

**Exploring Growth Opportunities for CarShareHFX in the Multi-Residential
Building Development Sector in Halifax, Nova Scotia**

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Abstract

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This study examines how carsharing grows at the multi-residential building level in other cities and examines the barriers and enablers that exist in Halifax, Nova Scotia for similar growth to take place locally. Findings from the study show that the process to implement carsharing at the building level is complex. Limited municipal policies create obstacles for developers to reduce parking requirements and integrate carsharing into new building developments. There needs to be stronger relationships between the CarShareHFX, the City urban planners and developers for these types of initiatives to take place in Halifax.

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CHAPTER 1 – INTRODUCTION

It has been shown that world markets are reaching their capacity to govern their resources in a sustainable manner and the emergence of shared resources and services are becoming more commonplace (De Moor, 2012). Access-based consumption are transactions that are mediated through the market, whereby no transfer of ownership occurs (Bardhi & Eckhardt, 2012). Access-based consumption includes the concept of collaborative consumption where people “conduct sharing activities in the form of renting, lending, trading, bartering, and swapping of goods, services, transportation solutions, space, or money” (Mohlmann, 2015, p. 194). People that subscribe to this kind of consumption model, benefit from the access to products or services but without ownership (Bardhi & Eckhardt, 2012).

These models are part of the sharing economy that allows people and organizations to offer and share underutilized resources (Cohen & Kietzmenn, 2014). Businesses in the sharing economy include Air BnB, Uber, and Bixi that allow people access to accommodation, rideshare services or use of a bicycle through an organized system or network. People are becoming increasingly interested in these types of business models due to the ability to save money, be more environmentally conscious and the fact that technological capabilities can easily connect people to these services (Cohen & Kietzmenn, 2014). These businesses have challenged the traditional way resources are consumed and could help bridge the gap towards a more sustainable society by using resources more effectively and efficiently.

This research paper will examine a local enterprise that operates in the sharing economy. CarShareHFX has the goal to give residents access to vehicles without ownership in Halifax, Nova Scotia (CarShareHFX, n.d.). This study will examine how carsharing grows at the multi-residential building level in other cities and determine the barriers and enablers that exist in Halifax, Nova Scotia for similar growth to take place locally.

Carsharing

The concept of carsharing started in Europe in the 1940-1980s and gained popularity across the world in the early 1990s (Cohen & Shaheen, 2006). Carsharing is an alternative to vehicle ownership and allows members access to vehicles at reduced costs compared to vehicle ownership or rental (Lee, Byun, Lee & Do, 2014). Carsharing gives a group of members the access to a fleet of vehicles for short-term access, whereby the vehicle fleet is maintained, managed and insured by the carshare organization (Shaheen, Chan & Micheaux, 2015). Members can book the carshare vehicles on a 24-hour basis, and they pay an hourly or per kilometer rate that includes fuel, insurance and maintenance of the vehicles (Shaheen et al., 2015). There are many different models of carsharing that exist, including roundtrip carsharing where vehicles need to be returned to the same location that they were picked up, peer-to-peer carsharing where vehicles are privately shared, and one-way carsharing where carshare vehicles are picked up and dropped off at different locations (Shaheen et al., 2015).

Carsharing is an alternative mode of transportation that has become increasingly popular in cities around the world (Costain, Ardon & Nurul Habib, 2011). The benefit of carsharing

for individuals is that they gain the access to vehicles without the costs and responsibilities of vehicle ownership (Costain et al., 2011). Carsharing services convert the fixed costs of vehicle ownership to variable costs based on the member's usage of the service (Martin & Shaheen, 2011). The top motivators for people using the service include cost savings, convenient vehicle locations and guaranteed parking (Shaheen & Cohen, 2008).

There has been an increase in carshare services and memberships in Canada and the United States. In January 2015, there were 336,058 carsharing members that shared 5,264 vehicles and 20 carshare operators in Canada (Shaheen & Cohen, 2015). Eight out of the 20 operators (40%) in Canada were for-profit carsharing organizations and represented 95.5% of the total Canadian membership base and 89.9% of the fleets deployed (Shaheen & Cohen, 2015). Over the last year, carsharing membership has grown by 50% in Canada and decreased by 4% in the United States (Shaheen & Cohen, 2015). This has coincided with an increase of carsharing fleets in Canada by 26% and a decrease in fleet size in the United States by 2% (Shaheen & Cohen, 2015). By January 2015, there were 1,181,087 carshare members that shared 16,754 vehicles with 23 operators in the United States (Shaheen & Cohen, 2015). In 2016, it is estimated that there will be 5.5 million carsharing users in Europe and 4.4 million in North America (Zhao, 2010).

Research Need & Overview

Carsharing is very popular in other North American cities and across Europe and Asia (Shaheen & Cohen, 2008). The concept of carsharing is still relatively new in Halifax with the start of the social enterprise in 2008 (CarShareHFX, personal communication, November 8, 2015). Over the last seven year, CarShareHFX has grown to over 1,000 members with 35 carshare vehicles in the fleet (CarShareHFX, personal communication, November 8, 2015). The carsharing service is currently available on the Halifax peninsula and downtown Dartmouth.

In Seattle, Vancouver, and San Francisco, there are specific zoning provisions that are related to the implementation of carsharing into multi-unit residential building developments (Engel-Yan & Passmore, 2013). This means that developers are given parking relaxations when they incorporate carshare vehicles and services into their building plans. In Halifax, the parking requirements for new building developments vary depending on the location and zoning of the area and there are no specific parking relaxation policies in place.

In the urban environment, developers design their projects to make use of every square foot. Since land is expensive, their building project needs to maximize their unit count in order to get a decent return on their investment. The multi-residential building development sector includes apartment buildings, condos, and townhouse (PDC Construction Site | Mapping Project, 2015). On the Halifax peninsula and downtown Dartmouth, there are currently 42 multi-residential buildings that are planned, approved or

under construction (PDC Construction Site | Mapping Project, 2015). Appendix A includes a map with all of the recent multi-residential building development on the Halifax peninsula.

With the continued development of new multi-residential building developments in Halifax, this study aims to look at how parking regulations and municipal policies impact the integration of the carshare service at the building level. This study will assess how parking policies in other Canadian cities aid the integration of carsharing at the building level. It will also aim to understand the awareness and perceptions of carsharing from both the developer and the City perspectives, and to create recommendations for the successful integration of carsharing into new multi-residential building development projects in Halifax.

Research Objectives:

- The research will investigate the value of carsharing for multi-residential building developers and the municipal urban planners in Halifax, NS.
- This information will help to identify and inform business growth opportunities for carsharing in the multi-residential building sector in Halifax, NS.

To reach these objectives, this project will focus on the following elements:

- Identify the perceptions and value of carsharing that exist for multi-residential building developers and the municipal urban planners in Halifax, NS.

- Identify parking policies in the multi-residential building development sector and how these policies impact the integration of carsharing into new multi-residential building development projects.
- Drawing on research from other cities, compare different carshare models to determine the similarities, differences, and best practices in order to make recommendations for CarShareHFX.
- Determine where there are opportunities for CarShareHFX to grow within the multi-residential building developments sector.

CHAPTER 2 – CARSHARING LITERATURE REVIEW

The literature on carsharing has grown in the last decade but is still relatively small due to carsharing still being a young industry in North America (Shaheen & Cohen, 2008).

Carsharing was introduced in North America as an innovative approach to the growing transportation problems in urban centres (Katzev, 2003). The recent economic downturn and volatile gas prices are motivating individuals to seek more energy efficient modes of transportation (Martin & Shaheen, 2011). Carsharing has gained popularity in cities because society has become more aware of the negative impacts caused by vehicle use (Zheng, Scott, Rodriguez, Platz & Adams, 2009). Carsharing provides the convenience of access to a vehicle at a reduced cost to the individual compared to vehicle ownership or rental (Lee et al., 2014). The majority of the literature focuses on the growth of the industry, benefits for cities that adopt carsharing, and the motivation for people to use this type of mobility option.

Carsharing is an example of collaborative consumption and access-based consumption where people can use and pay for a resource without the transfer of ownership (Bardhi & Eckhardt, 2012). This type of consumption allows people to conduct sharing activities through an organized system or network (Mohlmann, 2015). By understanding the nature of the exchange that takes place, it allows for the marketplace to better understand consumers' preferences, values, and desires so that they can be better served (Bardhi & Eckhardt, 2012).

Consumer Mentalities

Andrew and Douma (2006) show that potential carshare users include individuals that are between the ages of 21 to 55, have high levels of education, are professionals, concerned with the environment and live in non-traditional households. There are five main user-groups that make use of carsharing that include, neighbourhoods, businesses, colleges and universities, low-income and commuters (Shaheen & Cohen, 2013). In countries where carsharing exists, the main user-groups of the service are neighbourhoods followed by businesses, although this trend is reversed in Japan and Sweden (Zheng et al., 2009). The neighbourhood segment's demand peaks on the weekend, whereas the business segment generates workday demand for the service (Zhou, Kockelman, & Gao, 2008). This is due to neighbourhood members using the carshare vehicles outside of normal work hours and the business members using the vehicle for work purposes during work hours. Students have not been a historical user-groups for carsharing due to the cost of membership, availability of low-cost transportation alternatives and ineligibility for membership for those that are younger than 21 years old (Zheng et al., 2009). There are different types of carsharing models that people can subscribe to based on their needs and include roundtrip, one-way and peer-to-peer service (Shaheen et al., 2015).

In addition to demographics and neighbourhood characteristics, motivation plays an important part in how people perceive or use carsharing services (Shaheen & Martin, 2006). There are many different determinants about whether people adopt collaborative consumption concepts like carsharing. This includes factors like community belonging, cost savings, environmental impact, familiarity, internet capability, service quality,

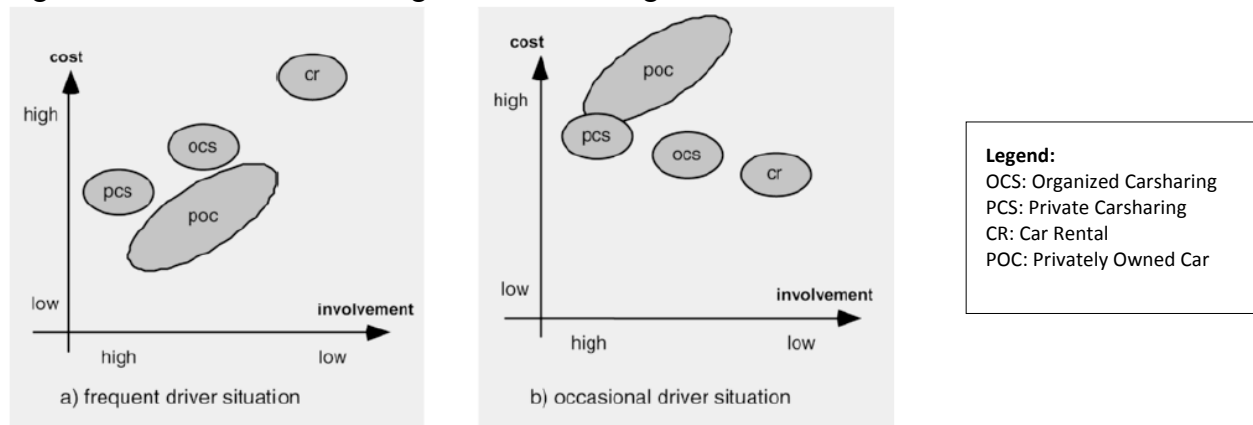
smartphone capability, trend affinity, trust and utility (Mohlmann, 2015). These determinants influence the individual's satisfaction with the service and their likelihood to use the service again (Mohlmann, 2015).

With the growth of carsharing throughout North America and across the world, research has focused on the motivation to adopt the concept, trip behaviour and the effects on mobility of members (Katzev, 2003). There is evidence to suggest that people are more likely to adopt carsharing when they only have an occasional need for a vehicle and when there are definite cost savings for members (Katzev, 2003). The most cited factors for people joining carsharing organizations are household vehicle ownership and income levels, with the carsharing membership having the ability to lower overall costs for individuals and families (Shaheen & Rodier, 2005; Zhou et al., 2008). While the top motivators include cost savings, convenient vehicle locations and guaranteed parking (Shaheen & Cohen, 2008), the most important determinants for people to use and continue using carsharing were that it helped them save money, followed by high utility and familiarity with service (Mohlmann, 2015). Other motivations for adoption of carsharing are people's attitudes towards automobiles and the associated environmental impact (Zheng et al., 2009). A study in San Francisco indicates that sensitivity to vehicle congestion, willingness to experiment, and environmental concerns influence people's attitudes towards the service (Shaheen & Rodier, 2005).

Carshare Usage Patterns

Depending on the amount a person drives, there are different ways to help determine the right modal mix for the individual (Truffer, 2003). Figure 1 illustrates the mix of vehicle options that are available to people depending on their driving situation, whereby the cost axis includes direct, indirect or transactional costs of vehicles while the involvement axis includes labour time, accountability and social interaction and learning and expectations (Truffer, 2003). These factors influence the best transportation choice for a given transportation trip.

Figure 1. Market Position of Organized Carsharing



Note. From “User-led Innovation Process: the Development of Professional Car Sharing by Environmentally Concerned Citizens” by B. Truffer, 2003, *Innovation*, 16(2), p. 145.

