study area, developed parcels were classified by residential, commercial, and institutional land uses. Residential lots were grouped based on single-detached, attached, and multi-unit housing types to determine the total number of dwelling units. To determine net density, the total number of units was divided into the area of all residential parcels. Gross density calculations are based on total developable land in the study area, including land designated as commercial, open space (excluding lakes and major waterways), and institutional land.

---

[1] For detailed neighbourhood boundaries and analyses, please visit http://theoryandpractice.planning.dal.ca/

Data retrieved from Statistics Canada for census years 1971-2011 were used to identify demographic trends in population densities and household size. However, relying solely on census data to calculate densities proves problematic in an area as large as HRM (Cuthbert & Anderson, 2002). Census boundaries at the dissemination area level are based on population numbers rather than area, and as such often contain large expanses of non-residential uses including water, industrial uses and undeveloped land. Using dissemination area data to calculate gross population density in fringe areas often leads to calculations that are misleadingly low. This study uses 2011 dissemination block data. Boundaries conform with street patterns and exclude undeveloped areas. Population density is calculated per acre to reflect the method used for housing density. Though not exact, these data more accurately reflect population density calculations at the neighbourhood level[2].

Historic Suburban Development in Halifax Regional Municipality

Halifax Regional Municipality is Nova Scotia's provincial capital. It covers 5,500 square kilometers and has a population of approximately 390,000 (Statistics Canada, 2012b). The municipality was created in 1996 when the former cities of Halifax and Dartmouth amalgamated with the Town of Bedford and Halifax County. The municipality's core is referred to as the Regional Centre, which contains major population centres on the Halifax Peninsula and the area of Dartmouth contained within the boundary of Highway 111 (Figure 1).

Before amalgamation, land use planning was decentralized. Housing development remained primarily focused on the Halifax Peninsula and Mainland until the early postwar years. Until then, development in Dartmouth remained concentrated in the downtown due to the transportation limitations caused by the Halifax Harbour, which was only traversable by ferry. The opening of the Angus L. MacDonald Bridge in 1955 allowed development to spread quickly in Dartmouth and Halifax County's eastern regions. The Albro Lake neighbourhood is one example of a postwar suburb that reflects a traditional, compact grid pattern. Development in the County was disconnected from the city planning structures for decades, which led to piecemeal growth throughout the region (Millward, 2002). During the period of 1970-1996, Dartmouth expanded eastward into rural areas at a higher rate than elsewhere in HRM (Cuthbert &

---

[2] See Appendix A for dissemination block codes used for this study.

Anderson, 2002). During the same period, residential and household densities plummeted throughout the Halifax Region, mirroring trends throughout the country (Bunting, 2004; Bunting, Filion, & Priston, 2002).

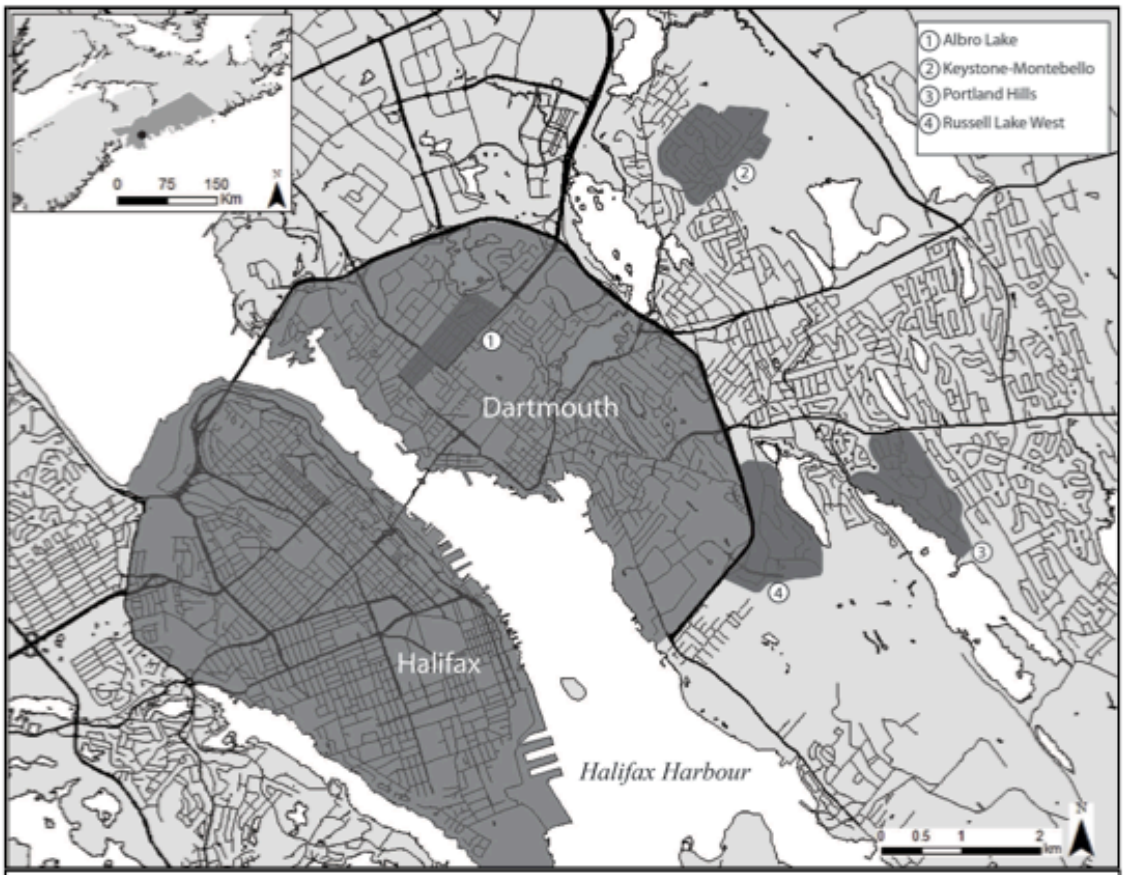

Figure 1: HRM Regional Centre and Dartmouth study area (HRM Geodatabase, 2012).

Nova Scotia's 1969 Provincial Planning Act, coupled with the 1975 Halifax-Dartmouth Regional Development Plan, attempted to curb sprawling growth patterns and establish a regional planning structure. The 1975 plan instituted a development boundary to limit the rapid suburbanization of the Dartmouth fringe. Despite the growth boundary, exaggerated population projections at the time led to soaring suburban housing construction outside the Dartmouth City limits (Millward, 2002) in areas such as Keystone-Montebello. Much of the land within the boundary was controlled by the Nova Scotia Department of Housing, which developed several Dartmouth-area neighbourhoods throughout the 1970s, 80s, and early 90s. The last neighbourhood developed by the Department of Housing was Lancaster Ridge, located near Albro Lake within what is now considered the Regional Centre. As development there came to a

close, the Department's remaining land was sold to the private market, which is now responsible for all suburban development in the municipality.

Many interview respondents acknowledged that allowing development to spread so far into outlying areas is putting a strain on current services and infrastructure in the suburban fringe. One councillor pointed to the ramifications of HRM's historically uncoordinated development patterns (Box 1).

Box 1: "From a suburban perspective, I think we started to address the issue a little too late. We developed our suburban area, even going out into our rural areas, before we really had a plan... We were helter-skeltered for, I would say, probably back even to the '70s... And so we're still dealing with the challenges of communities like that that were part of the former county that developed on their own." (Councillor C23)

This councillor acknowledges the lack of foresight in HRM's historical suburban planning. Communities that developed in the County have since been amalgamated. Many of these areas are seeking increased municipal services such as public transit that are expensive for the City to provide over such a large geographical area. The municipality is now struggling to find the most efficient ways to control the rising costs associated with its suburban growth.

A New Approach to Growth

The 2006 Regional Municipal Planning Strategy is HRM's current guiding policy document. It acknowledges the environmental and financial concerns associated with historical development patterns. A recent private-sector report for HRM calculated that if the municipality continues growing contiguously without change, infrastructure and servicing will cost half a billion dollars more than if the city adopts a compact development strategy that limits growth to already-serviced areas (Stantec, 2013). To address the issue of costly sprawl, HRM established growth targets to be achieved within the plan's 25-year lifespan. The targets aim to limit suburban development to 50% of total new growth, with 25% development directed to the urban core and the remaining 25% to rural development. The Municipality has established a service boundary that establishes which areas will receive municipal services such as public transit, water, and sewer. One respondent explained the Regional Plan's approach to containing growth and maximizing service efficiency (Box 2).

Box 2: "I think that number one is that it's a serviceable boundary. I mean, HRM made a very strategic decision back in 2006/07 to draw a line to do two things, which was to control growth and for all the infrastructure, cost, financial reasons, and then to try to fill in the area on the other side of the line. So before you were coming in and getting leap frog, haphazard, ribbon development, let's build up the core." (Planner P10)

This planner believes adopting a more urban development pattern within a growth boundary will capitalize on existing services and infrastructure while reducing costs and protecting the natural environment. To achieve these goals, the Regional Plan instituted two policy mechanisms. First, a new Downtown Plan was established in 2009 to make building regulations in the central business district simpler and more attractive to developers. The Downtown Plan established strict height limits and instituted a density bonusing program to gain public amenities in return for increased height. There has been renewed interest in downtown development since the plan was implemented, and several major residential and commercial projects have been completed. However, in recent years urban core development has accounted for a mere 16% of new construction while 56% of new development has continued to go to the suburban fringe (HRM, 2012d).

The second approach to curbing sprawling development is to create a hierarchy of twelve types of urban, suburban, and rural growth centres where new development will be directed. In Dartmouth alone, policy identifies seven suburban growth centres. Most suburban communities are classified as Urban Settlement areas that are expected to be more compact, complete communities (Box 3).

Box 3:
"The Urban Settlement Designation includes both the urban and suburban centres. These centres will be designed through Community Visioning and secondary plan review processes as mixed-used transit-oriented communities, to accommodate a mix of housing types, office, retail and institutional uses in addition to parks, trails, community gardens and safe public open spaces."

"The community centre and surrounding neighbourhoods will be serviced with an interconnected system of streets, pathways, sidewalks, and bicycle lanes where appropriate. Buildings within the centre will have varied architectural facades which will frame the street and have direct connection to the public sidewalk and street. The ground floor of buildings within the core of a centre that front on corridors and public facilities will be developed with commercial uses such as shops, restaurants and cafes with large windows that add visual interest for pedestrians and provide shelter in the form of awnings, structured colonnades or street trees. Adequate short-term parking will be provided to service these retail areas, without compromising pedestrian access from the sidewalk." (HRM, 2012b, p. 45)

The plan's language promotes mixed-use, compact, visually interesting neighbourhoods that are oriented toward pedestrians, cyclists, and public transit. However, it also acknowledges that most new suburban housing will remain low-density (HRM, 2012b, p.8). The plan suggests that medium-to-high density development should occur near transit stops and major arteries. Density levels will taper off into low-density housing located in conventional residential neighbourhoods further away from high-density nodes.

The Regional Plan represents a shift in what development pattern municipal policy is encouraging, yet some planners pointed out that many projects were approved before the Plan came into effect (Box 4).

Box 4: "I know the Regional Plan tried to curb that [sprawl] somewhat. But we had so many applications in that were grandfathered, that were in prior to the Regional Plan that we're just proceeding with those. I think the development community saw the writing on the wall and would get their applications in to give them some grandfathering." (Planner P15)

Grandfathered development agreements have resulted in a lag between what policy encourages and what is currently under construction**.** Several projects located within new suburban growth centres such as Morris Russell Lake were identified as part of the Regional Plan's development, and were planned to comply with new municipal policies. However, as the plan had not yet come into effect, there is a gap between the Regional Plan and the Secondary Planning Strategies that govern the development of these areas. One planner stated that new areas were expected absorb new population growth and "hopefully" integrate with municipal services (Box 5).

Box 5: "And the new growth areas, Portland Estates, Russell Lake, those ones, I mean they are the same old suburban model. And those are the growth areas. And mind you, they were approved... Well, they were approved at the beginning of the Regional Plan as the growth areas... The Regional Plan was really about trying to contain growth but it didn't really talk about the form of growth. Not really. It was where the population would be placed hopefully to integrate with the transit system." (Planner P12)

Achieving population targets became a priority in these developments, but little thought was given to whether the built environment conformed with municipal visions of complete, walkable communities. Despite the intention to coordinate vision, policy, and practice, current development fails to capture the Regional Plan's intent.

The Regional Plan sets out a broad vision for HRM's future development, but due to the wide variety of neighbourhood types in the region, it emphasizes that new development will occur based on each growth centre's current built form and geographic context. Fine-grained development policies in new suburban areas are guided by Secondary Planning Strategies that provide a regulatory framework for individual development areas. Since the 1990s, conventional zoning has become less common in new development areas, particularly those in the suburbs. Municipal policy has adopted master-planned Comprehensive Development Districts (CDDs) produced via development agreements. CDDs allow the Municipality to encourage a greater mix of land uses and housing types through Secondary Plan policies while leaving the built form up to the developer (Box 6).