Urban Planning

Aside from personal characteristics that determine carshare users, land-use in cities can be an important determinant for membership (Zheng et al., 2009). It has been shown that neighbourhood and transportation characteristics, including walk-ability and commuter transportation modes available, may be more important indicators of successful carsharing

organizations compared to demographic information about individual members (Celsor & Millard-Ball, 2007). Although demographics, land-use in cities and attitudinal motivations have all been researched, the interdependence of these factors is unclear and whether other characteristics, such as socio-economic indicators, play a role in the adoption of carsharing (Zheng et al., 2009).

The Global Health Observatory predicts that the urban population will increase from 3.4 billion to 6.4 billion by 2050 (WHO, 2013). The growth of urban centres will threaten traffic patterns including increased congestion, air pollution and vehicle-related accidents (Shaheen et al, 2015). In an effort to reduce travel demand and limit vehicles in our cities, governments have implemented parking reductions, roadway-supply and road pricing measures (Shaheen et al., 2015). The rise of sharing economies presents solutions to reduce inner-city traffic congestion and pollution (Cohen & Kietzmann, 2014). This makes carsharing a very attractive alternative transportation model for cities.

Carsharing is seen as a potential solution for the reduction of vehicles in densely populated urban centres and can provide a benefit to the transportation mix in helping to increase mobility options for residents (Whiteman, Rene de Vos, Chapin, Yli-Pelkonen, Niemela & Forbes, 2011). Carsharing has positive benefits on the environment because it is able to bridge the gap between a rapidly growing transportation sectors that is inherently bad for the environment, and a shared-asset model that reduces private car ownership (Katzev, 2003; Truffer, 2003). Cities are known to be one of the key drivers of climate change, and carsharing can help address urban ecological problems like greenhouse gases and pollution

(Whiteman et al., 2011). Overall, carsharing reduces car ownership, vehicle kilometres travelled, vehicle emissions, increases public transit and allows for a more efficient use of roads and parking (Shaheen, Cohen & Martin, 2010; Engel-Yan, 2013).

Impacts of Carsharing

The environmental impact of the adoption of carsharing includes the reduction in a number of privately owned vehicles. This is directly related to the need for resources, manufacturing, maintaining, operating and the space to store existing fleets (Katzev, 2003). Vehicle ownership is studied to help determine the environmental impact that carsharing has on the environment and community. A review of North American carsharing policies revealed that carsharing vehicles reduce the need for privately owned vehicles by 4.6 to 20 vehicles per carshare vehicle (Shaheen et al., 2012). This research also showed that between 15-32% of carsharing members sold a vehicle after they joined the carshare organization while 25-71% of the members delayed or forwent the purchase of a vehicle (Shaheen et al., 2012). It had been seen that the reduction in overall privately owned vehicles varies depending on locations (Firnkorner & Muller, 2012). Evidence shows the ownership of private vehicles is reduced when people have carshare membership; this includes people selling their vehicles, but also avoiding intended future purchase of vehicles (Katzev, 2003).

In addition to reduced vehicle ownership, carsharing is shown to provide environmental benefits as well. Studies have shown that people that use carsharing services drive significantly less than people without membership, thus reducing the amount of vehicle

emissions and greenhouse gases (Cervero and Tsai, 2004). Organized carsharing can provide a basis to the movement toward multi-modal modes of transportation (Truffer, 2003). Carsharing could help to reduce the reliance on personal vehicle ownership while still providing mobility to people and communities (Millard-Ball et al., 2005). This service could provide the ‘missing link’ of urban mobility in terms of having the ability to provide greater flexibility to transportation needs (Millard-Ball et al., 2005).

Carsharing Business Models

The majority of past carsharing literature has focused on roundtrip, membership-based carsharing models. New carsharing models have begun to emerge including one-way carsharing services and business-to-business models. The entry of auto manufacturers into the carsharing sector has changed the landscape by increasing carsharing competition in cities. Roundtrip carsharing models, which have the members return the vehicle to the same location they booked the vehicle from, have been shown as a strategy to reduce personal vehicle ownership and vehicle kilometres travelled (Shaheen et al., 2015).

One-way carsharing, a new carsharing model, has gained momentum across the world and there are currently 18 operators in ten countries (Shaheen et al., 2015). The development of technology, including smartphones and keyless entry to vehicles has been a major push towards the ability to have one-way carsharing services (Shaheen et al., 2015). This model allows members to use carshare vehicles to make one-way trips whereby they do not need to drop the vehicle off where they picked it up, but instead they can leave the vehicle within a specified geographical area (free floating) or drop it off at a designated operating

area (station-based) (Shaheen et al., 2015). The one-way carsharing model is usually associated with minute versus hourly charges for the reservation (Shaheen et al., 2015). Due to this model being relatively new, more research needs to be conducted about the impact to cities, built environment, parking, transportation issues (first and last mile solutions) and environmental impact (Shaheen et al., 2015). Figure 2 outlines the different types of carsharing business models that exist, their value propositions and examples.

Figure 2. Types of Carsharing Business Models

Segment	Value proposition	Supply chain	Customer interface	Financial model	Examples
B2C point to point	Reduces emissions and congestion A vehicle when you want/need one and no requirement to return to same location	OEM vehicles; some programs using EVs and hybrids	Shift from vehicle acquisition to shared use	More affordable access to a vehicle than owning and maintaining Potential for profitability and exit	Car 2 Go
B2C roundtrip	Reduces emissions and congestion A vehicle when you want/need one	OEM vehicles; some programs using EVs and hybrids	Shift from vehicle acquisition to shared use	More affordable access to a vehicle than owning and maintaining Potential for profitability and exit	Zipcar
Nonprofit/cooperative	Reduces emissions and congestion A vehicle when you want/need one	OEM vehicles; some programs using EVs and hybrids	Shift from vehicle acquisition to shared use	More affordable access to a vehicle than owning and maintaining Member revenue, sponsorship, government subsidies/grants	Modo
P2P	Reduces emissions and congestion A vehicle when you want/need one and no requirement to return to same location Usually more variety of vehicle types for renters For the owner, a way to generate extra income from a subutilized resource	P2P models are unique in that they require virtually no additional production or suppliers; instead P2P firms serve as intermediaries between owners and renters; that is, generally more environmentally sustainable than B2C models	P2P models encourage vehicle owners to share a resource For the renter it also shifts from acquisition to shared use	Provides additional income to vehicle owners to offset the high cost of ownership For renters it provides more affordable access to a vehicle for than owning and maintaining a personal vehicle Scalable revenue model based on a percentage of transaction without need to acquire vehicles	Relay Rides Flight Car

Note. EV = electric vehicle; OEM = original equipment manufacturer; B2C = business to consumer; P2P = peer-to-peer.

Note. From “Ride On! Mobility Business Models for the Sharing Economy” by B. Cohen & J. Kietzmann, 2014, *Organization & Environment*, 27(3), p. 284.

Business-to-Business (B2B) Carsharing

The business-to-customer (B2C) carsharing model is the most popular model for carsharing organizations. There is a gap in the literature about the size of this market due to carsharing not being categorized as being for private or business-use (Clark, Gifford,

Anable & Le Vine, 2015). In Britain, there is evidence that suggests that the B2B carsharing market is growing faster than the B2C market, with an increase of 29% in 2013 compared to a 13% increase in the B2C market (Clark et al., 2015). This B2B model has proven to replace personal vehicle use for business-related travel to company-initiated carsharing (Clark et al., 2015). The result of this type of carsharing model have changed employee behaviour by reducing the need for employees to use their personal vehicle to work for work-related travel (Clark et al., 2015). Data from Autoshare in Toronto reveals that the B2B carshare model has members for a longer period of time compared to B2C customers (Costain et al., 2012). The B2B carsharing model can be particularly attractive to new businesses that do not want to purchase a fleet of vehicles for their company, so instead purchase a membership to carsharing for their employees (Reutter & Bohler, 2000).

Additional B2B carsharing research has been conducted in university campus settings. Benefits for the university include offering an amenity for staff, faculty and students, projecting a progressive environmental image outwards and reducing parking demand on campus (Zheng et al., 2009). Company-initiated carsharing programs on campuses with employees that do not regularly commute to work with a vehicle resulted in 68% of the members using the carshare vehicles for a personal errand and 21% of members using the vehicles for business-related trips (Zheng et al., 2009). It was shown that although the staff were less willing to participate in the carsharing compared to students, they said they were more inclined to need a vehicle for their current lifestyle (Zheng et al., 2009). There are different employer motivations for B2B carsharing, including the reduction of liability if there is an incident and the reduction of cost for maintaining a fleet of vehicles (Clark et

al., 2015). It was shown that financial and administrative benefits for employers were cited the most for reasons to participate in an employer-led B2B carsharing program (Clark et al., 2015). For the employee, the literature has mainly focused on the commuting aspect of transportation and how to reduce the need for personally-owned vehicles through restricted or paid parking, improving active transportation to and from work, encouraging telecommunication and improving public transportation connectivity (Clark et al., 2015). Overall, B2B carsharing is emerging as a new market-segment for carsharing - especially when companies already have specific policies that address transportation sustainability (Clark et al., 2015).

Auto Manufacturers Entering the Market

Eight out of the 20 operators (40%) in Canada were for-profit carsharing organizations and represented 95.5% of the total Canadian membership base and 89.9% of the fleets deployed (Shaheen & Cohen, 2015). Recently, there has been increased interest in private auto manufacturers to start breaking into the carshare market (Shaheen & Cohen, 2015). Increasingly, there is a 'push' for carsharing onto the consumer from private auto manufacturers and a 'pull' from cities looking for mobility solutions to reduce traffic congestion and pollution (Firnkorner & Muller, 2012). With the growth of carsharing in North America, auto manufacturers are looking at business strategies to enter this market (Firnkorner & Muller, 2012). There has been limited research conducted on access-based consumption and further research needs to be conducted as we begin to understand the shift of consumers from ownership of goods to access to services (Bardhi & Eckhart, 2012). In addition to consumer-based access, there has been attention on the business

model of auto manufacturers selling mobility instead of vehicles and how this impacts vehicle ownership (Firnkorff & Muller, 2012).

Carsharing & Parking

With the growth of carsharing around the world, there is more interest in how parking policy in cities helps to support these initiatives (Engel-Yan & Passmore, 2013). There is evidence to suggest that accommodating parking reductions in multi-unit residential building developments and providing carsharing has benefits for multiple parties, including the carshare organization, the developers, the city and the community (Engel-Yan & Passmore, 2013). The benefits include reduced costs for developers, the facilitation of the expansion of carsharing fleet, greater access to carsharing vehicles for neighbourhoods and residents, and a reduction in the negative impacts associated with vehicle use, including vehicle emissions, accidents and congestions (Engel-Yan & Passmore, 2013).

Public policy has begun to focus on improving fleet efficiency to reduce energy consumption, reduce carbon emissions and decrease costs (Shaheen et al., 2010). In the United States, transportation accounts for the largest end-user contributor of carbon dioxide emissions (Shaheen et al., 2010). In an effort to reduce vehicle kilometres travelled, and the subsequent environmental impacts, some public agencies have started to allocate parking to carsharing organizations (Shaheen et al., 2010). However, there are a number of technical and implementation challenges that exist at the municipal level, including zoning by-laws and parking requirements (Engel-Yan & Passmore, 2013). The issue arises about whether there are benefits that exist to reduce parking requirements

when the incorporation of carsharing takes place in a new development project (Engel-Yan & Passmore, 2013).

Additional concerns for parking easements occur when trying to ensure that the correct formula exists to provide the merits of carsharing in specific building developments (Engel-Yan & Passmore, 2013). This process takes a considerable amount of attention to ensure that the zoning provisions have that the proper amount of uptake and compliance is maintained, while at the same time understanding that the developer may not be able to guarantee the long-term commitment of having carsharing at the location (Engel-Yan & Passmore, 2013). The public opinion is also a factor that needs to be considered when considering parking easements. If the community is not behind the reduction in parking at the building level, then difficulties can arise in regards to zoning and parking requirements (Engel-Yan & Passmore, 2013).

From a study conducted by the Mineta Transportation Institution about the motivation and challenges of implementing carsharing policies in numerous jurisdictions, there were many common themes (2011). There was agreement that giving public parking spaces for carsharing networks was a public service that resulted in reduced traffic congestion, vehicle kilometre travelled, ownership and parking demand while at the same time improving air quality (Shaheen et al., 2010). Some jurisdictions noted that carsharing increased the density of developments and smart growth practice, while the transit authority felt that carsharing led to increasing access and ridership of public transit (Shaheen et al., 2010). It has been noted that municipal parking standards have not kept up

with the complexities of the mixed-use developments and how people use various transportation services to meet their transportation needs (Engel-Yan & Passmore, 2013). One of the major barriers to the growth of carsharing services is the parking access locations for the carsharing vehicles - this includes on-street, public off-street or at public transportation parking stations (Shaheen et al., 2010). Parking is an important factor to carsharing organizations because it defines the vehicle network in a city (Shaheen et al., 2010). In addition, parking is an asset that the city or businesses can offer a carshare organization to help facilitate the growth of the business by reducing financial costs for the carshare operators (Shaheen et al., 2010). Parking allocation from a city jurisdiction or business can be a formal or informal process.