Box 6: "In doing this approach that we've done with most of the suburban development recently, it's sort of a balance. The developer gets more density through the multis and through the commercial, but they are also providing these other services. And we're planning for it from the beginning." (Planner P7)

This planner suggested that producing master plans before construction begins provides clarity for both the developer and the municipality and shapes the direction future growth will take. One planner saw this as a mutually beneficial strategy that allows developers to maximize on their investments and integrate a variety of uses while capitalizing on municipal infrastructure and services. This strategy may also appeal to homebuyers because it removes the potential for rezoning at a later date to allow for more density in the neighbourhood.

Reluctant Acceptance

Current planning theory suggests that cities can expect re-population in their urban cores with an increase in suburban density. Residents in larger cities who need to "drive until they qualify" for affordable mortgages may be willing to accept smaller properties and higher densities to keep housing costs lower and reduce commute times. However, suburban residents in HRM currently have few reasons to alter their behaviours or demands for spacious lots. The Halifax Peninsula remains a major employment centre for commuters, but many sectors have moved away from the central business district to suburban industrial and office parks that are easily accessible by highways. Commute times in HRM remain below the national average, and

are significantly lower than the lengthy travel times faced by Toronto residents (Figure 2). Housing costs are rising, but often remain more affordable in suburban areas than in the urban core (CMHC, 2013). In a context where the status-quo remains appealing and achievable for homebuyers, there is little incentive for suburban residents to seek more compact neighbourhoods that diminish the sense of privacy they seek in the suburbs.

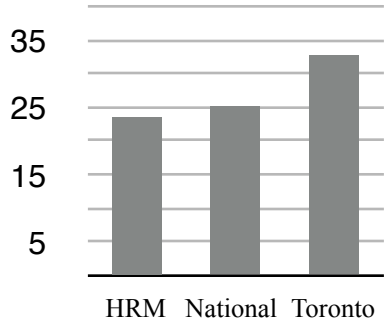

Figure 2: Commute times in minutes (Statistics Canada, 2013)

One major hurdle to creating denser, mixed-use neighbourhoods is the negative connotation that density carries. Density is often promoted as the best way to increase services that require certain population levels to support. Yet residents and planners remain reluctant to abandon conventional low-density suburbs entirely. Halifax respondents cautioned that if development focuses solely on housing, rather than community building, the result may be sterile apartment blocks built in isolation without providing the benefits associated with increased density (Box 7).

Box 7: "There are places where there's dense development as in Clayton Park where you just feel that in 20 years' time, it's going to be a slum. And that comes down to construction quality, plus just the density. It's people warehousing." (Planner P12)

This planner argued that increased population and housing density should not be treated as goals in themselves. Without incorporating appropriate levels of services and amenities, the vibrancy and accessibility associated with mixed-use development is lost and the result is tantamount to "people warehousing." As the costs associated with sprawling suburbs are increasingly becoming part of public discussion, residents may to recognize that a more dense development pattern theoretically makes financial sense. However, the tension between public versus private benefits remains (Box 8).

Box 8: "I think people are reluctant to give up the idea of more space... There has certainly been reluctance to accept densification... but at the same time, people do.... they want more density. Because they want better services, they want... They don't want the schools to close. They want more transit. They want the things that go with density, but not the other side of it which is more people." (Planner P12)

This statement highlights the challenges in encouraging denser suburban development. Compact neighbourhoods may lead to expanded and upgraded services, yet residents remain reluctant to support density because it means more intensive land use and more people in their neighbourhoods.

Demographic Influences

The demand for large lots and increased personal space is a phenomenon of post-war booms in population and suburban housing. During that period, families grew in size and affluence increased, leading homebuyers to seek larger houses on private lots outside of cities. Personal space is no longer viewed as a luxury as it was during the growth of post-war suburbs. Rather, homeowners have come to expect it. However, the demographics spurring today's market demands are rapidly evolving. In 1971, Halifax had an average of 3.4 persons per private household. In 1991 that number was 2.6, and by 2011, the average had dropped to 2.3 (Statistics Canada, 2012b). As young homebuyers increasingly delay starting families, they may choose to stay in smaller apartment or condo units for longer, which is creating a demand for more compact housing in new neighbourhoods.

Average household sizes are shrinking in part due to smaller families, but also because Nova Scotia's senior population is increasing at a rapid rate. National trends suggest that many older residents are choosing to downsize from their single family homes into townhouses or condominiums that require less maintenance and allow for freedom to travel without worrying about the safety of their property (CMHC, 2012). Despite predictions that seniors will choose to relocate to the core where amenities such as health care, shopping, and cultural attractions are more accessible, respondents noted that this may not be the case (Box 9).

Box 9: "There was a school of thought that the suburbs were going to die off. Right? All the empty-nesters, when their kids grew up, they're going to go, *"What are we doing living out here?"* That hasn't really happened." (Planner P19)

Seniors often choose to move into compact housing near where they raised their families and where they maintain social ties. The concept of aging in place is becoming increasingly common amid a growing senior population. Developers are incorporating a diverse range of suburban housing types, including assisted living facilities, to accommodate consumer needs.

Evolving demographic trends are changing what consumers have come to expect in new suburban developments. Though most neighbourhoods built in post-war years include some apartment and townhouse units, suburban housing has typically catered to single-detached houses that appeal to growing families. The growing demand for low-maintenance, compact housing is changing the proportion of condominiums and apartments included in the suburban housing mix. Multi-unit dwellings account for less than 17% of total housing units in Dartmouth neighbourhoods that developed throughout the 1970s and 1980s. Units in those areas are typically clustered near arterial roads and separated from single-detached housing with a buffer of trees. One planner suggested that attached and multi-unit forms of housing have traditionally been seen as undesirable because they were associated with low-income rental units (Box 10). However, the social stigma of higher density housing is diminishing as those buildings are increasingly occupied by seniors.

Box 10: "I think one of the reasons, and it was worse for apartment buildings because that brought in rental... people that rented. And that was seen as a real threat. In the new master planned communities, the new buildings are, whether they be rental or whatever, a lot of them are for seniors. And they're built to a higher standard... I don't think there's as much feeling of threatening neighbourhoods as there used to be in the past." (Planner P6)

The purchasing power of seniors and young couples is driving developers to construct a higher proportion of multi-unit apartment and condominium buildings in new suburban developments. In the Portland Hills neighbourhood, which developed on the fringe of the former city throughout the 2000s, 42% of dwelling units are contained in multi-unit buildings. Dartmouth's newest development, Russell Lake West, has increased the share of multi-unit housing to 74% of total units. While housing density is on the rise, developers are keenly aware that owners of single-detached homes still prefer that more intensive housing types be kept separate. In Department of Housing developments built during the 1970s and 1980s, townhouses were sometimes interspersed with single-detached houses along collector routes in order to mix different price-points within the same neighbourhood. Providing a mix of housing types is necessary in today's marketplace, but it now requires large development parcels in order to deliver a configuration that appeals to homebuyers.

Developers now avoid the practice of mixing housing types on the same street for aesthetic reasons, but also because homebuyers prefer a buffer between different price points (Box 11). Suburban residents are reluctantly accepting higher housing densities in their neighbourhoods, but remain resistant to an urban structure that blends various densities, housing types, and land uses without separation. Achieving a varied housing mix while mitigating the perceived visual sense of density has become a necessary challenge for developers. Since the 1980s, townhouses and semi-detached units in Dartmouth have primarily been placed on cul-de-sacs, which were once the domain of large-lot single-detached houses.

Box 11: "It's got to be a large enough development because you don't mix [housing types] on the same street. Well, you can. I mean we have one street of 50 foot lots or 38 foot wide homes where we're mixing bungalows with two-storey on the street, but they're still larger homes which is speaking to a certain marketplace. But parallel to that street is the townhouses, and then perpendicular to both are those junior executives. [Mixing] just doesn't work. It would look awful." (Developer D25)

Though attached forms of housing are not as threatening to lower-density neighbourhoods as multiple storey buildings, they represent a different housing market. By placing attached units along short, dead-end streets rather than collector routes, more intensive housing types can be integrated within a neighbourhood while also being visually distanced and socially segregated.

Incorporating multi-unit housing has evolved in two ways since Portland Hills was developed in the 2000s. During the first phase of Portland Hills' development, the municipality approached the developer with the proposition of making it a transit-oriented community with a high ratio of multi-unit housing units located near a bus rapid transit station. Though the developer initially agreed, homeowners balked at the idea of a high number of multi-unit buildings in the neighbourhood (CMHC, 2009).

The result was a lesser number of 4-storey apartment and condominium buildings placed behind lower density housing with dedicated right-of-ways to act as private driveways (Figure 3). A wide swath of trees and open space separates the buildings from the rest of the development to limit the visual impact of increased density. In this way, the developer was able to appeal to a wide range of housing markets while giving the appearance of a low-density, single-detached neighbourhood.

By contrast, Russell Lake West, located approximately 1.5 kilometres west of Portland Hills, is one of the first CDDs that was written in conjunction with HRM's Regional Plan. In that development, most multi-unit buildings are clustered at the fringe of the neighbourhood along a busy collector road near an interchange that connects directly to a major highway system (Figure 4). This configuration suggests that development practice is beginning to align with policy objectives to place higher-density residential uses near traffic nodes to maximize on transit services while allaying the fears residents have of heavy traffic running through quiet neighbourhoods.

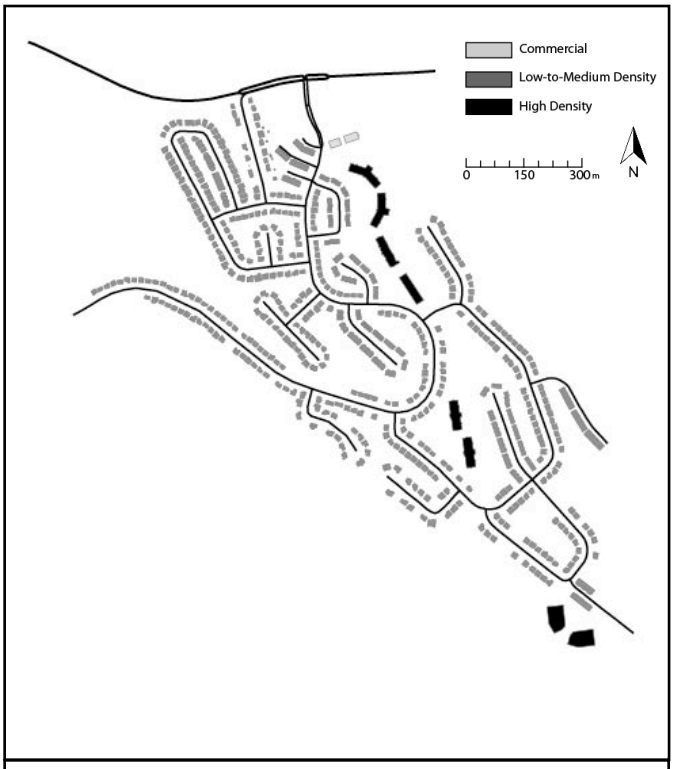

Figure 3: Portland Hills: High density apartments hidden behind detached units.
(HRM Geodatabase, 2012)

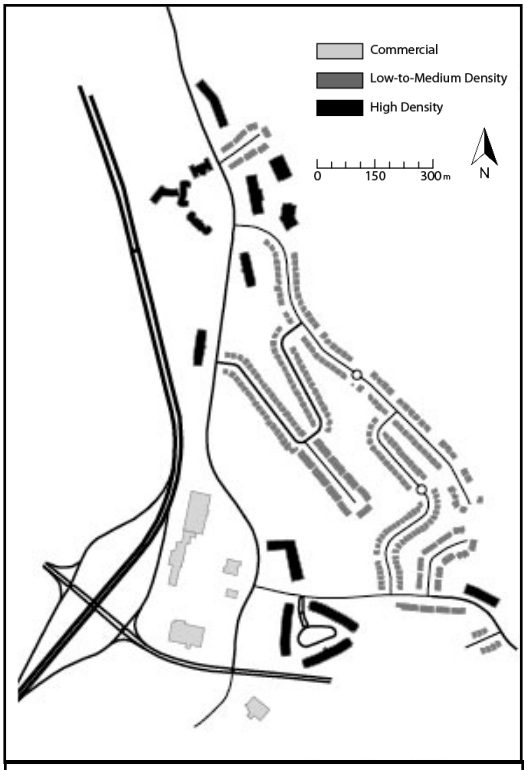

Figure 4:
Russell Lake West: High density housing clustered along collector roads.
(HRM Geodatabase, 2012)

Mixed-Use versus a Mix of Uses

As cars became the travel mode of choice during the second half of the 20th Century, residential areas became increasingly separated from commercial uses. The ease of driving led to suburbs becoming primarily residential areas and distinctly non-urban. Pre-war patterns that emphasized walkability and accessible amenities gave way to winding streets, cul-de-sacs, and ample surface parking that prioritized auto-use. Cars remain the primary travel mode of choice in HRM, but suburban residents sometimes view the need to drive as a burden rather than a luxury. Consumers, particularly older, retired, residents who may not be required to travel long distances to reach their work place, no longer want to face traffic congestion as a necessary part of their daily lives. Many interview respondents believed that the desire for segregated residential zones was waning, and that homebuyers are increasingly looking for neighbourhoods that are close to commercial services (Box 12).