In practice, there are cities that have adopted minimum parking requirements at the multi-residential building development scale (Engel-Yan & Passmore, 2013). This includes Seattle, Vancouver and San Francisco that have parking requirements that are determined by the size of the building development (Engel-Yan & Passmore, 2013). In Vancouver, it was shown that there are two main factors that need to be considered when determining if parking easement policies are right for new development projects. Firstly, the parking supply at the building needs to be rationalized based on the demand of the building and area (Environment and Parks Committee, 2014). Secondly, the availability of carshare vehicles in the area and at the building level must be considered (Environment and Parks Committee, 2014). If these two factors are not properly assessed, then the parking relaxations that are given to developers may not accurately demonstrate the parking

demand and may result in oversupply or undersupply of parking (Environment and Parks Committee, 2014).

There are many different benefits that are realized when there are parking relaxations within municipal policies. Research conducted by the Transportation Research Board concluded that carshare vehicles typically reduce vehicle ownership by 3.9 vehicles, which warrants the reduction of three parking spaces for every carshare vehicle that is incorporated into a development (Millard-Ball, Murray, ter Schure, Fox, & Burkhardt, 2005). In San Francisco, this type of parking requirement reduction program resulted in 30% of their members substituting their personal vehicles for carsharing vehicles and two-thirds of their members foregoing the purchase of a second car because of the service (Engel-Yan & Passmore, 2013). In Toronto, research showed that the presence of carshare vehicles in multi-residential buildings reduced parking demand and vehicle ownership at the building level (Engel-Yan & Passmore, 2013).

Overall, carsharing has picked up momentum in North America and around the world as an alternative transportation mode that reduces the need for private vehicle ownership. The emergence of the sharing economy has helped to fuel this momentum. There are many different kinds of carshare models that have emerged with an established user-groups. Carsharing provides both social and environmental benefits to society. Although this service is gaining momentum, research is still needed at the city-specific level to learn best practices to broaden the service to new cities and communities.

CHAPTER 3 – RESEARCH METHODOLOGY

The research methodology for this project includes the emergent design process and grounded theory. A series of interviews were conducted with CarShareHFX, other carshare organizations across Canada, Halifax Regional Municipality (HRM) urban planners, and multi-residential building developers. The purpose of the interviews was to gather information about current parking requirements that exist in Halifax preventing carsharing being adopted in the multi-residential building development sector, to gather information from other carshare organizations about how parking requirements have been used as a tool for the inclusion of carsharing in the multi-residential building development sector, and to understand the perceptions and challenges that exist from local urban planners and developers to incorporate this service into new development projects that are planned for the city.

Emergent Design Process

The type of research that was conducted for this study was a qualitative inquiry that involved an emergent design process. This research design aims at solving a problem by engaging with the people/organizations that are involved in the problem in order to gain a better understanding of the issue (Patton, 2002). This process engages people and organizations as part of the change process (Patton, 2002). Qualitative research involving emergent design allows for a more adaptive approach to gathering data from the participants and means that the research can be more responsive to the answers that are given for this project (Patton, 2002). Emergent design is a process that cannot be

completely specified in advance of the study (Patton, 2002). The reason why the emergent design has been chosen for this study is because it is a qualitative study with many interview participants identified. The study itself needs flexibility in order to gather all of the pertinent information that may arise through the initial interviews. The initial interviews provided information about other participants that should be interviewed and provided relevant information and data that should be gathered for the study.

Grounded Theory

Grounded Theory connects inductive and deductive research by taking steps and procedures to test emergent concepts with additional fieldwork (Patton, 2002). For this study, additional information was gathered from the HRM to better understand the process of how residential development projects are approved. Due to the different policies and planning strategies that exist in the HRM, it can be confusing to fully understand how this process works. Information was gathered from the HRM planning department to better understand the nuances that exist for development projects.

Data Collected

The data for this research were collected through a series of interviews that were conducted from July to October 2015. The questions asked of the participants were designed to understand the process of how carsharing services, development projects, and municipal policies influence decisions about parking requirements in the multi-residential building sector. Additional questions were asked to the multi-residential building developers and HRM urban planners about their perception and awareness about carsharing in Halifax. At

the end of each interview, a referral request was asked for additional participants in the study. Interview scripts are available in Appendix B.

Interviews

The first participant in the study was CarShareHFX. This organization provided referrals to other stakeholders to be contacted as part of this research. Information about the study was sent to potential participants by email. The participants in the study agreed to an interview with the student principal investigator. These interviews were conducted in person when possible, or over the phone. Before the interview, all of the participants were sent an informed consent form that was approved through the Saint Mary's University Research Ethics Board. All of the participants gave their signed or verbal permission to be interviewed as part of the study. All of the interviews were recorded and were transcribed for the analysis of the study.

The participants that were interviewed for this study include:

- CarShareHFX
- Carsharing organizations in Canada (3)
- Multi-residential building developers in the HRM (5)
- HRM municipal planners (2)

Secondary Data

Secondary data were used to better understand the strategies and policies that guide development projects in Halifax. The three secondary documents used were the Regional

Planning Municipal Strategy (2014), the Downtown Halifax Secondary Municipal Planning Strategy (2014) and the Regional Parking Strategy Functional Plan (2008).

Analysis Process

A qualitative analysis was conducted from the transcribed interviews to determine the relationship between various themes that emerged. All of the transcribed interviews were uploaded into the Atlas ti qualitative software program to categorize the themes from the interviews. The information from the three distinct groups, i.e., carshare organizations, municipal officials, and the multi-residential building development sector, were grouped and coded individually. Secondary coding was conducted for each of the groups to determine further relationships that existed. The enablers and barriers that existed in each of the groups were then assessed. Common themes began to emerge from all three groups. These common themes were then merged to determine overarching enablers and barriers from the research.

CHAPTER 4 – RESEARCH CONTEXT

The review of literature makes clear that there are various factors that influence carshare activities. Of these, the multi-residential development sector stands out as being important.

Yet, at the same time, this sector is greatly influenced by municipal policy and by-laws.

This section will provide the local context of how the multi-residential building development sector operates and the municipal structure and policy that guides decisions in development projects. In addition, a background of the local carshare organization will be provided.

Municipal Policies & Strategies

The overarching policy that guides the city planning is the Regional Municipal Planning Strategy, referred to as the Regional Plan. This plan informs the city where they will grow over the next 30 years and details the servicing boundary, including the extent of transit, water and sewer services¹. The Regional Plan identifies which areas have been allocated as growth centres for future growth in the HRM (Halifax Regional Municipality, 2014a). The next level of planning documents that help to guide development in the HRM are the Municipal Planning Strategies. Due to the amalgamation of HRM in 1996, which resulted in the municipality's current boundaries, there are currently 22 different community plans that guide the development in specific geographic areas¹. These plans incorporate the vision of the community and the types of uses and built form they are trying to encourage¹. Also included in the Municipal Planning Strategies is the approval process under the land-

¹ Information about how the Regional Plan is implemented at the city level was gathered from an HRM urban planner who was a participant in this study.

use by-laws about what kind of development is permitted¹. This includes items about how tall the buildings can be and the parking requirements. In each of the 22 different geographical areas, the requirements are different.

In 2013, the HRM adopted 18 Municipal Planning Strategies (MPS) and 13 Secondary Planning Strategies to guide planning decisions in the municipality (Halifax Regional Municipality, 2014a). There are five important implementation documents that guide development in the HRM:

(1) Land Use By-laws: (LUBs) regulate the use of land through zoning and can establish a wide range of development standards such as allowable heights and densities to landscaping requirements. LUBs have significant influence on community design and form. Where an MPS has been adopted, there is a corresponding LUB. All lands in HRM have a governing MPS and LUB.

(2) The Regional Subdivision By-law: establishes regulations for the subdivision of land throughout HRM. Included in this By-law is the Urban Service Area which establishes areas which may be developed with municipal water, wastewater and stormwater services. This By-law also establishes design standards for public streets, sidewalks and municipal parkland dedication.

(3) Development Agreements, Rezoning and Site Plan Approvals: are regulatory tools which may be established by policy provisions under MPS and LUBs in accordance with the provisions of the *HRM Charter* to allow for discretionary approvals by Regional Council or Community Councils. These tools offer flexibility but statutory requirements are imposed on the approval process and appeals.

(4) Priorities Plans, as identified throughout this Plan, are intended as management plans with more detailed actions to be taken to carry out the policy directives of this Plan. These plans may include regulations, programs, facilities or partnerships and associated budgetary requirements. These Priorities/Functional Plans are not to be considered a legal part of this Plan and were originally referred to as Functional Plans in the original version of this Plan.

(5) The Heritage Property By-law, adopted pursuant to the Heritage Property Act of Nova Scotia, allows for the identification, preservation and protection of properties deemed of heritage value to HRM. The Act also allows for the establishment of heritage conservation districts and heritage protection by-law to preserve areas or communities of historic or architectural significance.

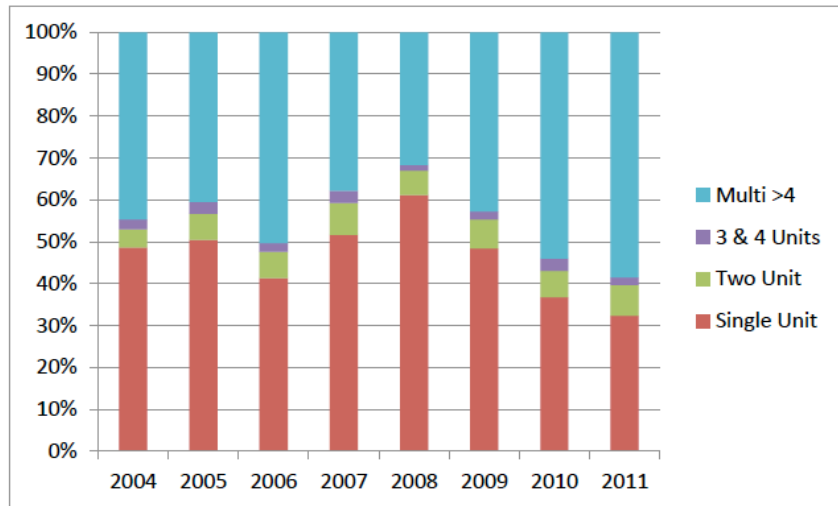
(Halifax Regional Municipality, 2014a, p. 19-20)

Multi-Residential Building Development Sector

As part of the Regional Plan, 25% of the new housing growth will be concentrated in the Regional Centre that includes the Halifax Peninsula and Dartmouth between the Circumferential Highway and the Halifax Harbour (Halifax Regional Municipality, 2014a). Based on studies conducted, it was shown that the growth rate of 1,200 new households per year would be a sufficient supply for at least 28-35 years in the HRM (Halifax Regional Municipality, 2014a). The trend is towards higher density developments (Halifax Regional Municipality, 2014a). The future development trends in the HRM are influenced by multiple factors including the population, strength of the economy, public infrastructure, planning regulations, housing choices and affordability of housing (Halifax Regional Municipality, 2014a). In Figure 3, it can be seen that there has

been an increase in the multi-residential (over four units) development sector from 2004-2011.

Figure 3. New Dwelling Units in HRM by Type (2004- 2011)



Note. From “Regional Planning Municipal Strategy” by Halifax Regional Municipality, 2014, p. 15.

The Research Case - CarShareHFX²

CarShare Atlantic Ltd., operating as CarShareHFX, has provided carsharing services for people in the HRM since December 2008. CarShareHFX’s mission is to reduce the dependence on individually- or fleet-owned vehicles through collaboration and partnership. The goal of the organization is to give residents ‘access rather than ownership’ of a vehicle. CarShareHFX is a certified social enterprise through BCorp (Benefit Corporation) that assesses specific social and environmental impacts an organization has by doing business. Among others impacts, CarShareHFX has specifically met social and environmental criteria by creating a mobility option that not only decreases significant

² Information about CarShareHFX was gathered through email correspondence with the company and through their website.

emissions through sharing vehicles but also makes car mobility affordable. From an interview with CarShareHFX, they describe the carsharing organization and the benefit of their company as:

The mission of car sharing, any carshare organisation around the world, is to provide access to vehicles rather than ownership and the result of that is that more people join and use the cars. For every carshare car that is used takes anywhere from 10 to 15 cars off the road. The idea of shared vehicles [...] decreases the parking constraints in urban centres, it allows people to see mobility as a multimodal approach meaning that if you can walk, if you can ride your bicycle if you can take transit and if all those three are not enough for your activity then you have a car available to you, but without the hassles of ownership, finding parking, insurance and repairs.

CarShareHFX provides their members with a self-service access to a fleet of vehicles on an hourly, daily or weekly basis 24-hours a day, 7-days a week, 365-days a year.

Depending on the membership type, the hourly and distance fee can be as low as \$2.25 per hour and \$0.17 per kilometer. This fee includes gas, insurance, maintenance, MacPass service (for bridges tolls and airport parking), winter tires and several membership perks such as free parking provided by partners in designated parking lots downtown. Membership types are categorized as individuals, families for personal and for business use, institutions (government and universities) and workplace, corporate or small business use.