Box 12: "When Bedford South was approved, I had a woman call me up. She and her husband were retired, and they were moving into a condominium there. And she said, *'Will there be commercial development in the community?'* And I was used to the old thinking, that keep it away from me. And she wanted assurances that there was going to be a grocery store in there. They didn't want to have to drive a long way. So I think demographics is affecting our development a lot." (Planner P6)

The desire for an integrated mix of uses in new neighbourhoods suggests that rather than move into the city to be close to amenities, residents prefer to have urban amenities closer to their suburban homes. Commercial areas are increasingly becoming a fixture in new, master-planned communities, but development patterns do not necessarily conform to policy intentions. The Regional Plan encourages growth centres to contain pedestrian-oriented shops with varying facades that frame the street, street trees, and even colonnades to create architectural interest. In theory, HRM supports the ideal of complete, walkable neighbourhoods that replicate a compact urban form and provide for most daily needs in close proximity to housing as promoted by Krier (2009). However, these provisions are limited to high-level policies that apply to all new growth centres and are not made explicit in CDDs. Development agreements regulate general uses on

specific development parcels, but remain vague on built form. For example, the CDD for Russell Lake West indicates that consideration shall be given to architectural design and pedestrian access, but there is no mention of what this consideration is or how to incorporate it in practice.

Policy in HRM recommends that new suburban developments adopt a vibrant, mixed-use development pattern, but no mechanism exists to require developers to shift to a more urban built form. What has developed in practice in major suburban commercial areas is a response to economics rather than planning. As in Markham, planners and developers have found that while smaller urban format shops located in a town-centre layout work well in theory, they do not suit the needs of the current consumer market (Grant & Perrott, 2011; Langlois, 2010). The ability to walk to daily amenities is appealing, but residents continue to prefer the one-stop shopping advantage of power centres that are easily accessible by car. The most common commercial configuration in master-planned developments is big box retailers and two-storey strip malls located near highway access and surrounded by surface parking lots (Box 13).

Box 13: "Anywhere that I've been to, I find them, to a degree, rather similar. You have your housing areas, you try to put your large, higher density, multi-units and whatnot closer to highways and highway access, just off the interchanges, etc. And you also try to put your commercial and that as well. So the further away you are from the main arteries, the more residential you get. And the closer you are is usually where you'll find your cluster of commercial and high density. And I've seen that in various areas." (Developer D13)

Retail outlets such as grocery stores and pharmacies often adopt a big-box format that makes integrating them into a local setting difficult. Master-planned suburbs are beginning to integrate a mix of local commercial uses such as medical clinics, restaurants, banks, and yoga studios into new developments as well. This variety of services speaks to consumer desires for more urban amenities close to home, but the suburban built form continues to respond to car culture. Commercial services are separated from residential uses by large open spaces and parking lots, making them aesthetically uninviting and difficult for pedestrians to access. Some respondents noted that such patterns are common, and are more akin to the formulaic replication of zones rather than the vibrant, walkable neighbourhoods advocated by policy (Box 14).

Box 14: "In terms of creating a kind of a town streetscape or villagescape, that hasn't really been happening. We've just been getting commercial separated... You know, some commercial here and then separation and then there will be another block and there will be some commercial there. It's not continuous. And as a result, you don't get people really walking from one to another." (Planner P12)

The proliferation of box stores and strip malls highlights the disconnect between what policy can encourage and what tends to emerge in practice. The term “mixed-use” most commonly refers to ground-level offices or retail with residential units located above. Though new neighbourhoods allow for a mix of uses, those uses rarely mix in new Dartmouth communities.

Density in Theory and Practice

Though HRM is generally supportive of increasing suburban density, it seems that planners and policy-makers are still unsure how much density is too much. The municipality continues to struggle with the best way to measure and integrate more intensive land use into new developments. Planners remain reluctant to make increased density explicit in policy for fear that it will result in the “people warehousing” one respondent described. Bringing density from concept into practice remains a major challenge due to the many ways density is defined and rationalized.

Density measurements do not necessarily relate to the built form. As the diagrams in Figure 5 demonstrate, an equal number of units can be accommodated in a variety of housing types and configurations.

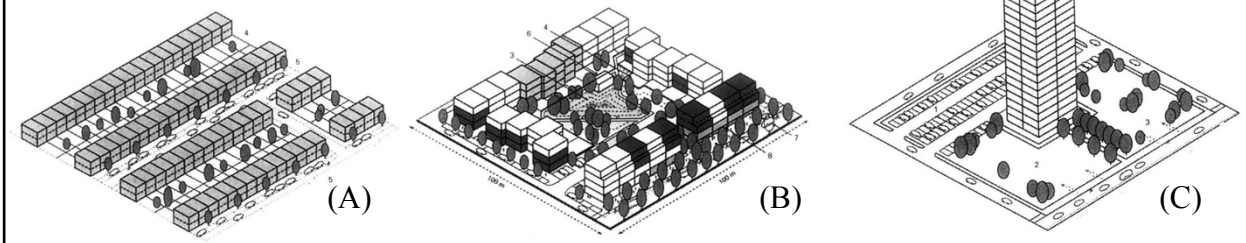

Figure 5: Accommodating equal housing density in different housing types (Pont, 2011).

Though the diagram uses the example of a highrise in example C, this scenario is rare in Dartmouth suburbs. Highrise residential buildings with underground parking and minimal setbacks are becoming more commonplace in the Regional Centre. In the suburbs, however,

multi-unit buildings continue to incorporate large setbacks, surface parking lots, and wide expanses of green space that separate them from lower-density housing types (Figure 6).

Figure 6: Multi-unit construction in Russell Lake West.

Current multi-unit configurations reflect consumer desires for privacy and segregated housing types, but also result from policy constraints. Current Comprehensive Development District policy limits the total allowable gross density to eight units per acre, which is approximately four times less than the examples in Figure 5. As a result of this constraint, the development community is struggling to make the best use of developable land. Due to density caps that one developer saw as politically motivated and prohibitively low (Box 15), new neighbourhoods are forced to include a disproportionate amount of open space that often results in housing areas being separated from commercial uses and transit nodes. Regional Plan policies stipulate that new developments must provide no less than 10% open space that, once developed, will be maintained by the municipality. However, due to the limited density allowed in suburban communities, open space tends to far exceed the minimum requirement.