CarShareHFX as an independent, local for-profit company will continue its growth strategy relying on partnerships with property managers, local businesses, and institutions

who have a similar sustainable, business and social mandates (CarShareHFX, n.d.). The organization relies on creating strategic partnerships with businesses and institutions to expand their network and encourage new members to join. These partnerships include Dalhousie University, NSCC, Port of Halifax, Waterfront Development, Crombie REIT, Southwest Properties, Killam Properties, HRM government, and NS Health, to name a few (CarShareHFX, n.d.). These relationships have been vital in the growth of carsharing in Halifax by expanding the locations of parking spaces, promoting the service to clients and creating innovative solutions to the transportation needs of residents.

CarShareHFX currently serves over 1,000 members with a fleet of 35 vehicles that are located throughout the Halifax peninsula and downtown Dartmouth. In 2011, CarShareHFX formed a formal partnership with Montreal's carsharing company Communauto who operates over 1,500 vehicles servicing approximately 30,000 members. In the summer of 2015, CarShareHFX increased their carshare fleet by ten hybrid vehicles. Through membership data analysis, the organization was able to determine where the demand for the service was and to create new carshare hubs throughout the Halifax peninsula and downtown Dartmouth. Over the last seven years, CarShareHFX has seen growth in their membership base and fleet of vehicles. In the next decade, CarShareHFX has ambitions of reach over 100 cars in HRM as well as expand to other cities in the Atlantic region.

CHAPTER 5 – RESEARCH FINDINGS & DISCUSSION

The findings for this research were broken into the three different stakeholder groups: carshare organizations, municipal officials, and multi-residential building developers.

Coding and analysis of the interviews were conducted to determine the different enablers and barriers that exist for each stakeholder group to implement a carsharing service at the building level. Network diagrams were created to visually represent the relationship between different themes. The findings section outlines the specific enablers and barriers that exist for each stakeholder group.

Once all of the enablers and barriers were determined for each stakeholder group, an additional level of coding and analysis was conducted to determine common themes and relationships that existed. The merged enablers and barriers illustrate the commonalities that exist for all three groups for the incorporation or lack thereof for carsharing services at the building level.

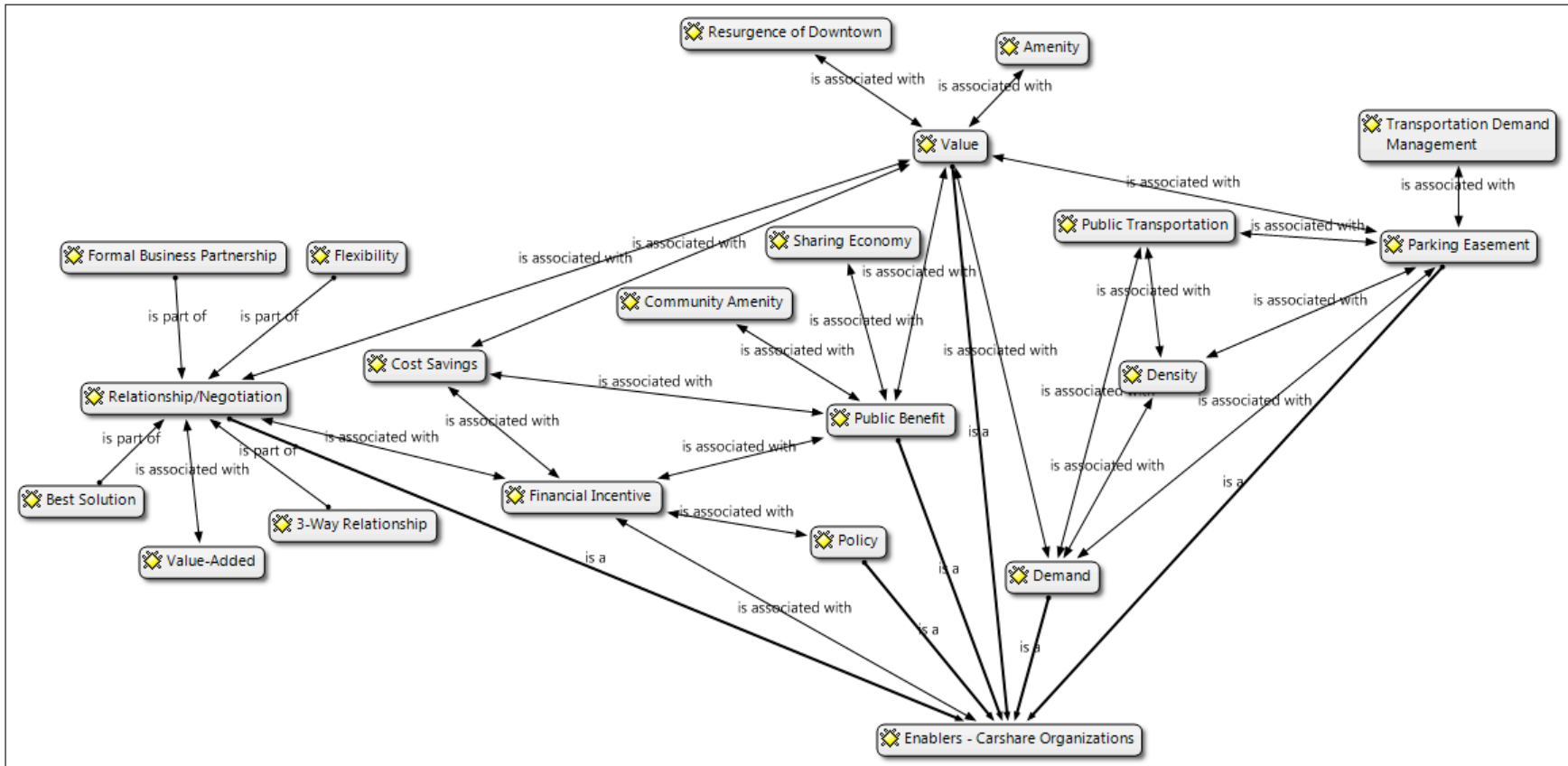
Carsharing Organization Enablers

There were many different themes that emerged through the interviews that were conducted with the three different carshare organizations. The coding of interviews and subsequent analysis revealed a network diagram of how these relationships enabled or created barriers to the integration of carsharing at the building level.

The carshare organizations that were interviewed all had municipal policies in place that allowed developers to request parking relaxations if they incorporated a carshare service into their building plans. There are stronger enablers compared to barriers associated with carshare organizations and the implementation of the service at the building level. Strong enablers are themes that have five or more direct relationships with the incorporation of carsharing within a city. Some of these themes also are co-related to one another with varying degrees of strength. For instance, the demand for a carshare service is strongly associated with the value of the service. Strong enablers included relationships that had five or more co-occurrences with other themes, while the weaker enablers had less than five co-occurrences.

The central enablers that emerged from carshare organizations were demand, financial incentive, policy and parking easements, public benefit, relationships and negotiations and value. These relationships and concepts will be discussed in more detail and are shown in Figure 4.

Figure 4. Carshare Organizations – Enablers for Incorporating Carshare



Demand

The demand for carsharing services is supported by the resurgence of downtown areas and the need for amenities, including additional transportation services, enables carshare services to be implemented in multi-residential building developments. The demand of the service is associated with the value of creating higher density communities in downtown and central areas of the city:

There's a bit of a resurgence in our urban downtown neighbourhood and a lot of them are hip and seen as young and your target millennial and play up on the carsharing and the sharing economy [...]

The common denominator is always going to be parking, what's the demand for parking. That's going to be the common denominator whether they are able to provide enough parking or not and whether they think that carsharing is a positive contribution to the development.

Financial Incentive

Financial incentive is an enabler for the implementation carshare service in the multi-residential building development sector by allowing developers to realize costs savings through reduced parking requirements. This financial incentive is tied to the public benefit that the apartment dwellers receive in terms of an extra amenity at the building level. There is a strong relationship between the municipal policy and integration of carsharing in new developments. One carshare organization explains this financial benefit for the developer and the demand of the service:

[...] savings is \$150,000 in terms of the construction of the building, so the developers are highly motivated because all of the sudden they can build the building without as much

parking, the city says it's okay and all they have to do is give a parking spot and car to [Carshare Organization], or somebody else. Once this formula becomes more attractive, the phone just rings, or people just email us that they are building a building, here's where it is, can [Carshare Organization] satisfy the other part of this.

Policy & Parking Easements

Policy and parking easement by-laws play a central role in the implementation of carsharing in the development sector. Parking easements incentivize a parking reduction for the developer through the building application process. Parking easement policies work well in areas that have high density, good public transportation and where there is high demand for the carsharing service. This is explained by one organization here:

The city of [city name] is trying to be a greener city. Whatever it can do to provide better transit and more options for people that don't require then to own a car or park a car, better the long-term future here. You know the gridlock, the congestion, those things create havoc, so there's an incentive. The City saw this incentive, if they could help the developers reduce the amount of parking and help them support carsharing as part of it, then that might be a good thing.

It should be noted that these policies could act as best practices for other municipalities to build confidence in how the relationships work with the carshare organization, municipal planners, and multi-residential building development sector.

Public Benefit

The public benefit that comes with the incorporation of carsharing through parking relaxation by-laws, includes the reduced cost per unit due to minimizing the parking

requirements and, therefore, cost of building the parking spaces for the development. This is directly associated with housing affordability. In addition, the carshare service provides an additional transportation amenity to the tenants and surrounding community.

The city benefits because there are fewer cars, developers benefit because it costs them less to build the building, the person benefits because the cost of the building is reduced somewhere through the cost savings, we benefit because we get parking and cars, or even just really good parking.

Relationships & Negotiation

Carshare organizations need to have strong relationships with the municipality and developers. The carshare organization needs to look at themselves as a service provider and that they are creating a formal business relationship with the other two parties to implement the carshare service into new developments. This is a relationship that works three-ways with the carshare organization, municipal planners, and multi-residential building development provider to provide an amenity for the residents and community members. Carshare organizations need to be flexible in their approach and be able to meet time sensitivities of the developers and municipal planners in order to come to the best solutions for all three parties.

[...] the relationship between the carsharing organization there and the city planning department is fundamentally important. They have to have a good relationship and the city has to see carsharing as a worthwhile amenity and a good trade-off when there's a parking variance in play.

When the developer comes to us and we say this is how you can think about this relationship, I am like your concrete guy that is about to build a parking structure for a tenth

of the price. And so really, the engagement that you have with the developer is building a relationship so they know that you are a good service provider, that your product and service actually means something substantial and that you're not just sort of a requirement that the city is throwing at you [...].

Value

The value of carsharing is directly association with public benefit and demand for the service. The value of incorporating carsharing into new multi-residential building developments not only helps the carshare organization grow, but helps to reduce building costs for the developers and provides complete neighbourhoods with extra amenities for the city. The residents' benefit by realizing the savings in housing costs from the reduced cost of building parking in the building.

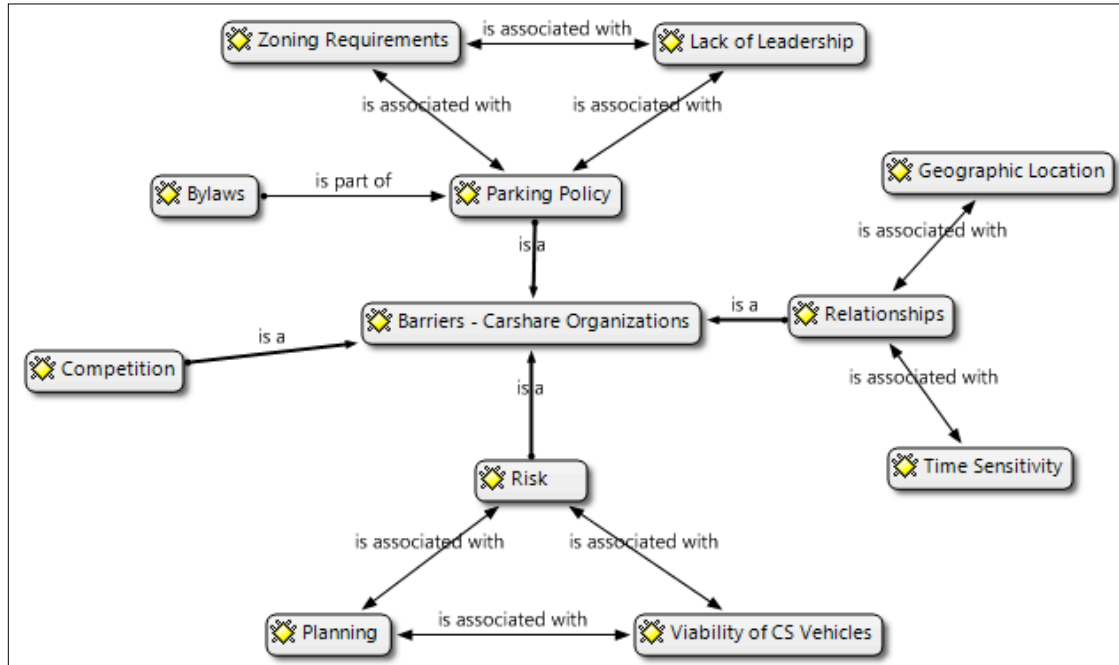
There is a climate for that kind of development, appropriate development. The other thing that [city name] has, is that there is a high demand for land. So, the higher demand for the land asset, the more valuable it is. [...] it is an attitudinal thing, the more people tend to treat land in a valuable way and make intelligent decisions, have intelligent discussions about it. [...] it elevates the sophistication of the discussion around how do we want our cities to grow.