Box 15: "We're finding that our developments are running in the order of 20 to 23 [percent open space]. Now, that looks great, but then you're saying, *"well, why is that?"* And that's because your density allocation at 8 units per acre is light. And when 60% of your housing accommodation is multiple, in other words high density, the lands can support more density. So these fringe areas that are again just politically held to 8, in my opinion they should be higher than that. They should be 10. And it creates greater economies of scale, greater and best use of the infrastructure, greater transit opportunities. But there's a political stigma and some mental block to increasing that density in those areas." (Developer D20)

While developers stated that the potential for additional open space and trail networks is a selling point for homebuyers (Box 16), it is also a barrier to creating more the vibrant, walkable communities that additional density is meant to promote. The concept of extra open space may be appealing, but in practice it represents additional maintenance costs that are passed on to the municipality.

Box 16: "It comes from smart designs of communities. Because you know your density. You're limited to the number of houses you can put in. So no matter how you put them in, that's your total number. So if you put them in in such a way that maximizes parkland, why wouldn't you?" (Developer D13)

Current development practice in Dartmouth suggests housing density is increasing in new communities (Figure 7).

	Net Housing Density	**Gross Housing Density**	**Population Density**
Portland Hills	7.2 units/acre	4.4 units/acre	1,673 people/sqkm
Russell Lake West	12.8 units/acre	7 units/acre	671 people/sqkm

Figure 7 Source: HRM Geodatabase (2013), Statistics Canada (2012a).

Housing and population density in Portland Hills is typical of Dartmouth study areas from the 1970s-2000s (Brewer, 2013). The current wave of development in Russell Lake West represents a dramatic increase in unit density over older communities, and is by far the most dense neighbourhood studied. Population data for the neighbourhood comes from the 2011 National Household Survey, before the neighbourhood's development was complete. Consequently, the calculated population density of 671 people per square kilometer will increase over time as additional units are built and populated.

Though housing density is increasing, the form of development may have more impact on population levels than simply allowing more units. Higher housing density is often associated with multi-unit buildings. However, new developments containing a high proportion of smaller units are apt to attract homebuyers with smaller household sizes than those who choose detached forms of housing. Though the built form may appear denser, the resulting population levels may be lower than if the area were to feature all single-detached homes occupied by growing families.

HRM policy currently assumes an average of 3.35 people per single-detached and townhouse unit, and 2.25 people per unit in higher density housing types. If these numbers are applied to the examples in Figure 5, the houses on compact lots in example A would yield a population of 100.5 people per acre, while the multi-unit configuration in example C would house 67.5 people per acre. By spreading these calculations over a multi-acre development area, two significantly different population scenarios emerge. Furthermore, population projections used by HRM may not reflect current demographics. If multi-unit buildings are being occupied by seniors and young homebuyers entering the housing market, assuming that each unit will house 2.25 people seems unlikely. Even slightly reducing this number to two people per unit would decrease population density to 60 people per acre. The disconnect between housing and population density presents a challenge to HRM policy initiatives. Promoting density through multi-unit building clusters provides housing options for a wider range of people, but relying heavily on high-density housing types may not result in the population growth centres advocated in the Regional Plan.

Economic Realities

The shape of HRM's burgeoning suburbs relies heavily on economic conditions. Markham, Ontario benefited from myriad forces converging to put pressure on developers to build denser suburban neighbourhoods. However, the current situation in Dartmouth shares little in common with that of Toronto in the 1990s. Between 2006 and 2011, HRM had a population growth rate of 4.7% (Statistics Canada, 2012b). The cost of land in the region is on the rise, but the suburbs remain cheap compared to the Regional Centre. For the price of a modest home on a small lot on the Halifax Peninsula, homebuyers can often purchase a new home more than

double the size on the Dartmouth fringe. A survey of single family houses for sale on MLS[3] in the $400,000-$500,000 price range showed that houses on the Peninsula are typically more than 50 years old, sit on lots generally smaller than 5,000 square feet, and range in size from 1,300-2,000 square feet. By contrast, houses in Russell Lake West in the same price range have been built in the last five years, have lots in the 8,000 square foot range, and are commonly larger than 3,000 square feet. Despite a reluctant acceptance of higher density in new neighbourhoods, developers noted that large single-detached homes are still in high demand (Figure 8).

Figure 8: Single-detached houses in Portland Hills

Though single-detached lots show some signs of shrinking in new suburbs, the difference is minimal. Average lots in Russell Lake West are approximately 9,000 square feet versus 9,600 square feet in Portland Hills. Lot sizes were largest in Dartmouth study areas built between the 1980s and early 2000s.

One planner suggested that new single-detached neighbourhoods appear more compact because of growing house sizes rather than shrinking lots (Box 17). Policy currently does not

[3] A national real estate service (Source: mls.ca)

govern lot size or setback distances in CDDs to allow developers more freedom to produce mixed communities. By removing itself from its traditional role in fine-grained land use control, the municipality misses an opportunity to advocate innovative design for single-detached homes and create more compact development patterns.

Box 17: "One thing I noticed, the characteristic of those suburbs, in addition to having a lot of apartment units in them, the single family homes are monster... are big... It's not that the lots have gotten that much smaller, it's that the houses have gotten huge. Like a lot of these homes now I think are probably maybe 3,000 square feet plus." (Planner P6)

HRM may be encouraging a new, denser form of suburban development, but many respondents felt that residents may not yet be ready to accept a suburban pattern with small lot single-detached houses (Box 18).

Box 18: "When you get into design elements like New Urbanism and so on, they may not feel that that's necessarily marketable because it's very sort of different in design and feel than what the folks have become used to in the suburban environment. So I see that being a big challenge, is, you know, the developers are the ones that are basically creating these communities, and we're trying to create policies that will help council when making decisions or help development officers when making decisions." (Planner P26)

This planner pointed out that while policy is intended to encourage a more compact settlement pattern and lay the groundwork for what developers ultimately produce, residents remain reluctant to give up the freedoms they associate with a suburban lifestyle. Without geographic constraints, a conducive economic climate, and the ongoing demand for single-detached homes on large lots, developers have little incentive to experiment with a new suburban built form in an uncertain market.

Both planners and developers agreed that policy alone cannot spur changes in suburban development patterns. Developers referred to themselves as community builders, but they are also business people who must capitalize on their investments. They seek to create denser, more urban neighbourhoods to produce a greater economy of scale. Yet experimenting with new built forms presents a financial risk without political and economic assurances that a new suburban model will sell. The potential for change in the suburban built form is confined to windows of opportunity when economic, market, and political conditions coincide to create the right climate

for homebuyers' expectations to change. Outside of these periods, developers are likely to become averse to tampering with established practices.

Waiting for the perfect time to develop denser urban quarters in the suburbs presents a challenge to planners who are trying to encourage compact development patterns to meet 25-year growth targets. If developers do not see an advantage in promoting new configurations and a more intense mixture of uses, new housing developments will continue to consume more land than is advocated by policy. As one planner noted, each conventional neighbourhood that is built while waiting for the right opportunity represents a large area that contributes to the ongoing problems of resource consumption and rising infrastructure costs (Box 19).

Box 19: "So for planners, there are big advantages to seeing New Urbanism principles, densification, all that going forward. But the developers, you know, if they don't perceive that the market is really ready for it, they just won't do it. And that means you can be way, way late in terms of opportunity for doing... because the developer then fills the space they have with whatever they figure is going to work and then that piece of land is gone." (Planner P12)

Developers and planners see compact, mixed-use communities as a desirable development pattern in new suburbs. Yet without tangible planning mechanisms to control the suburban built form and encourage more efficient land use patterns, developers will continue to seek the greatest return on their investment with whatever they perceive to be the most marketable configuration of uses.

Implications for Planning

Since the Regional Municipal Planning Strategy was adopted in 2006, high-level planning objectives in Halifax Regional Municipality have advocated compact growth within a defined service boundary. As HRM refines its Regional Plan and promotes its growth centres, support is slowly growing for a more urban built form. However, conventional suburban land use patterns remain popular due to affordability and easy accessibility. Population and economic growth remains moderate, placing little pressure on developers to shift to New Urbanist style neighbourhoods.

Planners and developers agreed that planning policy can only lay the groundwork for development in the larger context of economic and demographic conditions. This is not to say

that policy is powerless to effect change. If HRM planners and policy-makers are sincere about concentrating growth, improving service efficiency, and protecting environmental resources, increased density will need to be an explicit part of this strategy. Policy must reflect objectives in more than broad Regional Plan vision statements. Planners have excused themselves from fine-grained land use decisions in CDDs due to the perceived restrictive nature of conventional zoning and the promise of complete mixed-use communities. Despite higher housing density in Russell Lake West, however, development patterns in new suburbs continue to resemble traditional suburbs segregated by land use.

The municipality continues to struggle with bringing density from concept into practice. The current wave of development in Dartmouth generally increases housing density by relying on a higher proportion of multi-unit buildings. These buildings give the visual appearance of higher density, but relying too heavily on this strategy may not yield the anticipated population influx in designated growth centres. If household sizes continue to decline as demographic trends suggest they will, the municipality will need to reassess the way it calculates density and develops policy for Comprehensive Development Districts. Gross housing density is a useful indicator for identifying trends in the suburban built form. However, basing housing policy in CDDS on this measure alone fails to facilitate the types of communities HRM is encouraging. Limiting the amount of density allowed in new suburban developments undermines initiatives to increase population within the service boundary and maximize efficiency. Within these density constraints, developers are forced to spread development over larger areas, which results in underutilized tracts of land that the municipality is left to maintain. This approach will not only prove more costly than if the private market were allowed to develop housing on these sites, which would increase tax revenues, it will also likely result in the failure of growth targets being met. If low-density development remains the predominant suburban land use as the Plan anticipates, planners have a role to play by redefining what policy considers “low-density.” Permitting, and even promoting, smaller lots for single-detached houses would help create the greater economies of scale developers are seeking while also facilitating population increases that multi-unit housing may fail to capture.

Though enacting policy that specifically encourages New Urbanism may not be a viable option in HRM, the CDD mechanism allows planners to work directly with developers in crafting new suburban areas. Dartmouth’s current development agreements acknowledge the Regional Plan, but policy in these areas pre-dates the Plan’s completion. As new suburban areas are planned, new policy approaches to land use and built form may need to be incorporated in CDD agreements to more fully align with Regional objectives.

References

Brewer, K. (2013). *Densifying Dartmouth? Emerging Land Use Trends in Suburban Development.* Working Paper. Retrieved from http://theoryandpractice.planning.dal.ca/_pdf/suburbs/working_papers/kbrewer_2013.pdf.

Bunting, T. (2004). Decentralization or Recentralization? A Question of Household Versus Population Enumeration, Canadian Metropolitan Areas 1971-1996. *Environment and Planning A*, *36*(1), 127-147.

Bunting, T., Filion, P., & Priston, H. (2002). Density Gradients in Canadian Metropolitan Regions, 1971-96: Differential Patterns of Central Area and Suburban Growth and Change. *Urban Studies, 39*(13), 2531-2552.

Bunting, T., Filion, P., Hoernig, H., Seasons, M., & Lederer, J. (2007). Density, Size, Dispersion: Towards Understanding the Structural Dynamics of Mid-Size Cities. *Canadian Journal of Urban Research*, *16*(2), 27-52.

Campoli, J. & MacLean, A. (2007). *Visualizing Density*. Cambridge, Mass: Lincoln Institute of Land Policy.

Canada Mortgage and Housing Corporation. (2009). *Transit-Oriented Development Case Study: Portland Hills Residential Community, Dartmouth (Halifax Regional Municipality), N.S.* Retrieved from http://www.cmhc-schl.gc.ca/en/inpr/su/sucopl/sucopl_007.cfm.

Canada Mortgage and Housing Corporation. (2012). *Housing for Older Canadians — The Definitive Guide to the Over-55 Market: Volume 1 — Understanding the Market*. Retrieved from http://www.cmhc-schl.gc.ca/en/inpr/bude/hoolca/.

Canada Mortgage and Housing Corporation. (2013). *Housing Market Outlook, Halifax CMA, Fall 2013.* Retrieved from http://www.cmhc-schl.gc.ca/odpub/esub/64267/64267_2013_B02.pdf

Churchman, A. (1999). Disentangling the Concept of Density. *Journal of Planning Literature 13*(4), 389-411.

Cuthbert, A. & Anderson, W. (2002). An Examination of Urban Form in Halifax-Dartmouth: Alternative Approaches in Data. *Canadian Journal of Urban Research, 11*(2), 213-237.

Fishman, R. (2005). The Fifth Migration. *Journal of the American Planning Association*. 71(4), 357-366.

Forsyth, A. (2003). Measuring Density: Working Definitions for Residential Density and Building Intensity. *Design Center for American Urban Landscapes*. Design Brief, Number 8. Retrieved from http://www.corridordevelopment.org/pdfs/from_MDC_Website/db9.pdf.

Garde, A. (2008). City Sense and Suburban Design: Planners' Perceptions of the Emerging Suburban Form. *Journal of the American Planning Association, 74*(3), 325-342.

Gordon, D. & Vipond, S. (2005). Gross Density and New Urbanism: Comparing Conventional and New Urbanist Suburbs in Markham, Ontario. *Journal of the American Planning Association, 71*(1), 41-54.