Carshare Organization Barriers

Through the interviews conducted with carshare organizations, the barriers that exist were not as strong as the enablers found. One reason for the reduced number of barriers compared to enablers could be the fact that all of the carshare organizations that were

interviewed have successfully implemented the carshare service at the building level through municipal policy and processes. The main themes that emerged were the financial cost, parking policy, and risk and were all mentioned four times in the interviews. Figure 5 illustrates the direct barriers that exist and the relationship between other themes.

Figure 5. Carshare Organizations – Barriers for Incorporating Carshare



Competition

Competition was mentioned by two of the carshare organizations that were interviewed. In cities where there is more than one carshare organization and there is competition in the carshare sector, it is up to the developer to decide which provider to choose to work with when they are looking for a parking relaxation through the municipality. This means that the carshare providers need to cultivate strong relationships with the developers to ensure future business opportunities. Competition in the carsharing sector is described from one organization:

[...] there is a lot of competition in the carsharing sector [...] it has grown substantially because the traditional automotive manufacturers and people in the industry, the transportation industry, the traditional movers realize that they have to do something differently. So, Avis own Zipcar, Mercedes Benz owns Car2Go [...]. It's starting to explode and private sector sees this as a form of vertical and horizontal integration.

Risk

The time it takes to build the project could amount to the loss of other opportunities for the carshare organizations and presents risk to the carshare organization. It can take 12-24 months from the time that the developer receives their building permit for the development project to be built³. This time lag means that carshare organizations need to ensure that the location of the carshare vehicle is viable when the constructions is complete and the service will be available to the residents and public. Carshare providers need to determine future geographic needs of their service. One carshare organization describes this risk:

If it is not an area that currently has carsharing, it will be a carshare area in 12-24 months. It has to be, or else you are not going to catch up with your revenue in the long-term to make those cars viable [...].

Parking Policy

The type of parking policy that municipalities have can be a barrier for the integration of carsharing into the residential development sector. Most municipalities have set formulas that determine how many parking spots need to be built depending on the number of units in the building. Parking policy is associated with the leadership of the planning department

³ Information provided by one of the carshare organizations.

and whether they are willing to move away from zoning requirements (or parking requirements) in order to build projects that make the most sense for the community. One organization explains how zoning or by-laws don't necessarily make sense for all building developments:

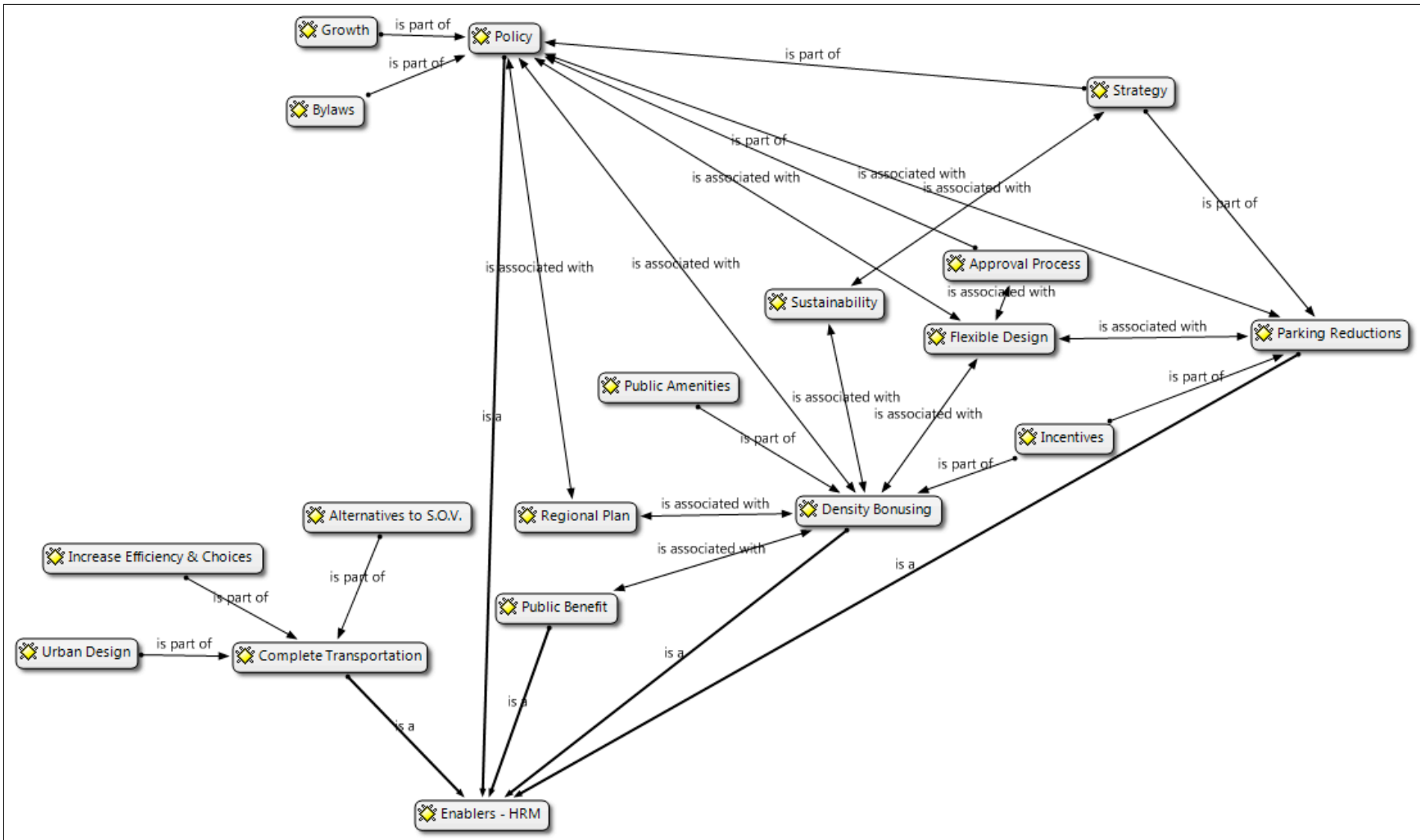
The only thing that is the loser is the zoning, but who cares about that anyway? These formulas are so old anyway that they don't make sense – you have to have two parking spots for every apartment.

Halifax Regional Municipality Enablers

The interviews and research into planning and strategy documents for the HRM revealed many different factors that will either help contribute the implementation of carsharing at the residential building development level or prevent it from taking place. When looking at the enablers and barriers that exist, the enablers had much stronger associations than the barriers, meaning that there was more evidence collected to show enabling aspects of how the City operates to encourage the implementation of carsharing in new building developments.

There were five main enablers discovered through the interviews and research into municipal planning documents. These include policy, complete transportation, public benefit, density bonusing and parking reductions and all had five or more mentions in the interviews and supporting documentation. Figure 6 shows the direct enablers that exist at the city level and the associated themes.

Figure 6. HRM Planners – Enablers for Incorporating Carshare



Complete Transportation

Transportation is an enabler to having carsharing services integrated into new multi-residential developments. Complete transportation (as defined in this study) is when people have alternative modes of transportation, including active transportation (walking or biking), to get to amenities, their work and other locations. When neighbourhoods are complete, it is not necessary to use a car for every activity that is carried out. Carsharing also makes people use public transportation more because they have to plan out each trip that they are taking. One of the strategies of the Regional Plan is to implement sustainable transportation options that emphasise public transportation, active transportation, carpooling and other forms of transportation that minimize the use of single occupancy vehicles (2014a). The availability of other transportation options in a community directly impacts the use of carsharing and is associated with parking requirements and policy. An HRM urban planner explains the importance of transportation in urban design:

There's been a push to increase active transportation, so that includes basically any way to get people out of their cars to improve walking, urban design is all about that too.

[...] as the amount of mixed use planning, as our neighbourhoods become more complete, as our streets become more complete, you don't necessarily need your car for every single activity that you do, but you might need it once in a while.

Density Bonusing

Density bonusing is associated with the public benefit because it allows for something to be given back to the public through the development project. Density bonusing is a process whereby developers and city planners determine building requirements that may fall outside of specified by-laws. Through a negotiation process, the developers may need

to contribute something to the public benefit or realm (i.e. build a playground in the community) in order to get approval on their development that does not meet the municipal guidelines. An example of this could be that a developer is allowed to incorporate two additional storeys on a project, but, as part of the planning agreement to allow for extra storeys, the developer then needs to provide a carshare vehicle for the community or a playground across the street. Within the HRM Charter, there is a lot of flexibility to allow for density bonusing in the regional centre for multi-residential building development. It should be noted that the City is currently going through an investigative process about how to implement density bonusing for more projects in the future.

The Centre Plan, which is looking into all of the policies in the Regional Centre, inside the circumferential as well as the Halifax Peninsula. The Centre Plan is looking at opportunities for density bonusing.

Parking Reductions

Through the Regional Parking Strategy Functional Plan, HRM has a proposed parking strategy that aims to increase the efficiency of the current parking system and reduce parking demand (IBI Group, 2008). This plan supports the reduction of parking structures in the regional centre of the HRM by increasing transportation choice and efficiency (IBI Group, 2008). This is explained below:

S-30 When preparing new secondary planning strategies or amendments to existing secondary planning strategies to allow new developments, means of furthering housing affordability and social inclusion shall be considered including:

- a) creating opportunities for a mix of housing types within designated growth centres

and encouraging growth in locations where transit is or will be available;

b) reducing lot frontage, lot size and parking requirements;

(Halifax Regional Municipality, 2014b, p. 57)

Policy

Policy helps support the implementation of carsharing services. HRM does not have specific formulas for parking relaxations or easements in the HRM. Each land-use by-law has slightly different parking requirements for developers and is described below:

[...] the land use by-law that is a fancy name for the zoning by-law. Now I should mention that the more progressive area is downtown Halifax, which for many years has had no parking requirements for downtown residential.

Public Benefit

The implementation of carsharing in the multi-residential building development sector gives people access to vehicles without vehicle ownership in their community. This is an added amenity for the building tenants and surrounding community and can be associated with the development process of density bonusing. In the Regional Plan, HRM is supportive of building communities that are resilient and adaptable to their needs:

Guiding Principles - Sustainable

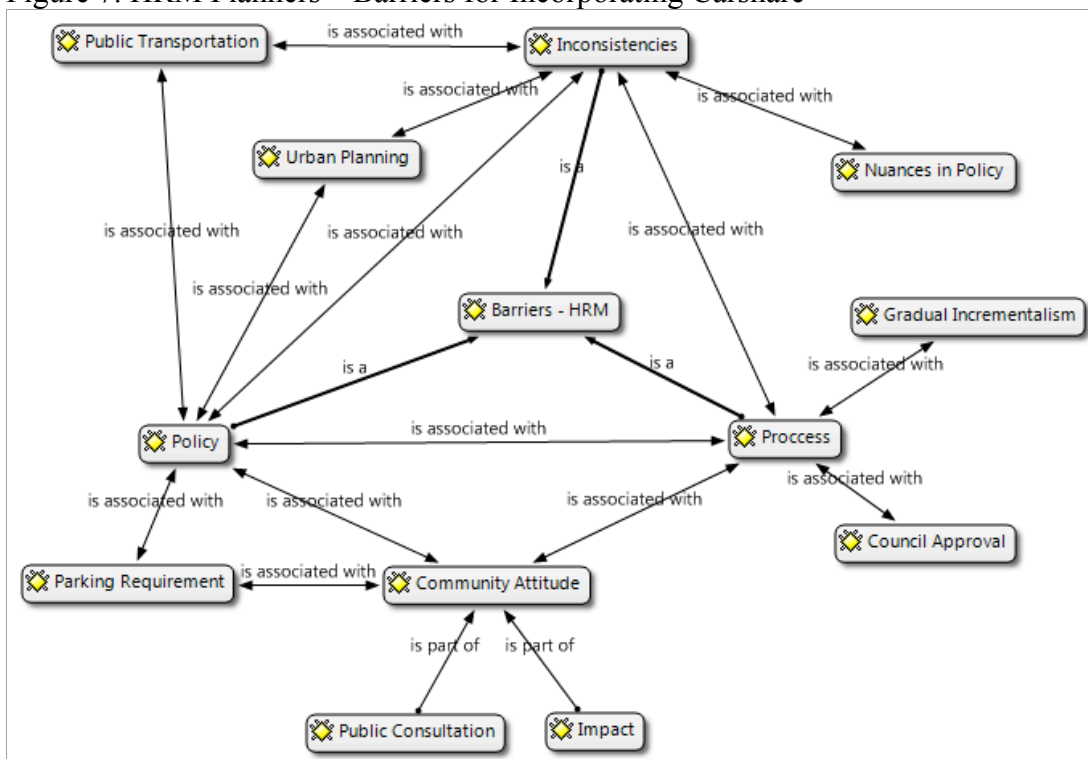
- Design, plan and build with respect for economic, environmental, social and cultural sustainability.
- Create resilient communities that adapt to evolving opportunities and needs.

(Regional Municipal Planning Strategy, 2014, p. 77)

Halifax Regional Municipality Barriers

The barriers that exist at the municipal level for the implementation of carsharing at the building level were weaker than the enablers. There were three main barriers that were identified, including inconsistencies, process and policy. Each barrier was mentioned at least twice in the interviews and supporting documentation. The three main barriers were all associated with one another and included other relationships. Figure 7 illustrates the barriers and their relationships at the municipal level.

Figure 7. HRM Planners – Barriers for Incorporating Carshare



Inconsistencies

In the HRM, there are 22 different land-use by-laws that guide building development. These 22 by-laws have different rules and regulations for the developers in terms of what they can and cannot build. The reason why there are so many different land-use by-laws is

due to being an artefact of the pre-amalgamation of the HRM, whereby different communities had different requirements. This is supported by:

[...] the nuance here in Halifax is that obviously prior to 1996 it was a number of different of governments, number of different municipalities, number of different mayors, so we had the Halifax county, we had Halifax proper, we had the city of Dartmouth, we had a number of them, so right now, we're living under that legacy. So right now, we have 22 different land use by-laws. And in each of those land use by-laws, well not in each of them, but in many of them, the parking requirements are a little bit different.

Policy

Depending on how on the by-laws and what kind of building the developer is planning to build, there are different processes within HRM to acquire a building permit. This includes different implementation tools discussed in the Municipal Policies & Strategies section. Some of these implementation tools need public consultation or council approval. In terms of parking requirements, the land-use by-laws describe the requirements for each area and zone. In downtown Halifax, there are no parking requirements for new buildings. Within the secondary municipal planning strategy for downtown Halifax there is guidance about parking in this location:

Key to encouraging the use of alternative modes of transportation, including active modes and public transit, is providing disincentives to drive. The cost is often cited as a motivator to switch from driving to work to other modes, as is the lack of available or convenient parking. Parking is required at the end of every trip and if it is too expensive or unavailable, commuters will choose other options. However, for a downtown to be vibrant and continue to thrive, parking is required and should be developed to encourage short-term trips.

(Halifax Regional Municipality, 2014a, p. 49)

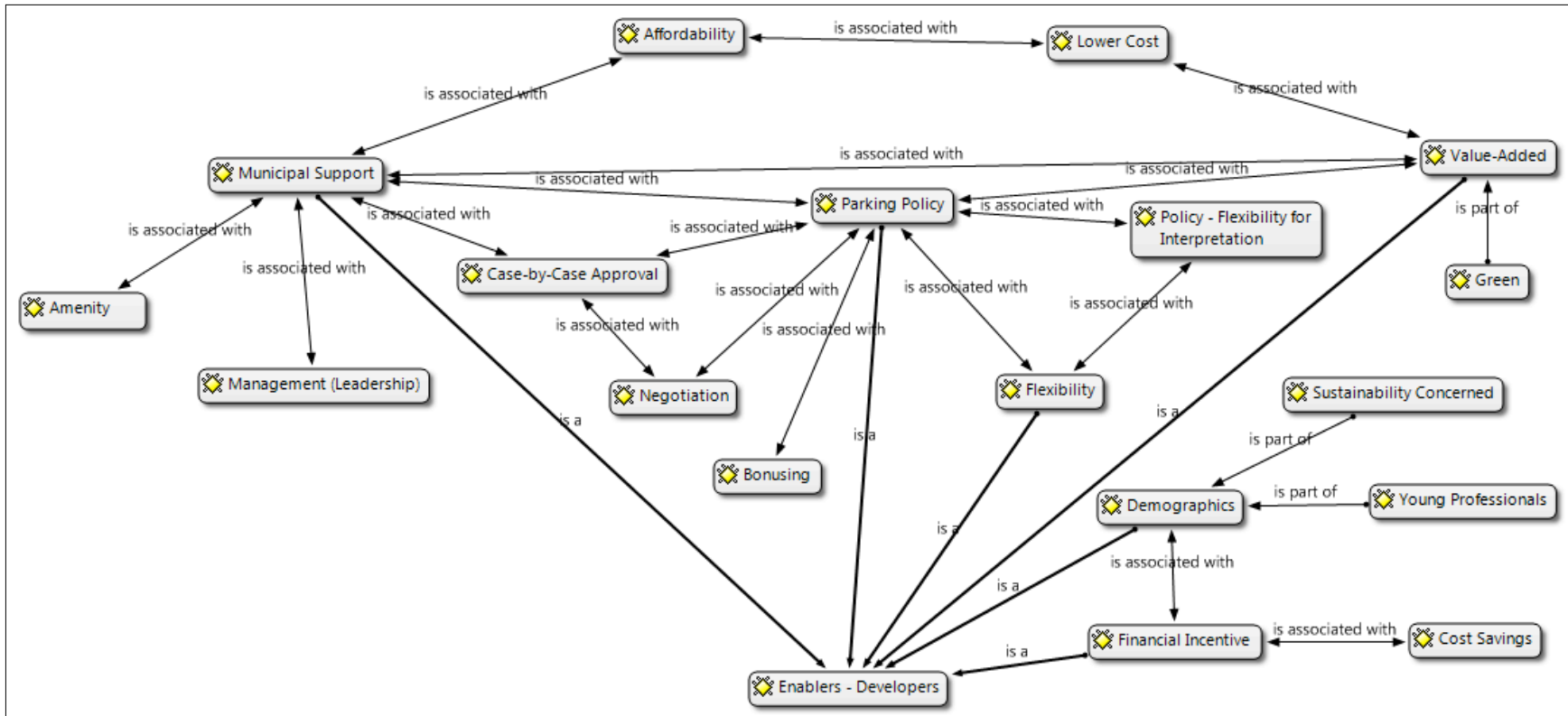
Process

The process of getting a development permit can be long and onerous. At times, the development plans are adopted as-of-right development and can be approved through the planning department. As-of-right development is when a development project complies with all of the applicable zoning requirements and does not require any additional action by HRM Council (Developments Approval, 2012). If there are any changes to the plans that fall outside of the as-of-right development, then public consultation or council approval is needed. When public consultation is needed, there are often concerns about the impact that the development will have on the community.

Multi-Residential Building Development Sector Enablers

The interviews with the developers revealed many facets for the incorporation of carsharing into their projects. The developers were all very interested in the possibility of parking reductions and an extra amenity for their tenants, but explained that the process is complicated. The enablers that existed for developers were municipal support, parking policy, flexibility, demographics and value added. Each of these enablers had at least five mentions in the interviews. The enablers for the multi-residential developers are shown in Figure 8.

Figure 8. Multi-Residential Building Developers – Enablers for Incorporating Carshare



Demographics

When talking to developers that focus on the Halifax peninsula, they are seeing young people and professionals that are attracted to a central, urban lifestyle. These people often do not own a vehicle and have environmental concerns. These factors contribute to developers wanting to reduce parking requirements to suit the needs of their tenants.

Developers explain the demographics of people living in their buildings:

[...] having carshare onboard has some commercial value. It makes the building more attractive to the people we are trying to attract. In other words, people who, you know, people that are kind of at the lower end of affordability. First-time homeowners, often younger people, this is the first home for them. And, so carshare would be seen as a very attractive aspect of marketing this building.

We are seeing a lot of young professionals. They live downtown and they do not have a car.

Financial Incentive

For developers, it can be very costly to build underground parking space depending on the geological substrate and how far down they need to dig to satisfy the parking requirement needed for the building size. According to the developers, the cost per parking stall ranges from \$20,000-\$60,000. If developers can reduce the parking in their building, then there are cost savings that can be passed onto their tenants through lower rent. Depending on where the development is, some developers have the ability to rent vacant parking spaces to the surrounding community to try and make money.

Table 1 illustrates the payback period in years for developers renting vacant parking spaces in their building to the general public. The information about the average cost per parking spot was gathered from the developers, while the average monthly parking fee was found through an Internet search⁴. Overall, the payback period ranges from 9.5 years to 67 years.

Table 1. Average Payback Period for Parking Space Rentals (years)

Average Monthly Parking Fee Average Cost per Parking Space	\$200	\$175	\$150	\$125	\$100
\$20,000	8.33	9.52	11.11	13.33	16.67
\$25,000	10.42	11.90	13.89	16.67	20.83
\$30,000	12.50	14.29	16.67	20.00	25.00
\$35,000	14.58	16.67	19.44	23.33	29.17
\$40,000	16.67	19.05	22.22	26.67	33.33
\$45,000	18.75	21.43	25.00	30.00	37.50
\$50,000	20.83	23.81	27.78	33.33	41.67
\$55,000	22.92	26.19	30.56	36.67	45.83
\$60,000	25.00	28.57	33.33	40.00	50.00

Municipal Support

When developers are proposing new developments, their plans are evaluated on a case-to-case basis. This means that there is flexibility for the municipality to deviate from the land-use by-laws if the developer can make a compelling argument why the deviation should occur. This allows for some flexibility for the developers building plans.

Developers have seen that the City is supportive of carshare initiatives, but that there is no

⁴ Retrieved from:
<http://www.collierscanada.com/en/news/2012/parking%20survey%202012#.Vk5nMUtxM3Q>

set formula to reduce parking requirements when incorporating carsharing into a new development. The reduction in parking requirements at the building level for a carshare service allows for more affordable housing options for tenants and an extra amenity. The flexibility of the building permit documents is explained:

Anyone in development understands that planning documents are purposely written in the grey in order to allow the planner the flexibility for interpretation and for give and take and seeing what situation suits best, case-by-case.

Parking Policy

The current parking policy is associated with parking requirements set out in the municipal by-laws and is described below:

What generally drive our parking requirements are the by-laws, so when HRM stipulates that you have to either 1:1 or .75:1 for every apartment. That is really what drives our parking.

Value Added

Value added is associated with green developments and lower cost for the tenants. If developers do not need to build as much parking in their buildings, then this cost savings is passed onto the tenants. Developers see carsharing as a value added to their tenants, and if it makes sense based on the demographic of the tenants in the building, then can be a smart business decision. Developers opinions about offering additional amenities to their tenants is described here:

I really think, to be honest with you, because I know 99% of the developers in Halifax, the bigger guys, we're a very progressive, open-minded group. I think that your energy and

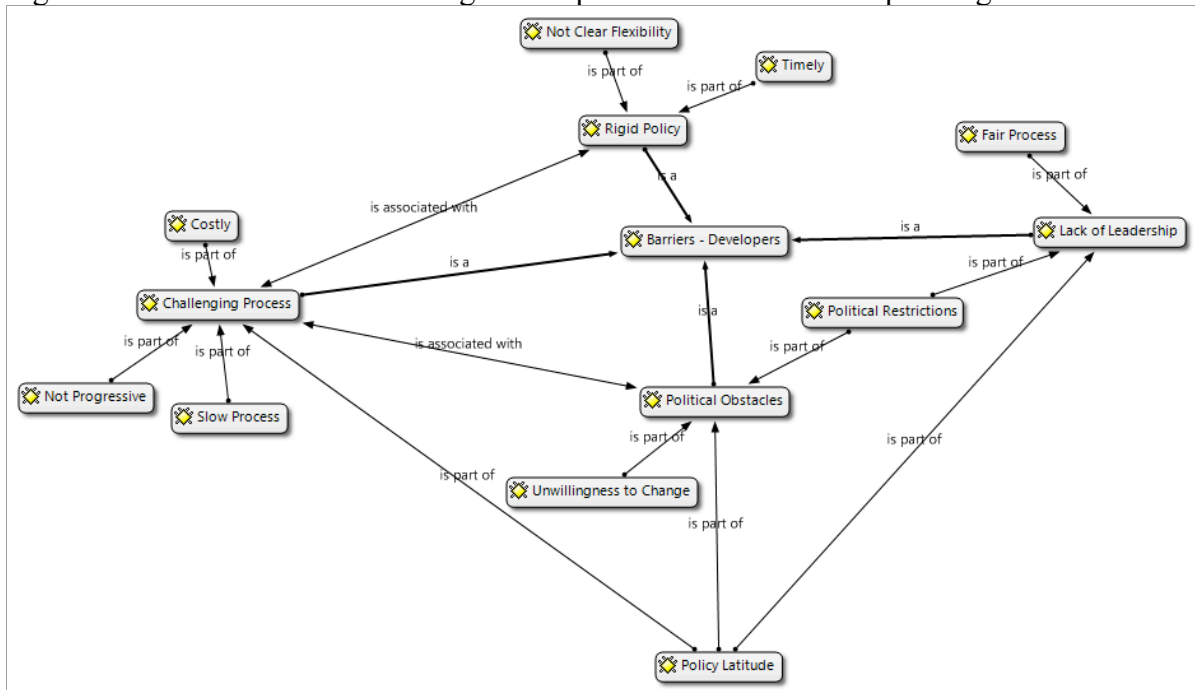
focus need to be interviewing HRM and understanding how, you know, do people in HRM know how to navigate through the political and policy restrictions. Because I think that if HRM came to me or any of the other guys that I compete with and says look you can either put in a parking stall or for every carshare stall you provide, you save X parking stalls, I would almost guarantee you that you would have carsharing in probably every new development. We are not stupid, we are all businessmen. The only reason we don't is if it adds no value because the municipality doesn't credit us for the value.