Grant, J. (2006) *Planning the Good Community: New Urbanism in Theory and Practice.* Royal Town Planning Institute Library Series, Routledge (Taylor and Francis), London, UK.

Grant, J. (2009). Theory and Practice in Planning the Suburbs: Challenges to Implementing New Urbanism, Smart Growth, and Sustainability Principles. *Planning Theory and Practice, 10*(1), 11-33.

Grant, J. (2013). Suburbs in Transition. *Planning Theory & Practice*, 14(3), 391-392.

Grant, J. & Bohdanow, S. (2008). New Urbanism Developments in Canada: A Survey. *Journal of Urbanism*, 1(2), 109-127.

Grant, J. & Perrott, K. (2011). Where Is the Cafe? The Challenge of Making Retail Uses Viable in Mixed-use Suburban Developments. *Urban Studies 48*(1), 177-195.

Halifax Regional Municipality. (2011). *Land Use By-Law for Dartmouth*. Retrieved from http://www.halifax.ca/planning/documents/Dartmouth_LUB.pdf.

Halifax Regional Municipality. (2012a). *Municipal Planning Strategy for Dartmouth.* Retrieved from http://www.halifax.ca/planning/documents/Dartmouth_MPS.pdf.

Halifax Regional Municipality (2012b). *Regional Municipal Planning Strategy*. Retrieved from http://www.halifax.ca/regionalplanning/documents/Regional_MPS.pdf.
Halifax Regional Municipality. (2012c). HRM Geodatabase. Geographic Information Systems and Services Retrieved from the Dalhousie GIS Centre, [http://libraries.dal.ca/locations_services/services/gis_centre.html], May 2013.
Halifax Regional Municipality. (2012d). RP+5 Regional Plan 5 Year Review. Presentation. Retrieved from http://www.halifax.ca/planhrm/documents/RP5PresentationMar19-29.pdf.
Halifax Regional Municipality. (1997). *Traditional Neighbourhood Design: A New Approach for Small Lots*. Community Services Report.
Jepson, E. & Edwards, M. (2010). How Possible is Sustainable Urban Development? An Analysis of Planners' Perceptions about New Urbanism, Smart Growth, and the Ecological City. *Planning Practice & Research, 25*(4), 417-437.
Krier, L. (2009). T*he Architecture of Community*. Washington, D.C.: Island Press.
Langlois, P. (2010). Municipal Visions, Market Realities: Does Planning Guide Residential Development? *Environment and Planning B, 37*(1), 449-462.
Lewis, P.G. & Baldassare, M. (2010). The Complexity of Public Attitudes Toward Compact Development. *Journal of the American Planning Association, 76*(2), 219-237.
Millward, H. (2002). Peri-urban Residential Development in the Halifax Region 1960-2000: Magnets, Constraints, and Planning Policies. *Canadian Geographer, 46*(1), 33-47.
Moore, S. (2013). What's Wrong with Best Practice? Questioning the Typification of New Urbanism. *Urban Studies,* Special Issue Article, 1-17.
Nelson, A. (2013). The Resettlement of America's Suburbs. *Planning Theory & Practice*, 14(3), 392-403.
Pont, M. (2011). *Space, Density, and Urban Form*. [Presentation]. Retrieved from http://www.slideshare.net/brooksp/spacematrix-presentation-nov-2011.
Pont, M. & Haupt, P. (2005). The Spacemate: Density and the Typomorphology of the Urban Fabric. *Nordisk Arkitekturforskning*, 4(1), 55-68.
Province of Nova Scotia. The Nova Scotia Civic Address Database. Property Boundary file. Retrieved February 2013.
Sands, G. (2009). Half a Loaf: Are New Urban "Hybrids" a Marketable Option? *Theoretical and Empirical Researches in Urban Management*, 1(10), 30-45.
Skaburskis, Andrejs. (2006). New Urbanism and Sprawl: A Toronto Case Study. *Journal of Planning Education and Research, 25*(1), 233-248.
Smith, C.A. & Billig, N. (2012). Public Perceptions of Compact Suburbia in Progressive, Burgeoning Communities. *Journal of Urban Design, 17*(3), 313-335.
Stantec Consulting. (2013). *Quantifying the Costs and Benefits to HRM, Residents and the Environment of Alternate Growth Scenarios.* Retrieved from http://www.halifax.ca/boardscom/documents/HRMGrowthScenariosFinalReportApril292013.pdf.
Talen, E. (2011). Sprawl Retrofit: Sustainable Urban Form in Unsustainable Places. *Environment and Planning B*, *38*, 952-978.
Statistics Canada. (2012a). 2006, 2011 Halifax Census Dissemination Block Data. Using CHASS (distributor) via Dalhousie University Libraries. (accessed October 13, 2013).
Statistics Canada. (2012b). Halifax, Nova Scotia (Code 1209034) and Nova Scotia (Code 12) (table). Census Profile. 2011 Census. Statistics Canada Catalogue no. 98-316-XWE. Ottawa. Released October 24, 2012. http://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/index.cfm?Lang=E (accessed October 30, 2013).
Statistics Canada. (2013). National Household Survey: Commuting to Work. Catalogue no. 99-012-XWE. Ottawa. Released June 26, 2013. http://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-012-x/99-012-x2011003_1-eng.cfm (accessed November 1, 2013).
Wilson, B. & Song, Y. (2011). Do Large Residential Subdivisions Induce Further Development?: A Spatially Explicit Hazard Analysis of Land Use Change in Charlotte. *Journal of the American Planning Association, 77*(1), 5-22.

Appendix A

Neighbourhood	Dissemination Block Codes (All codes in Halifax Regional Municipality begin with 12090)
Albro Lake	19701, 19702, 19703, 19704, 19801, 19802, 19803, 19804, 19805, 19806, 19807, 19901, 19902, 19903, 19904, 19905, 19906, 19907, 19908, 21201, 21203, 21204, 21205, 21206, 21207, 21208, 21209
Highland Acres	77501, 77505, 77601, 77602, 77701, 77702, 77703, 77801, 77802
Keystone-Montebello	13005, 13007, 13008, 13009, 13101, 13103, 13104, 13105, 13106, 13107, 13109, 13109, 13201, 13202, 13301, 13302, 13401, 13501, 13504, 19105
Lancaster-Willow Ridge	18511, 18512, 19312, 19313, 19371, 19376
Portland Estates	79103, 79105, 79109, 79201, 79202, 79203, 79204, 79205
Portland Hills	75109, 75110, 78301, 78302, 78305, 78306, 78307, 78308, 78309, 78401, 78402, 78403, 78404, 78405
Russell Lake West	37205, 37206, 37207, 79107, 79108, 79109, 79110