So what the development agreement processes allows us to negotiate with the city and say that, if you allow us to build some number of additional floors, making the building taller, we will provide certain amenities, urban or civic or another kind of amenities, not just for the residents of the buildings, but broader to the urban community for reason that we would then go on to identify.

Multi-Residential Building Development Sector Barriers

The interviews with the multi-residential building developers revealed that the barriers are more strongly associated with the incorporation of carsharing into new building developments compared to enablers. The barriers had at least three mentions from the interviews that were conducted. The main barriers include a challenging process, lack of leadership, political obstacles and rigid policy. These are shown in Figure 9.

Figure 9. Multi-Residential Building Developers – Barriers for Incorporating Carshare



Challenging Process

Developers find that dealing with the City for new building development projects can be a difficult process.

[D]ealing with the city in general on development projects is a very slow and painful process.

I would say that the process has been extremely bumpy to put it mildly in dealing with the city.

There are instances when requests for carsharing have taken place with the City, but there has been no response back from the city officials. The developers don't see the City planners as being very progressive in their approach, implying that there is unwillingness at the City level to deviate from set by-laws.

Changing Demographics

Developers noted that there are changing demographics in their tenants. People who are looking for nice accommodation will take on a roommate that may result in additional vehicle parking being needed. Conversely, other developers notice that there are a lot of residents on the peninsula that choose not to own a vehicle because they live in a central location where it is very walkable. One developer noted that in their buildings, 15-18% of the tenants have vehicles. This developer still needs to build parking spaces to meet the land-use by-laws that exceed the need of their tenants.

Financial Expense

There is a huge financial expense for developers to build underground parking in new multi-residential building projects. If the developer is not able to fill the underground parking lot, they have the ability to rent spots out to the general public. This is described below:

So I mean, when you are renting a stall for \$100 a month or \$80 a month, you have to rent it for 30 years before you are paying it back. So, people will say that you're building all of these extra spaces, but you can rent them out and make money off of them - well no, your payback period is about 30 years. So I would much rather not have to build them and not have to rent them out and take that \$40,000 times 300 extra parking spaces that I wouldn't have necessarily have put there and put it in other amenities or features of the building that would be a true value add for my residents.

Depending on market conditions and the location of the parking lot, the payback period for the developer of the parking spot can be 9.5-67 years (Table 1 - Average Payback Period for Parking Space Rentals). This additional cost and time period for the payback of

building extra parking spaces gets passed onto the tenants of the building in their rental fees.

Lack of Leadership

The lack of leadership at the municipal level is a barrier for developers to incorporate carsharing into new development projects. The leadership is strongly associated with the rigid HRM by-laws that dictate parking requirements for developers. One developer noted that planning documents are intentionally written in the grey to allow planners the flexibility to determine what the best solution is for a specific project. One developer describes the lack of leadership at the municipal level:

With this one here, you have to go to council to be signed. You don't really have a debate. One councilor stood up and said this is great. This is a great development; this is the way we should be moving in the city and not having parking. It means a lot for our city. It is good thing for our city, but they say things like that, but when it comes to help out, nothing really happens.

Political Obstacles

Although there is this flexibility within the planning documents, one developer does not feel like the HRM planners are given the political latitude to make decisions that are catered to the specific project or location. Another developer described the HRM planning department as “creatively destructive” in that they will shoot down projects or development plans in creative ways in order to avoid seeing the project to completion. There is a sense from the developers that there is an unwillingness to change in the HRM, this is described here:

I mean for years... you know we elected the new mayor on the platform that he was going to make it easier for developers, but just in general, nothing has really changed.

[T]he biggest hurdle for this, unfortunately, is going to HRM because it is a, and I say this with respect and as politely as I can, it is a schizophrenic organization. Okay, you have some people that will sit here and say yes, yes we agree we need to do this, it absolutely makes sense, then you will other people within the same organization of HRM, oh it can't be done because this is not how we do it, or the policies don't allow for that [...]

Rigid Policy

One developer noted that 15-18% of their tenants own vehicles, but they are still mandated to build excess parking even though they will not have complete occupancy of the underground parking lot. This adds additional costs to the developer. There are no set policies in place for parking relaxations or the incorporation of carsharing into new multi-residential building development projects.

It doesn't say you know, for every carshare stall, you can remove ten parking spots. It doesn't say that.

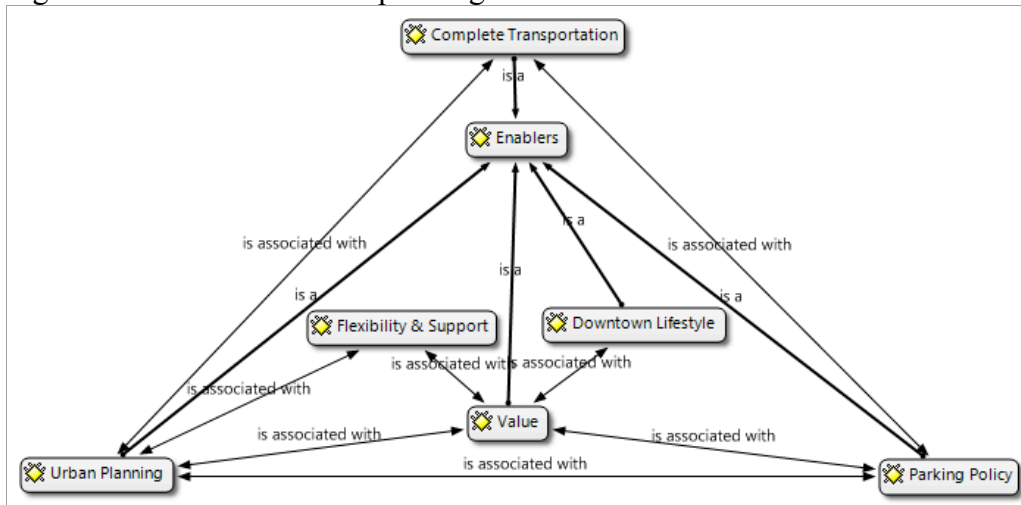
But, we were not able to vary parking.

Carshare Enablers

After evaluating the enablers for the carshare organizations, HRM planners and the multi-residential building developers, common themes emerged from all three-stakeholder groups. Overall, the enablers for these groups have stronger associations compared to the barriers. Each group discussed the different factors that are associated with the integration

of carsharing at the building level and these were put into broad categories to show their relationships. The strong enablers that came through for all three stakeholders were parking policy, urban planning and value that had over 28 mentions in the interviews. The themes of flexibility and support, complete transportation and downtown lifestyle had weaker associations with fifteen or more mentions in the interviews. The carshare enablers are shown in Figure 10.

Figure 10. Enablers for Incorporating Carshare



Stronger Enablers

Parking Policy

Parking policy is a central enabler for incorporating carsharing into new development projects. For carsharing organizations, parking policy provides the structure for relationships to be built between their organization, the developers and municipal planners to create win-win-win solutions for all three parties. Parking policy gives the guidelines for

municipal planners and developers to follow in terms of parking relaxations and is a central theme to enable carsharing at the building level.

Urban Planning

How cities are planned contributes to the willingness to incorporate services like carsharing in new developments. Urban planning is associated with parking policy and value. Urban planning strategies and plans allow for flexibility in the design of a city depending on the growth centres and what kind of development is wanted in a given city. In cities that have green urban planning policies, it is easier to create parking relaxations for developers that are able to contribute to the integration of carsharing services at the building level.

Value

Value is associated with parking policy and a downtown lifestyle in that the ability to incorporate carsharing at the building level provides value to tenants in the form of more affordable housing and an extra amenity. Parking policy is the central tool used to incorporate carsharing at the building level.

Weaker Enablers

Complete Transportation & Downtown Lifestyle

The availability of public transportation supports carshare initiatives. In the HRM, there has been a push for complete neighbourhoods - meaning people do not need to use a private vehicle for every trip they plan. The developers are seeing young people who do

not have vehicles and are attracted to a central lifestyle where they can walk to the services they need.

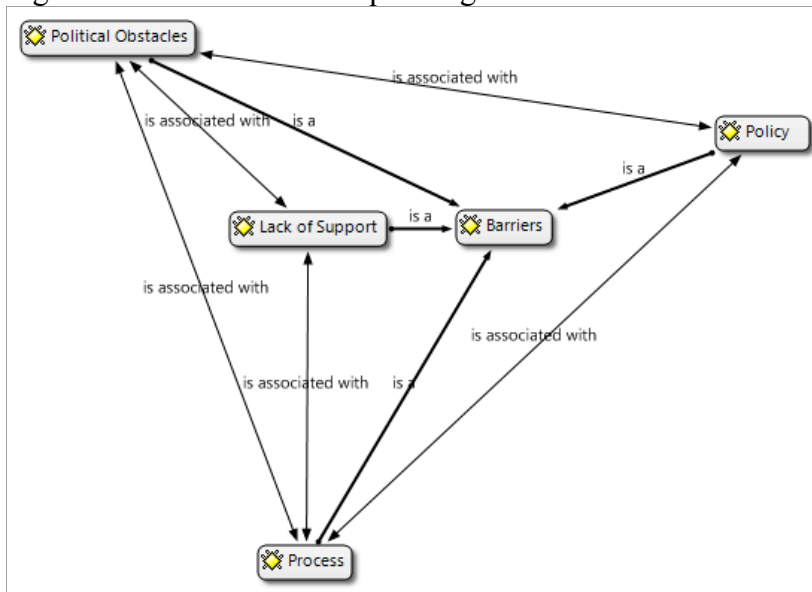
Flexibility & Support

The flexibility and support of the developers and city planners are associated with the parking policy and urban design. It is up to the planners and the developers to want to reduce parking in a city and incorporate carsharing at the building level. If support and flexibility do not exist from the developer's perspective it means that the incorporation of carsharing is much more difficult.

Carshare Barriers

As mentioned, the themes related to barriers were weaker than the enablers. The central barriers that emerged from the qualitative analysis show that lack of support, policy, political obstacles and process are the strongest barriers for the incorporation of carsharing at the building level. Each of these themes was mentioned at least 15 times in the interviews with the three stakeholder groups. The relationship of the carshare barriers is shown in Figure 11.

Figure 11. Barriers for Incorporating Carshare



Lack of Support

Lack of support is a direct barrier to the incorporation of carsharing at the building level and is associated with the process and political obstacles. This lack of support incorporates ideas around the impact of parking relaxations for the community and that there is not a process within the HRM to give these sort of easements to developers.

Policy

HRM does not have a policy that explicitly allows developers to reduce their parking requirements. This is a direct barrier to the incorporation of carsharing at the building level. Other cities that have a policy in place for parking easements have an easier time incorporating carsharing into building development plans.

Political Obstacles

From the perspective of the multi-residential building developers, there is both public pressure and lack of political latitude in the planning department of the HRM to incorporate carsharing at the building level. One developer feels like there is unwillingness for HRM planners to change the set guidelines and let more creative development approaches take place. This impedes the ability of developers to implement parking requirements that they feel best suit their building developments.

Process

The development permit process can be lengthy and difficult to obtain. This process is associated with both the policies that are in place and the political obstacles that exist at the city planning level. Currently, there is nothing that explicitly states that developers can reduce the parking requirement even if it adds an additional amenity for the residents and communities. In cities where the policy exists, there is a strong relationship between the carshare organization, urban planners and developers to implement these services at the building level. These relationships do not seem to exist in Halifax.

Discussion

There are many different factors that influence the ability to incorporate carsharing into new multi-residential building developments in Halifax. There are specific enablers and barriers that exist for carshare organizations, city planners and building developers, and also common themes that emerge for all three groups. The interaction between the three groups plays an important role to understanding the residential building development environment and the factors that influence changes to the building process for an initiative like carsharing.

Enablers

The incorporation of carsharing at the building level is strongly associated with the municipal policy and is related to the demand for the service, financial incentive for the developers and the public benefit and value of the amenity. The relationships that the carshare organization is able to create with the municipality and the developers are integral to this process. This cost savings for developer allows the municipality and carshare organizations to leverage the developer savings through the incorporation of a carshare service in their building. The carshare organization needs to demonstrate the value of their service to the city and developers in order for the integration of carsharing to take place at the building level. They need to show that they are strong service providers and are able to work within the municipal policies to find win-win solutions that benefit the other stakeholders.

Value

One of the main values of carsharing is the ability to reduce private vehicle ownership and the ability for individuals to switch to a transportation mode that is environmentally and socially minded (Environment and Parks Committee, 2014). In Vancouver, it was shown that carsharing has the ability to reduce 5-11 private vehicles per carshare vehicle (Environment and Parks Committee, 2014). From the findings of this study, the main value of carsharing was the ability to provide tenants who value a central, downtown lifestyle with an extra amenity. The implementation of carsharing at the building level, through the reduction of parking spaces, also gives tenants more affordable housing costs due to the extra cost of building parking spaces not being passed onto the consumer. Value is achieved for all three stakeholders through the expansion of the carshare network (expanded mobility options in the city) and affordable housing (savings in construction costs and reduced housing price for the tenant) (Environment and Parks Committee, 2014).

Urban Planning

Urban Planning is central to the implementation of carsharing at the building level in Halifax. The implementation of a parking relaxation policy could help the City achieve some of their transportation and parking strategies that they have laid out in the Regional Plan and the Regional Parking Strategy Functional Plan. At times, the land-use by-laws and the Regional Plan and the Regional Parking Strategy Functional Plan are at odds with one another. The land-use by-laws have parking requirements (outside of downtown Halifax) and do not offer much flexibility for developers to reduce the parking ratios set

out in the by-laws. This leads to inconsistencies in the overall strategy of urban planning and growth for the city.

Barriers

The four common barriers to the implementation of carsharing at the building level include lack of support, policy, political obstacles and process. These four themes directly impact whether developers are able to incorporate carsharing into a new development. In the findings, it was shown that all three groups are supportive of carshare initiatives, but there are structural reasons why these initiatives are not happening. One developer said that they are supportive of these types of initiatives that provide extra amenities for their tenants, but that there is no benefit from the City, in terms of a parking relaxation, to implement the service. Some municipal policies are beginning to focus on the reduction of vehicle kilometres travelled and are implementing carsharing services at the building level to address this problem (Shaheen et al., 2010). These policies are at time difficult to implement due to the existing parking requirements in municipal by-laws (Engel-Yan & Passmore, 2013). This is one of the main challenges that exist in Halifax.

The policies that exist in the HRM create a structure for developers and their projects. In the Regional Plan (2014a) and the Regional Parking Strategy Functional Plan (IBI Group, 2008), there are initiatives to decrease parking requirements in the urban core. These plans and strategies at times contradict the land-use by-laws and regular parking requirements. Policies can restrict the developer in terms of having the flexibility of how to use the land and can increase their costs. The literature shows that public opinion is an important aspect

when a municipality is considering parking relaxations (Engel-Yan & Passmore, 2014). The HRM is currently working on a plan to combine the different by-laws that exists so there is one policy for developers to follow, but this will take time to develop and implement. This lengthy process may end up being more beneficial in the end because stakeholder opinions and concerns will be addressed within the new policies in HRM. Studies have shown that implementing carshare policies results in reduced traffic congestion, vehicle kilometres travelled, vehicle ownership and reduced parking at the building level (Engel-Yan & Passmore, 2014). During the revision of the HRM by-laws, these benefits need to be considered and assessed with the specific needs of the City.

Implementing Carsharing

In other cities, there is constant communication between the carshare provider, municipal planners and developers to determine appropriate parking and mobility solutions for new multi-residential buildings. All three stakeholders are able to see a benefit in reducing parking requirement and increasing community transportation options. The evidence shows that accommodating parking reduction in the multi-residential building developments through the implementation of carsharing services, benefits the developer in terms of cost savings, the carshare organization by expanding their fleet, and the city by providing the community with more transportation modes and reducing vehicle emissions (Engel-Yan & Passmore, 2013).

In Halifax, this three-way conversation is not happening. The findings of this study show that the developers, at times, have difficulty working with the City on innovative projects

or building designs that deviate from the land-use by-laws. Although there is flexibility in terms of how building projects are approved (case-by-case basis) there is a lack of clarity of the leeway developers can take in terms of design. Currently in Halifax, density bonusing allows developers some flexibility in terms of the height restrictions of the building, but the bonusing does not include parking requirements. Density bonusing is a method in which the HRM planners are able to offer flexibility in building design. At this point, there is no other method, other than case-by-case negotiations with City planners, to reduce the parking requirements that are laid out in the land-use by-laws. This results in restrictive policy dictating the building approval process.

The inability for developers to have flexibility in terms of building design limits how they will approach innovative services like carsharing. If developers see the service as a benefit, it is up to the developer to incorporate the service without any support from the City. Unless the developer has the time to spend fostering the relationship with the carshare organization in the early building design phase, then the implementation of the carshare service will probably not take place.

CHAPTER 6 – RECOMMENDATIONS & CONCLUSION

Recommendations

Relationship Building

Stronger relationships with the carshare organization, HRM planners and building developers need to be fostered. Although the developers recognized the word carshare, they were not always properly informed about how the service provided added value for their residents. The HRM planners need to be more adaptive in their development approval process to be able to incorporate innovative design features that benefit the residents at the building level, but also the surrounding community. In the Regional Plan, and the Regional Parking Strategy Functional Plan there are clear initiatives to reduce parking requirements and decrease the use of single occupancy vehicle use (2014a; 2008). Carshare is one method to achieve these initiatives that are set out by the City. In addition, the HRM policy is looking at new ways of incorporating density bonusing at the building level. Again, carshare could be one approach that is taken by the urban planners to both reduce parking requirements and add community amenities at the same time.

Pilot project

Since there are currently no parking relaxation by-laws that exist in the HRM, it may be beneficial to test out the incorporation of carsharing at the building level through parking easements. There are some developers that do not want to include as much parking as is required through the land-use by-laws due to the demographics of their tenants and the current parking spaces used in their buildings. Carshare could be tested out in these cases to see what the impact is at the building level and surrounding community. In Halifax, the City would

need to critically examine the parking supply on the Halifax peninsula and the demand. This information would allow the regional planners to have a better idea of parking needs and locations. CarShareHFX currently has 35 carshare vehicles on the Halifax peninsula. In order to better understand how carshare services the community, information about the usage patterns and availability of the vehicles needs to be examined. This information would provide a clearer picture of service needs and potentially the places where the service could be incorporated successfully at the building level.

In addition, research would need to be conducted about the best parking easement practices from other cities to determine how this process would work in Halifax for the CarShareHFX, the City and developers. A pilot project could be the perfect method to assess how this process could work in the future for Halifax. This would give both the HRM planners and developers a process to reduce parking requirements at the building level and determine whether carsharing is the best solution for the tenants and community.

Conclusion

This study provides information about the enablers and barriers that exist for the implementation of carsharing through parking relaxations at the building level. Other carshare organizations that have successfully implemented this process with their municipality and local developers reveal that there are certain characteristics that must exist for this process to be successful. The city needs to have the demand, there needs to be a financial incentive for the developers, policy and process for parking relaxations need to exist, strong relationships

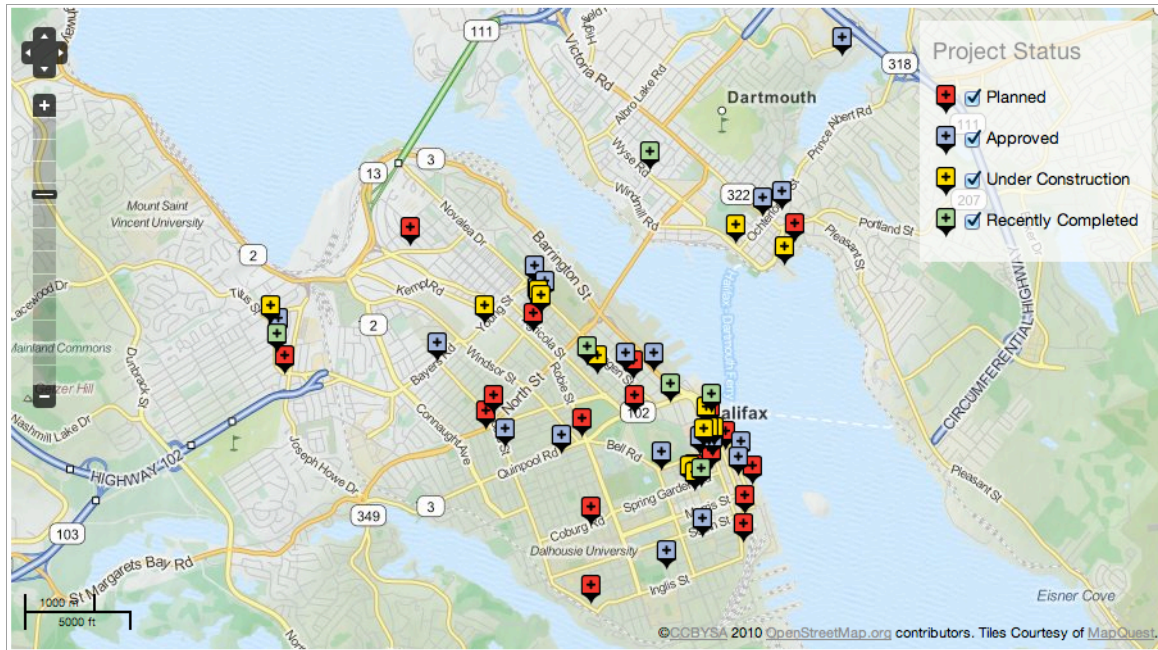
needs to be fostered between the three parties and there needs to be a clear public benefit of the service.

In Halifax, there needs to be leniency towards developers in the implementation of innovative solutions for building development projects to allow for carsharing to take root. Developers see many barriers in the implementation of carsharing at the building level, including community members being against development, a challenging process, changing demographics, rigid policy and process, and a lack of leadership within the development approval process. Many of these barriers can be overcome with fostering a better relationship between the three parties and having more flexibility in the policies that exist.

The urban planners need to determine how municipal strategies for parking reductions and decrease in single occupancy vehicles fit into the development application process. There needs to be leadership within the department to implement innovative solutions to our urban city challenges.

Overall, the process to implement carsharing at the building level in Halifax is complex. The limited municipal policies create obstacles for developers to reduce their parking requirements and integrate carsharing into their new developments. There needs to be stronger relationships between the CarShareHFX, the City urban planners and building developers for these types of initiatives to take place in Halifax.

Appendix A – Multi-Residential Building Developments



Appendix B – Interview Scripts

Participants	Interview Participant and Additional Information	Questions/themes
CarShareHFX	<p>Number of Participants: 1-2</p> <p>Length of Interview: 1-2 hours</p> <p>CarShareHFX will be the first interview in this study. A referral request for other carshare organization, municipal urban planners and residential developers will be requested.</p>	<p>Business Model:</p> <ul style="list-style-type: none"> - How long has CarShareHFX been in operation? - What is the service you provide for people? - How does CarShareHFX operate in Halifax? How do you get members? - What kind of challenges have you experienced to growing your business in HRM? - How is this related to the residential business development sector? <p>HRM:</p> <ul style="list-style-type: none"> - What has CarShareHFX’s relationship been like with the city? - Who have you worked with at HRM in regards to the expansion and development of your business? - Has CarShareHFX proposed any changes to the by-laws to make carsharing more attractive for developers? - What departments have you worked with? - What have the outcomes of these relationships been? - Moving forward, do you see any changes happening for HRM and the adoption of carsharing? - What kind of challenges have you faced to expand your service in the HRM? <p>Developers:</p> <ul style="list-style-type: none"> - Which developers has CarShareHFX worked with? - What have the outcome been on these business relationships been (positive/negative)? - What are your perceived barriers to expanding the carsharing service into this sector? <p>Individuals:</p> <ul style="list-style-type: none"> - Why do people use CarShareHFX? - What are some of the reasons why people sign up and discontinue using carsharing in HRM?
Carsharing Organizations	<p>Number of Participants: 3-5</p> <p>Length of interview: 30 minutes – 1 hour</p> <p>Participants will be determined through a literature review, internet search and referrals from CarShareHFX. Carsharing organizations that have had success in operating with the residential building development sector will be interviewed.</p>	<ul style="list-style-type: none"> - How long has your carsharing organization been in existence? - What is your membership base? - How many people are assigned to each car? - Do you work with residential building developers to offer your service in their development projects? - Can you explain how these relationships have been developed? - Have you encountered any challenges when trying to expand your carsharing service into the residential building development sector? If so, can you explain these challenges and if there were any way to reduce the challenges? - How has your municipality played a role in implementing carsharing in the residential building development sector? - What kind of by-laws/policies have allowed for this relationship to exist? - How many residential building development projects do you currently work with? - How many vehicles are currently at these developments? - Is the car/person ratio the same as other locations?
Halifax Regional Municipality Officials	<p>Number of Participants: 2-5</p> <p>Length of interview: 30 minutes – 1 hour</p> <p>The participants will be The participants will be determined through referrals by CarShareHFX and residential building developers.</p>	<ul style="list-style-type: none"> - What do you know about carsharing (awareness/familiarity)? - Can you tell me about what you know about CarShareHFX? - Do you know how many residential building developments are planned for the Halifax peninsula and downtown Dartmouth? - Does the city have any minimum parking policies/requirement for new residential building developments? If so, what are they and how do they work? - How does the process work when developers are looking to reduce their parking requirement - Do you know how other cities have used carsharing and parking

		<p>relaxations to incentivize developers to have less parking in their projects?</p> <ul style="list-style-type: none"> - Does the city communicate benefits to developers about incorporating carsharing into new building developments?
Residential Building Developers	<p>Number of Participants: 10-20</p> <p>Length of interview: 30 minutes – 1 hour</p> <p>The participants will be determined through referrals by CarShareHFX and HRM.</p>	<ul style="list-style-type: none"> - What do you know about carsharing (awareness/familiarity)? - Can you tell me about what you know about CarShareHFX? - How many residential building developments do you have in the HRM? - What kind of building developments are these (condos/mixed-use/apartments/other)? - What is the total number of units per building? - Do you know the average vehicle ownership per unit? - Average vehicle ownership per unit - Can residents lease parking spots or are they required to purchase them (condo owners)? - Do you try to minimize the parking requirements needed in your development projects? - What is the building development permit process like through the city? - What are the challenges you face to changing building requirements in your developments?

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